

**University Research Management in
European Small Island States – The Case for
Cyprus, Iceland and Malta**

**Christian Bonnici
(375281 M)**

**Thesis submitted to the University of Malta in part fulfilment of the
requirements of the degree of Doctor of Philosophy**

**Department of Management
University of Malta**

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Student's I.D. /Code 375281(M)
Student's Name & Surname CHRISTIAN BONNICI
Faculty FEMA
Department MANAGEMENT
Course DOCTOR OF PHILOSOPHY

Title of Dissertation/Thesis

UNIVERSITY RESEARCH MANAGEMENT IN SMALL ISLAND STATES
THE CASE FOR CYPRUS, ICELAND AND MALTA

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Abstract

The *general* aims of this study were twofold. One was of an exploratory nature, to instigate a discussion that brings together two seemingly unrelated concepts, that of smallness (within islands) and that of research management. The second aim was of a comparative nature, to compare the research management structures, challenges and strategies within the national, publicly-funded, flagship universities in three European small island states, namely Cyprus, Iceland and Malta. The *specific* aim of the study was to ascertain in detail a number of factors that shape university research management within the participant universities. This study adopted a qualitative approach using a case study strategy of inquiry in order to elicit as many detail as possible in a relatively unexplored field. Data was collected through semi-structured interviews and document analysis. It was analysed through a process of thematic analysis and complemented by insights derived from a focus group of independent experts. A number of factors that shape university research management were identified, ranging from factors related to the external context; the internal university context; the research management profession; and resilience factors. The investigation concluded that the national, publicly-funded, flagship university is at the centre of all research and research management aspects in a small island state. It faces challenges from an external context, which are largely uncontrollable, but also struggles against its own hurdles, imposed by history, tradition, location, and legacies to long-ingrained mindsets. This implies that models of university research management imported from abroad may not necessarily fit within a small island context or else they would require adaptation in a unique fashion. Nonetheless, universities and RMAs are not passive in the face of the challenges. They adopt a number of strategies that equip them with resilience and that shape their identity uniquely. This study is the first of its kind to explore research management from the perspective of small islands states. It highlights the relevance of the context towards the way the research management profession is shaped and it will hopefully generate interest into further research in this area.

Keywords: Research management; Research Managers and Administrators (RMAs); universities; small island states; islandness; smallness; context.

With Love and Appreciation To

My wife Sue Anne, for her unwavering love,
support and most of all patience

Our two children Yulya Anne and Yakob, who enriched
the journey with genuine joy and happiness

My parents, for betting on me all-in unrelentlessly,
even when I stacked the odds against me.

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List of Abbreviations

| | |
|--------------------------------|--|
| BERD | Business Expenditure on Research and Development |
| CY | Cyprus |
| DARMA | Danish Association of Research Managers and Administrators |
| EARMA | European Association of Research Managers and Administrators |
| EC | European Commission |
| EIS | European Innovation Scoreboard |
| EU | European Union |
| EU ² S ² | European Union Universities of Small States Association |
| FDI | Foreign Direct Investment |
| FREC | Faculty Research Ethics Committee |
| FTE | Full Time Equivalent |
| GDP | Gross Domestic Product |
| GERD | Gross Expenditure on Research and Development |
| GII | Global Innovation Index |
| GOVERD | GOVERNMENT Expenditure on Research and Development |
| HE | Higher Education |
| HEI | Higher Education Institutions |
| IceARMA | Icelandic Association of Research Managers and Administrators |
| ILO | Industry Liaison Office |
| IMF | International Monetary Fund |
| INORMS | International Network of Research Management Societies |
| INSULEUR | Network of the Insular Chambers of Commerce and Industry of the European Union |
| IS | Iceland |
| JRA | Journal of Research Administration |
| KTO | Knowledge Transfer Office |
| MCST | Malta Council for Science and Technology |
| MT | Malta |
| NCAR | National Conference on the Administration of Research |
| NCURA | National Council of University Research Administrators |
| NSO | National Statistics Office |
| OECD | Organisation for Economic Co-operation and Development |
| PI | Principal Investigator |
| PPS | Purchasing Power Standards |
| PSO | Project Support Office |
| PUI | Predominantly Undergraduate Institution |

| | |
|---------|--|
| QS | Quacquarelli Symonds |
| R&D | Research and Development |
| R&I | Research and Innovation |
| RIO | Research and Innovation Observatory |
| RMA | Research Managers and Administrators |
| RMR | Research Management Review |
| RQ | Research Question |
| SFIC | School/Faculty/Institute/Centre |
| SRAI | Society of Research Administrators International |
| STPC | Icelandic Science and Technology Policy Council |
| SWOT | Strengths Weaknesses Opportunities and Threats |
| TRNC | Turkish Republic of Northern Cyprus |
| UCY | University of Cyprus |
| UK ARMA | United Kingdom's Association of Research Managers and Administrators |
| UN | United Nations |
| UNCTAD | United Nations Conference on Trade and Development |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| UoI | University of Iceland |
| UoM | University of Malta |
| UREC | University Research Ethics Committee |

“The distinctive features of the world's civilisations are not simply and solely the giraffe and the city of Rome, as the children may perhaps have been led to imagine on the first evening, but also the elephant and the country of Denmark, beside many other things. Yes, everyday brought its new animal and its new country, its new kings and its new gods, its quota of those tough little figures which seem to have no significance, but are nevertheless endowed with a life and a value of their own, and may be added together or subtracted from one another at will”

**Halldór Laxness - Nobel Prize in Literature 1955
in *Independent People* (1945)**

CHAPTER 1

INTRODUCTION

CHAPTER 1 - INTRODUCTION

1.1 Introduction

This introductory chapter sets the scene for the study. First, it introduces the general theme of this research; second, it presents the aims of this study and a brief indication of some of the potential contributory values linked to conducting this research; and third, this chapter highlights, in chronological sequence, the content structure of the remaining seven chapters of this thesis.

1.2 The general theme of this study

This section introduces, in summary form, the general theme of this study, namely *research management*. This is a term which has been in circulation for the past sixty years and refers to:

The duties and responsibilities commensurate with the successful implementation of the research strategy and its daily operational implications, the control and co-ordination of specific research projects, their quality and related tasks of sponsor management. (Bushaway, 2007, p. 142)

Other authors have defined research management from different perspectives (e.g. (Hazelkorn, 2005; Campbell, 2010; Schuetzenmeister, 2010)). However, Bushaway's definition is being preferred here because it provides a general understanding of the research management phenomenon and the kind of research that falls within the scope of this study. This and other definitions will be critically appraised in Chapter Three

and shall contribute towards the formulation of the working definition of research management and of Research Managers and Administrators (RMAs) for this study.

It is essential to clarify briefly here what kind of research falls within the scope of this study. The above definition of research management makes specific reference to research projects and sponsor management. These research projects are normally of a collaborative nature, possibly involving partners from different countries. They are usually accompanied by several compliance requirements and have clearly set work plans, milestones and deliverables. In addition, these projects tend to have specific impact indicators and metrics in order to achieve medium to longer term socio-economic targets. Administrative and managerial support becomes essential in this type of research, known as Mode Two research (Gibbons *et al.*, 1994), hence the necessity for involving RMAs to support researchers in these endeavours. Unbridled, individual research, including undergraduate, master's and doctoral research which is not part of a research project (known as Mode One research) does not fall within the scope of this study. For the sake of clarity and simplicity any unqualified and unitary reference to *research* in this thesis (such as when referring to research as one of the university missions or to university research strategies, research landscape and the research environment) is deemed to refer to research in general. Where reference is made to *managing research*, the *research management profession*, *RMAs* and *research management as a phenomenon* in general, the word *research* is deemed to refer specifically to Mode Two research and which therefore requires a range of administrative support and managerial input.

Furthermore, in this study, the phenomenon of research management is discussed within a context. On a national level, this study focuses on the context of European *small island states*, whereas on an organisational level the focus is on *national, publicly-funded, flagship universities*. With respect to the former, one must make it clear at the outset that defining small island states has never been straightforward (see Armstrong and Read, 2003; Crossley, 2008; Sultana, 2006; Thorhallsson, 2006). Definitional issues of small island states will be discussed in detail in Chapter Two. However, it is worth clarifying that for the purpose of this study *small island states* are those independent and sovereign island states with a population that does not exceed one million five hundred thousand inhabitants. Within the European context, the small island states that fall within the scope of this definition and which will be covered in this study are Cyprus, Iceland and Malta. Their respective national, publicly-funded, flagship universities that constitute the organisational level covered in this study are: the University of Cyprus (UCY), the University of Iceland (UoI) and the University of Malta (UoM).

1.2.1 Contemporary challenges

The small island state context exposes the national, publicly-funded, flagship universities to a constant challenge: that of reaching a balance between their principal missions of teaching, research and service to society. *Teaching* is traditionally a primary mission, since the single or few universities in a small island state are often entrusted with providing a tertiary level of education to their inhabitants, thus reducing the necessity for these inhabitants to migrate to larger countries in order to access higher education. *Research* conducted by national, publicly-funded, flagship

universities has a nation-wide scope with a direct impact on the economy's competitiveness in view of the small size of the research landscape in small island states. In addition to these two missions, the national universities in small island states are expected to *engage continuously with society*. Reaching a balance between these three missions to address the demands of society may be quite challenging.

Universities in small island states are often in a position to influence the focus on specific niche areas of comparative advantage that may enable the state to achieve excellence in the international spheres of research. This challenging task is often undertaken in a context where agendas are set by larger international players and whose objectives may not be aligned with the needs of a small country. For example, universities in European small island states face significant competition for research funding from other larger European states, some of which have had access to funding from the European Union for a number of years. Up to a few decades ago, most small island states were still colonies of larger countries and their attainment of independence did not mean an immediate switch to self-sufficiency, autonomy and economic development. This tends to put small island state universities at a disadvantage when compared to other universities in larger states in terms of research capacity. Whereas the former universities may still be in the process of building research infrastructures and research teams, the latter universities may already be in an advanced stage of their research capabilities. When coupled with the fact that larger European countries tend to have greater say in setting the agenda, (including the research agenda and budgets of framework programmes), small island state universities may face a huge challenge to make their voices heard and for the European research agenda to be congruent with their idiosyncratic needs.

Despite these and other challenges (discussed in more detail in later chapters), research in small island state universities has started gaining in importance and recognition. Consequently, the study of research management has become relevant in the context of small island states, though to date it has been very limited (see section 4.2.2 in Chapter Four). Furthermore, the notions of *islandness* and *smallness* have never crossed paths with the concept of *research management*. This gap may be attributed to three potential factors. First, the development of the research management profession and the studies of smallness and islandness occurred around the same time, such that it was not easy for these concepts to be intertwined when they were still in their infancy. Second, it is also possible that these concepts were still considered to be unrelated to each other, such that any possible association between them remains one to be explored. Third, authors may have failed to appreciate the unique role of research management in small countries, as diverse from that in bigger countries.

This lacuna in the literature is not surprising, given that various small island states lack a national university and rely on a regional university. Consequently, there may be limited scope for developing a profession for university RMAs in these countries. This is not the case for the three European small island states that fall within the scope of this study. Their national universities have followed different pathways, which have, over the years, influenced their direction in research and in research management. The contextual factors (both national and organisational) in each of the three universities will play an important role in this study, whose aims and research questions are discussed in the next section.

1.3 Aims of the study

The contributory value of this study to the body of literature can be ascertained along two *general* objectives. One is of an exploratory nature, to instigate a discussion that brings together two seemingly unrelated concepts, that of smallness (within islands) and that of research management. The second aim is of a comparative nature, to compare the research management structures, challenges and strategies within the national, publicly-funded, flagship universities in three European small island states, namely Cyprus, Iceland and Malta. The *specific* aim of the study is to ascertain in detail a number of factors that shape university research management within the three universities. One over-arching question (Q) and three inter-related research questions (RQs) are addressed in this study. Each question is discussed briefly below.

Over-arching Q: What are the factors that shape research management in national, publicly-funded, flagship universities in three European small island states?

The main research question has been carefully crafted to reflect both the exploratory and the comparative nature of this study. On the one hand, the aim is to identify those factors that play a role in the manner and extent to which the participant universities manage their research. On the other hand, the question places this study within a context, namely that of national, publicly-funded, flagship universities in three European small island states. The main reason why the focus is on national, publicly-funded, flagship universities is because, as argued earlier, these universities tend to play a national role in small island states and hence represent a large majority (if not

all) of the market share for universities. To this end, this over-arching question is further developed into the following specific research questions.

RQ1: How is the research management function organised in the national, publicly-funded, flagship universities in three European small island states?

This first RQ is intended to analyse the research management *structures* within the three universities. There are two factors that contribute significantly to the need for a deeper analysis of the research management structures. One is inspired by the work of Nguyen (2013), who argues that university research capacity building is becoming a concern for every university, no matter its size or location. This also means that research is increasingly becoming recognised as a core university mission which requires adequate support. Linked to Nguyen's contribution, Nguyen and Meek (2015) argue that universities must also consider several intangible aspects which influence the way research capacity is developed. Intangible aspects refer to those factors that are ingrained (or not) in the minds of people or which are inherent in the nature of the context in which the research and the research management structures are operating. The mindset towards research and other external factors that influence the university operations are some examples of these intangible aspects that may sway the direction of research and its management within a university.

The second factor was inspired by the works of Bosch and Taylor (2011) and that of Pettigrew *et al.* (2013). While recognising the importance of universities to reach a balance between their three major missions, namely teaching, research and service to society, these literature contributions underline the need for universities to have

sound and adequate research management structures. However, according to Taylor (2006), there is no single right model of university organisational structure, since such structure depends on “local circumstances, especially institutional culture and history” (Taylor, 2006 p. 20). Therefore, in order to understand the factors that shape research management within the three universities, a good starting point is the manner and extent to which research management is organised and structured in each university, hence the purpose of this first RQ.

RQ2: What are the key challenges faced by these universities in managing their research?

The second RQ is intended to identify the key *challenges* to manage research in the three universities. On the one hand, it aims to ascertain whether the context has an impact on the challenges faced by the universities in managing the research. On the other hand, managing research is a challenging endeavour in itself, particularly because of the complex nature of research and the dynamic environment in which it is conducted. Therefore, this RQ draws on studies on research management and on small island states in order to investigate and analyse the challenges that are faced by the three universities.

RQ3: What strategies do these universities have in place to address the research management challenges?

The third RQ aims to match the *strategies* adopted by the three participant universities in managing research with the challenges identified in RQ2. This process of matching

has two main objectives: the first is to assess the extent to which the challenges faced by the universities are being strategically addressed, if at all; the second is to enhance the comparison and the richness of the findings, since in this manner one can assess whether a challenge in one university is common or not to the others, and also how the different universities respond to the challenges (if any) within the context in which they operate.

The combination of the findings from RQ2 and RQ3 in addition to the results obtained from RQ1 are intended to provide insights to address the over-arching question. The factors that shape university research management in the three European small island states (i.e. the ultimate aim of this study) can thus be identified in relation to the three elements investigated in each RQ, namely the research management structures, the challenges and the strategies of each university.

1.4 Overview of the chapters

This thesis consists of eight chapters. This chapter presents the introduction to the study. Chapter Two, Chapter Three and Chapter Four present a review of the relevant literature, spanning from that on small island states to that on the research management phenomenon and the conceptual framework chosen for this study. Chapter Five presents the research methodology, while Chapter Six presents the key results and findings. In Chapter Seven, these results are analysed and discussed. Chapter Eight concludes this thesis with a number of implications, some

recommendations for further studies and an overall conclusion. A summary of each chapter is provided below.

1.4.1 Chapter summaries

Chapter **Two** presents the wider context of this study – that of small island states. Islands, islandness and the study of islands are discussed first, as the three terms that fall within the scope of Nissology, the technical term used to refer to the study of islands. This chapter highlights the complexity of defining small island states and suggests an operational definition for this study. Subsequently, it presents a body of literature on small states, since the study of small island states very often borrows knowledge from such body of literature. Finally, the focus shifts to the specific context of the three small island states with a brief analysis of the Cypriot, Icelandic and Maltese contexts. The chapter concludes with a brief discussion of the implications of the country context for the study.

Chapter **Three** discusses the phenomenon of research management, which is the principal subject matter of this study. The development of the research management profession is presented first, followed by the conceptual problem of defining research management. This definition problem first addresses the complexities arising from *research*, as the underlying element that needs to be managed. Subsequently, an evaluation of the definition of *research management* is presented. Five main complexities around the concept of research management are discussed, namely: terminology; settings; stages and processes; roles and skills of RMAs and

perceptions. The Chapter ends with two operational definitions, one for research management and one for RMAs applicable to this study.

Chapter **Four** outlines the conceptual framework of this study which is composed of three pillars. The first pillar concerns the *contextual realities* and discusses three aspects in turn: the idiosyncratic nature of universities; university research management in small contexts; and university RMAs. The second pillar focuses on the *relationships* in university research management. First RMA relationships are explored with respect to two principal concepts, that of the *third space* and that of *servant leadership*. Subsequently, the focus shifts to institutional relationships. Power forces within universities and the way university relationships are moulded from a *collegium* perspective vis-à-vis the bureaucracy perspective are presented. Subsequently, the political perspective, as an alternative to the *collegium* and bureaucracy perspectives, is assessed. The third pillar concerns the *structural aspects* of university research management. This is first discussed from the perspective of research management as a balancing act, followed by an analysis of the set-up and structure of the research management function. A number of models and strategies are also presented and evaluated as part of this pillar. This chapter concludes with a number of propositions for research management thinking within a small island state university context.

Chapter **Five** elaborates on the selection of the appropriate research methodology. The research paradigm is presented first, including the case for adopting a qualitative approach in this exploratory study. Subsequently, the reasons behind the adoption of

a case-study strategy of inquiry are presented. A brief description of the process of formulating the research questions is provided, followed by details of the data collection procedures, comprising semi-structured interviews and document analysis. The process of data coding and analysis through themes is described in detail in a two-step approach, namely: the process of data coding and theme generation; and the process of analysis and comparison of themes. Ethical considerations are also discussed along with validity and reliability matters. The chapter concludes with some reflections about the limitations of this study.

Chapter **Six** presents the research findings. A comparison of the research management structures within the three universities is presented first. Subsequently, a two-fold comparison is presented, one comparing the research management challenges faced by the three universities and one matching the strategies adopted by each university in addressing the identified challenges. Drawing on these findings, a number of factors that shape university research management are identified and provide the basis of the main discussion on the findings presented in Chapter Seven.

Chapter **Seven** presents the core discussion of this study in response to the overarching research question. It starts with a review of the thinking process adopted in this study. Subsequently, the discussion about the results is presented. It is structured around eight strands and identifies a number of factors that shape research management in national, publicly-funded, flagship universities in three European small island states. These factors are classified along four categories, namely: factors relating to the external context; factors relating to the internal university context;

factors relating to RMAs and the research management profession; and resilience factors. Towards the end of the chapter, a number of reflections on the results and their interpretation are presented, together with a re-assessment of the baseline conceptual framework of this study in the light of the outcomes of the entire research process.

Chapter **Eight** is the concluding chapter. A number of implications derived from this study are presented. They are split in five categories, namely implications for theory, for universities, for RMAs, for the research management profession and for small island states. Subsequently, a number of recommendations for further research are presented. The chapter ends with an overall conclusion to the study.

1.5 Summary

This chapter was split in three sections. First it provided an introduction to the general theme of this study, namely research management in general and more specifically within universities in small island states. Second, it stressed that the primary aims of this study are twofold: one aim is exploratory, namely that of bringing together the concepts of *smallness/islandness* and *university research management*; and another one is for comparative purposes, namely to identify similarities and differences among the three universities within their own idiosyncratic context, where research management is concerned. These two aims highlight the major contributory values of this study: that of instigating a discussion about an area that is largely unexplored and somewhat neglected; and that of underlining the importance of analysing and

understanding the implications of context in research. This study aims to develop a contextual dimension to the research management literature, which so far has largely focused on the more generic aspects of the phenomenon. Finally, this chapter presented an overview of the contents of the chapters that follow.

CHAPTER 2

CONTEXTUAL ASPECTS OF THE STUDY

CHAPTER 2 – CONTEXTUAL ASPECTS OF THE STUDY

2.1 Introduction

The previous chapter stated explicitly that this study is embedded in the general realm of research management with a specific focus on the university context within three European small island states. However, it is unwise to delve into this domain without analysing and understanding the contextual realities of small island states in general and more specifically in the three small island states of this study. Sensitivity to the context is necessary because historical, cultural, political and geographical differences make any blueprint impossible (Nguyen and Meek, 2015).

The analysis of the general context of small island states is made on two levels: one by reviewing the relevant literature on islands, islandness and the study of islands and second by reviewing the relevant literature on small states. This approach is essential to integrate the knowledge about *islandness* (deriving from the study of islands, known as *Nissology* – explained further on) with the knowledge about *smallness* (deriving from the study of small states). This approach is not new in the literature. Scholars that study small islands states (for example: Baker, 1992; Bertram, 2004; Briguglio *et al.*, 2006; Anckar, 2006; Baldacchino *et al.*, 2008; Baldacchino, 2011; Guan and McElroy, 2012) acknowledge that *Nissology* is a field in its own right, with specific aspects, such as insularity, remoteness, and peripherality, characterising islands as distinct from the mainland. However, they also acknowledge that when islandness is coupled with smallness, the literature on islands borrows from the literature on small states, thus forming a comprehensive body of literature that widens

the understanding of small island states not simply because they are islands but also because they may be small. This thesis focuses on small island states, thus integrating the smallness factor with the islandness factor and borrows from both the literature on islands and that on small states. Thus, *small island states* are the main contextual focus of this thesis, except where expressly stated that the focus shall be temporarily shifted to small states.

This chapter begins by introducing briefly the world of islands, islandness and the study of islands. It proceeds with elaborating on the definition of small states and explores a body of literature that has, over the past sixty years, attempted to define what is a small state and to identify the general characteristics of small states. A detailed comparative analysis of the country context of the three European small island states, namely Cyprus, Iceland and Malta follows, in order to provide a contextualised background to the study.

2.2 Islands, islandness and the study of islands

In view of its focus on island states, this study also falls within the realm of *Nissology*, a term that was proposed by McCall (1994, p. 4) to refer to “the scientific study of islands on their own terms”. Developments in this field of study started taking shape towards the end of the 20th century and the first decade of the 21st century, as authors recognised that there is “much scope for unpacking what is meant by islandness” (Baldacchino, 2004, p. 272). Despite the great diversity among islands, “island(ers) have a sufficient commonality to warrant looking at them comparatively, justifying a

systematic ‘island studies’ perspective” (Baldacchino, 2005, p. 247). In view of this recognition, interest in small island studies flourished and led to what Baldacchino (2004 p. 272), proclaimed as the “coming of age of island studies”. This led to the establishment of the *Island Studies Journal* in 2006 and *Shima: The International Journal on Research into Island Cultures* in 2007 as two primary journals on the study of islands and island cultures. In the introductory article to the former journal, Hay (2006) argues in favour of a coherent theory of islandness. However, he contends that “[defining] what constitutes an island is not conclusively settled, and what constitutes a *small* island is a particularly contested issue” (Hay, 2006, p. 20). This complexity arises because there are many types of islands that vary in size (large versus small), development (urban versus rural), climate (from tropical to Arctic/Antarctic), demography (inhabited by aboriginal people versus inhabited by settler/immigrants), geomorphology (continental versus oceanic) and resource availability (resource-rich versus resource-poor islands).

These opposing characteristics of islands constitute only one aspect of the definition problem of islands. According to Hay (2006), other contrasts exist in island studies:

Perhaps the most contested faultline within island studies is whether islands are characterised by vulnerability or resilience; whether they are victims of change, economically dependent, and at the mercy of unscrupulous neo-colonial manipulation; or whether they are uniquely resourceful in the face of such threats. (p. 21)

These contrasts are considered as both obvious and at the same time elusive as they require a ‘jack-of-all-trades’ approach to the study of islands (King, 2009), while requiring “critical, inter- and pluri-disciplinary study of islands on their own terms”

(Baldacchino, 2007, p. 16). However, this approach is not free from difficulties. First, Baldacchino (2008) argues that:

There will always be epistemological and methodological challenges associated with studying islands, because we are grappling with the impact, conditioning and paradigmatic effects of the hybrid identity and ‘location’ of subjects (islanders, natives, settlers, tourists, second home owners), as well as those who would study them – who may be locals as well as outsiders (mainlanders, continental dwellers) – looking in. (p. 38)

This view is a reflection of a debate that characterised the study of islands so far, that of the insiders/outsiders dilemma. This dilemma concerns whether the study of islands should be conducted by islanders (*insiders*), as people who are born on islands and have grown in an island environment or by non-islanders (*outsiders*), as people who study islands from outside. On the one hand, the *outsiders* may be commenting on island affairs from a safe distance, as emigrants or as transnationals that are relatively disengaged from the society they are analysing (Baldacchino, 2004). On the other hand, the *insiders* may fall into the trap of the “crab in the barrel” syndrome (Baldacchino, 1997, p. 118) or *insularity*, as they may become somehow marginalised in their own land, whether physical or psychological, confined to comment about internal happenings with a critical eye to what goes on outside their restricted space. In this regard, King (2009) argues that in order to overcome what he terms the *colonial gaze*, Nissology requires a *conversation approach* in which island studies are presented as a *subaltern discourse* while the island *writes back*. This, according to Baldacchino (2004), would be a move away from the *mainlander gaze* which “stereotypically positions islanders in typically predetermined modalities” (p. 49), towards one that focuses *on* the islanders and *about* them, in an attempt to unearth the true nature of islandness.

Within the scope of this study, this dilemma is partly mitigated because the author, as an islander himself, is studying the national university of the same island in which he was born and grew up, but also comparing with national universities in two other European small island states. This is a halfway approach between the insider and the outsider role of the researcher, which however, can in no way eliminate completely the fact that the author is *seeing* things as an islander and not as someone who is completely extraneous to island life.

A second difficulty often associated with the study of islands is that it is practically impossible to have access to the same type of data across all islands, especially small islands, who may lack the resources to collect certain data. Therefore, making comparisons and drawing certain conclusions would not be possible if gaps in the data exist. For the purposes of this study, this difficulty is addressed by adopting a consistent approach in data collection (where possible) in order to try and obtain relevant and comparable data between the three universities.

Two more challenges in island studies are highlighted by King (2009). First, he warns against the danger of *exceptionalism*, as islands may be regarded as too special and too unique. This approach runs the risk that researchers may somehow regard islands as different from all others. He suggests that this can be overcome “both by *horizontal* comparative studies with other islands, and by *vertical* integration of islands within hierarchies of regional and global relations” (King, 2009, p. 56). Nonetheless, King (2009) argues that islands should not be studied with the pre-conception that they are small-scale models of the wider world. He suggests that there is a middle way, as islands can be studied with rigour, both for themselves and as places where inter-

relationships can have deeper focus. A horizontal comparative analysis as well as a qualitative research strategy represent the approach adopted in this study to address this challenge.

The second danger in island studies identified by King (2009) is that smallness of most islands may denote *insignificance* such that no problem is important enough to warrant dedicated studies. The association of islands with holidays and relaxation can further contribute to this danger, thus diminishing the emphasis for serious scholarship. However, the range of island studies over time has proven that this is a misconception and that islands have both similar and distinctive social, economic and environmental problems that warrant separate studies (Moncada *et al.*, 2009). This study aims to uncover the significance of island life by highlighting those factors that elicit the uniqueness of small island states through research management and that warrant to be studied separately.

When analysing small island states one must ask a fundamental question: do any similarities or differences between small island states arise because they are small or because they are islands? Anckar (2006) addresses this question by studying political institutions in small island states and concludes that islandness probably contributes more than size towards the distinguishing features of small island states, where political institutions are concerned. However, he argues that “the configurations remain hazy and hard to interpret” (Anckar, 2006, p. 49). In terms of impact and causation, small size and islandness are two intertwined concepts and cannot be easily separated from each other. This link was probably best captured by Newitt (1992), when he argued that:

Not all small states are islands and not all island states are small; but the problem of *smallness* is given an added dimension in the case of an island, and insular isolation can be considerably intensified if you are also small. (p. 16)

Newitt's argument may be considered to provide the basis for the rationale of this study as the author embarks on the journey to discover how smallness and islandness interact within a university context and to assess how research management is moulded in small island state universities. Therefore, islandness and smallness are two separate but intertwined concepts in this study. After introducing briefly island studies, the next three sections (2.3, 2.4 and 2.5) focus on small states, whose characteristics tend also to be prevalent within small island states, as argued in section 2.1. The definition problem of small states is discussed first.

2.3 The definition problem of small states

The criteria for what constitutes a small state and what distinguishes it from a medium sized or larger counterpart are not clear. Different attempts were made to develop classificatory measures for small states, but there has been no general agreement in the literature on how to define small states (Crossley, 2008).

The most common and perhaps the most readily available data to measure country size is that pertaining to *population* (Read, 2001). However, the choice of an appropriate population threshold to distinguish between small states and large ones has been the subject of a great deal of debate (Crossley, 2008). In a study carried out in 1960 by Robinson, high population thresholds of between ten and fifteen million have been adopted, such that countries like the Netherlands and Iceland, (with

approximately fourteen million and three hundred and thirteen thousand inhabitants respectively at the time of the study) were both classified as small states (Neumann and Gstöhl, 2006). However, as the concept of small states became the subject of more intense research, population thresholds became progressively lower. The United Nations (UN) adopted a one million population threshold, whereas the Commonwealth and the World Bank suggested a population threshold of one million five hundred thousand inhabitants, below which countries are considered as small. However, the latter two institutions also considered other more populated states, such as Singapore, Jamaica, Lesotho, Namibia and Papua New Guinea to be small states, in view of the fact that they share most of the characteristics associated with smallness, even though their populations surpassed the one and a half million mark.

To add to the complexity of size, it is not unusual for countries to be also subdivided into another sub-category, that of micro-states (Pace, 2001), although this classification is also characterised by inconsistency. Some proponents of the micro-state concept set a 100,000 population threshold for micro-states, which includes San Marino, Andorra and Liechtenstein, while others set the threshold at one million inhabitants and include countries like Iceland, Malta and Luxembourg in the micro-states category. These variations in thresholds and interpretations make the definition of what constitutes a small state highly unclear and open to different interpretations. In this section, the aim is to adopt an operational definition of small island states for this study.

There is a general agreement that *population*, *territory*, *Gross Domestic Product (GDP)* and *military capacity* are traditionally the most commonly used variables to

define the size of states. However, their order of importance or the prevalence of one variable over the other is also subject to debate, or rather, as Thorhallsson contends, subject to a revision. He argues that:

The four traditional variables may well have been suited to describing the size of states in the old international system [until the first half of the 20th century]; where *military capacity* was the key to survival of states; *manpower* for military purposes was highly important; the *size of the economy* was a basis for building up the militia; and states attached importance to concrete *territorial gains*. (Thorhallsson, 2006, p. 13)

However, with a shift in emphasis from military capacity and territorial gains (after the second World War) to economic and political co-operation between nations due to globalisation, new, more relevant measures started to be given greater consideration in determining the size of states and their action capacity (Thorhallsson, 2006).

Thorhallsson (2006) presents a conceptual framework with six categories that affect the notion of size of states and that can influence their international behaviour. This framework is presented in Table 2.1:

| <i>Variable</i> | <i>Description of variable</i> |
|-------------------------|---|
| fixed size | population and territory |
| sovereignty size | the state's ability to maintain effective sovereignty on its territory and to maintain a minimum state structure and presence at an international level |
| political size | military and administrative capabilities, the degree of domestic cohesion, combined with the degree to which the state maintains an external united front |
| economic size | Gross Domestic Product, market size and development success |
| perceptual size | how domestic and external actors regard the state |
| preference size | ambitions and prioritisations of the governing elite and its ideas about the international system |

Table 2.1: Conceptual framework of size of states

Source: Thorhallsson (2006)

This framework connects the notion of size to behaviour. According to this framework, the size of a country is also a function of: (a) its ability to maintain effective sovereignty on its territory and to maintain a minimum presence at an international level (*sovereignty size*); (b) the degree of domestic cohesion combined with the degree to which the state maintains an external united front (*political size*); (c) the perceptions of domestic and international actors towards a state (*perceptual size*); (d) and the ambitions and prioritisations of political elites in the international system (*preference size*). For example Malta, with its low internal and external capacity in military competence, administrative capacity and cohesion, combined with the corresponding medium to high vulnerability in each of these variables, would place at the bottom of a scale measuring the *political size* of EU members states using 2004 data. On the other hand, Sweden, with a high internal and external capacity, with regards to ambitions, priorities and ideas about the international system, combined with a low vulnerability in each of these variables, would place at the top of a scale measuring the *preference size* of EU member states.

Moreover, the links to strong neighbours and/or patrons may provide a new perception of size. Patrons are expected to act as pull-factors for small states through compensatory factors, such as sharing of knowledge and resources which can prove essential for small states in the absence of critical mass. These examples on the preference size and perceptions indicate that “domestic actors’ notions of size of the state and its internal and external capacity shape the behaviour of the state” (Thorhallsson, 2006, p. 27).

It is important to clarify that the operational definition of small island states for the purposes of this study shall not be based on Thorhallsson's conceptual framework, for two reasons. First, the framework's classification underlying domestic and international actors' notions of size and the internal and external capacity are subjectively determined as their interpretation may vary from one *actor* to another. Second, it does not provide any guidance for interpretation in order to reduce subjectivity, as it assumes that the variables associated with the six notions of size are fixed and universal. To a certain extent, this subjectivity has been acknowledged by Thorhallsson himself, as he stresses that the four traditional variables identified earlier on, are still important in revealing the size of states and their potential domestic and international behaviour (Thorhallsson 2006). Indeed, fixed size (population and territory), sovereignty and political size (military capacity) and economic size (GDP) all feature prominently in the conceptual framework. However, he argues that the traditional variables cannot be used on their own to determine the size of states.

In view of this criticism, the operational definition of small island states for this study shall be based on more objective variables. However, Thorhallsson's conceptual framework is still of relevance for this study. First, it enriches the debate on the definition of smallness and highlights the fact that it is far from a clear and straightforward task. Second, it acknowledges the fact that the size of states is not only dependent on fixed parameters, but rather it is subject to the perceptions of key domestic actors (e.g. political elite or universities) and external actors (e.g. the European Union) regarding the size of the state, which are capable of determining the state's international behaviour.

Therefore, this framework can explain why some states' performance is different than that of others, even though the traditional measures of size may indicate that they are of a similar size. For example, although population and territory suggest that Iceland is a small island state (using the World Bank thresholds), any findings about Iceland in this study shall be interpreted in the light of Iceland's close association with the other Scandinavian countries (due to closeness of territory).

2.3.1 The operational definition of small island states in this study

In this study, small island states are those *sovereign and independent island states situated at the periphery of Europe whose population does not exceed one million five hundred thousand inhabitants*. This operational definition adopts fixed, traditional measures of size, namely *population* and *geographical territory*. The rationale behind this choice is an instrumental one. In the same way as *military capacity* or *territory* were important measures of size until the first half of the 20th Century, *population* and *territory* are considered as the most important measures of size for this study. This is because, the study falls within the realm of research and research management in small island states, thus essentially influenced by the availability of human capital (*population*) and the geographical location (*territory*) of the small island states.

Moreover, this study adopts a population threshold of one million five hundred thousand inhabitants, as recommended by the World Bank. This choice of threshold is intended to avoid entering into the debate distinguishing between micro-states and small states since, as explained earlier, this distinction stands on a very fine line. In

addition, the geographical position is also being taken into consideration in this study. The aim is to focus on those small sovereign island states situated at the periphery of the European territory and to ascertain whether geographical position is an influential factor for the purposes of this study, in addition to factors related to population size. The combination of the population threshold with the geographical position brings Cyprus, Iceland and Malta within the scope of this study.

This section has raised several arguments about the problem of defining small states. The variables that authors have used to classify states into large, small or even micro, as well as the various thresholds that have been advocated, make it paramount to provide a clear working definition applicable for this study. The next section explores the ways in which literature on small states has evolved over the past sixty years and how interest has spun across several disciplines.

2.4 Small states in the literature

Literature on small states sees its inception in the late 1950s, with the first contributions evident primarily in the field of economics (see Fox, 1959; Robinson, 1960). The concept of vulnerability of small states was very often under the spotlight as the process of decolonisation proliferated the number of small states and islands as sovereign and independent states (Vital, 1967; Bray and Packer, 1993). In the 1960s small states studies started expanding to cover aspects of demography, politics, sociology and legislative-executive relations (see Demas, 1965; Benedict, 1967; Lloyd, 1968; Smith, 1988) as interest has grown into studying those factors that were leading to the success and resilience of several small states. In parallel to these

developments, overlapping literature has developed on island states (see Dommen, 1980; Shand, 1980; UNCTAD, 1985; UNESCO, 1991; Hintjens and Newitt, 1992).

As the studies on small states gained momentum, interest started emerging from the fields of education and public administration mostly under the umbrella of the Commonwealth Secretariat (see Brock, 1980, 1983; Commonwealth, 1985; Bacchus and Brock, 1987; Farrugia and Attard, 1989). Subsequently, the literature on education systems in small states has caught up with the literature in other fields focusing on a small states perspective (see Bray, 1991; Bray, 1992; Bray and Packer, 1993; Crossley and Holmes, 2001; Baldacchino and Farrugia, 2002; Crossley *et al.*, 2011). However, other literature that developed contemporarily on university research management did not reflect a small country perspective. Hence, the overarching aim of this study is to explore the small island states perspective in research management within a university context, as a novel contribution.

This section has briefly summarised the evolution of small states literature through various disciplines over the past sixty years. The next section reviews the most salient general characteristics of small states that are of relevance to this study. Since most of the characteristics of small states are equally relevant for small island states, the review bases its approach on the assumption that what applies to small states also applies to small island states, except where specifically indicated otherwise.

2.5 General characteristics of small states

Although each small state is considered to be unique in its own cultural, historical, and social realities, most small states share a number of common characteristics (Lee, 2004). The aim of this section is to present the most salient common characteristics shared by small states which are, in the author's view, of relevance for this study.

These characteristics are summarised in Figure 2.1:

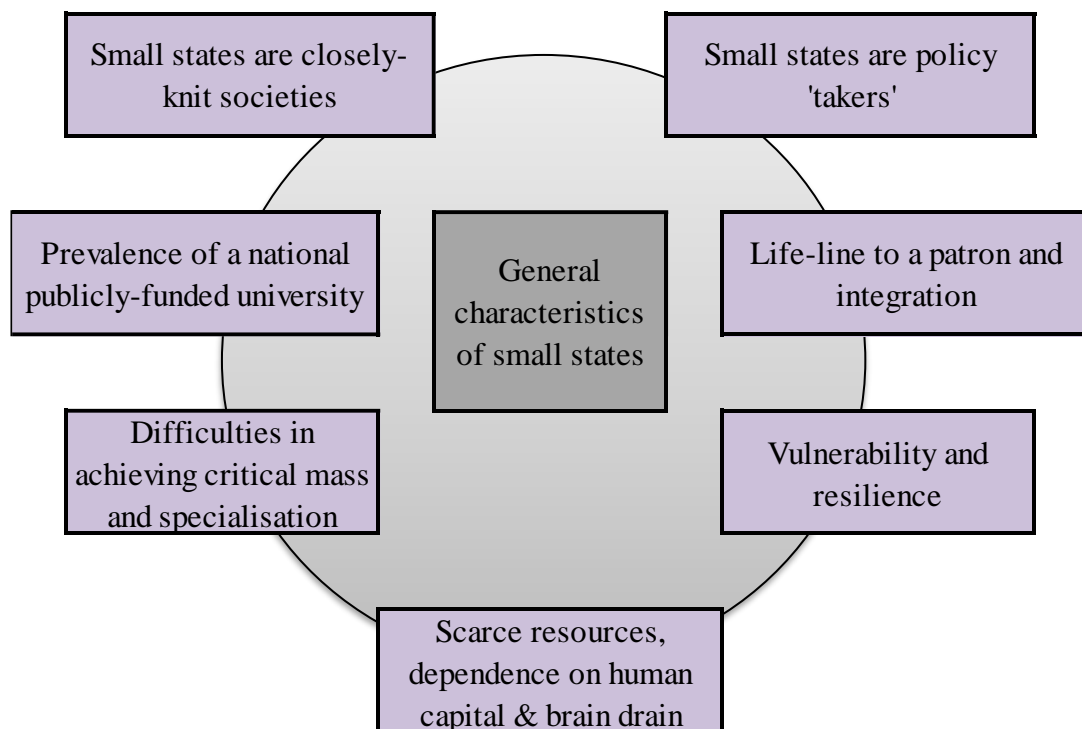


Figure 2.1: General characteristics of small states

Each of these typical characteristics shall now be reviewed individually in the forthcoming sections.

2.5.1 Small states are closely-knit societies

As the studies on small states started gaining momentum, a general agreement has developed among authors that small states have a social ecology of their own (see: Baldacchino and Farrugia, 2002). Baldacchino (2002) argues that smallness in size and in population often lead to the creation of closely-knit and integrated societies with highly personalised relationships. Farrugia (2002) is of a similar accord and argues that these close relationships can, on the one hand facilitate and hasten communication processes, but on the other hand, they can also complicate them. Ideas, views, requests and complaints can be easily communicated since people know the abilities, needs and idiosyncrasies of each other and act or react accordingly (Farrugia, 2002). However, this closeness may create problems when policy-making and the decision-implementation process are heavily influenced by an element of self-interested scrutiny. Personal interventions, community pressures, close personal and family connections may lead to nepotism and sometimes to corruption in closely-knit societies (Baldacchino, 2002).

Close personal connections (characterised either by friendly or antagonistic relations) are considered by Thorhallsson (2011) as one of the primary factors that led to the economic collapse in Iceland (2008-2011) and the response to the financial crisis that ensued. In his opinion:

These connections did not lead to efficient policy-making, instead they created suspicion and conflict. Close personal connections may also have played a part in the failure to supervise the financial institutions. (Thorhallsson, 2011, p. 7)

Similar opinions were formed by the Cypriots in an attempt to explain Cyprus' financial crisis of 2012-2013. Close personal connections made lay-offs impossible

in the public sector. Consequently, the large public sector limited the government's ability to reduce expenditure in order to focus resources on the more pertinent problem of the banking sector, which accounted for more than eight times the country's GDP (Orphanides, 2014).

Small communities are also characterised by strong social cohesion, such that once social unity is distorted it may take many years to be rectified. In small states, factors that in a larger state may have a local, community or regional effect, could potentially have a national dimension. Farrugia (2002) argues that "in communities where practically everyone knows everyone else, individuals' utterances and actions soon become public knowledge...[and] it is extremely difficult to avoid the polarisation that ensues" (p.17). According to Baldacchino *et al.* (2008):

Reputation is a valuable asset in any part of the world, but when one lives on a small, densely populated island where much activity takes place in the public eye and where news travels fast, both successes and failures become quickly known. Relocation to start again can only be to another country as it becomes impossible to operate in a hostile business environment with shattered networks and broken relationships. (p. 90)

The element of closely-knit societies in small states can be interpreted with reference to Hofstede's Framework of Bipolar Dimensions (Hofstede, 1993), which attempts to explain cross-cultural differences across nations (see Hofstede, 2006; 2010; Hofstede *et al.*, 2010). One of the bipolar dimensions is that of *individualism vs. collectivism*. Small states are more likely to exhibit *collectivism* within their closely-knit societies, as there tends to develop a strong sense of respect and belonging towards a group as closely-knit members since childhood. *Individualism* is the opposite dimension and is exhibited when members of a group learn to think of themselves individually as *I* instead of *we*. Individualistic societies expect that one

day their members will be able to stand on their own feet and not get protection from the group anymore (Hofstede, 1993).

As much as the sense of collectivism may be true for small states as opposed to the more individualistic societies in larger states, small states may tend to exhibit rather strong individualistic qualities collectively at a national level. These qualities may be associated with the strong sense of identity in small states, especially islands (King, 2009) as they search for independence, sovereignty and autonomy at an international level, even though close connections with a *protector* are normally sought (further reviewed in section 2.5.3). Iceland's reluctance to join the EU in order to protect its own collective interests is possibly a very good example of how internal collectivism leads to external individualism in small states.

2.5.2 Small states are policy takers

A second typical characteristic of small states underlined by scholars is that they are very often *takers* rather than *makers* of the world policies (Crossley *et al.*, 2009) 2009). Some maintain that this is not by choice. For example, Katzenstein (1985) argues that small states join international organisations, such as the European Union (EU), the Commonwealth, the Organisation for Economic Co-operation and Development (OECD), and the International Monetary Fund (IMF) to relieve the pressures that the international community puts on them. This alliance may put small states at the mercy of policies that are set by larger countries and which may be impossible for small states to implement due to their characteristics, challenges and political legacies (Darmanin, 2009).

However, other viewpoints contend that this reliance on policies dictated and monitored by other bodies may result from the political culture in small states, which is often characterised by bipolarity that results in conflicts and debates rather than by consensus politics (Magnússon, 2013b). This can easily create situations where certain decisions are delayed or postponed in a small state until an external policy-maker intervenes. Examples include: the reluctance of the Cypriot government to deal with pertinent internal problems that led to the 2012-2013 financial crisis in Cyprus; Malta's divided population (practically almost in half) on EU membership; and the abolition of spring hunting in Malta. These are examples of how the small state's inability to address the matters on a local level may induce intervention by larger organisations, such as the EU, which in turn aim to secure their own interests, even though they are not be congruent with the needs of a small state.

Critical to this aspect is the direction that research is given by the agenda-setters, who may either focus on *technology-push* or *market-pull* approaches in policy-making. A market-pull approach is often considered more appropriate for small states in their quest to develop indigenous technology in niche areas of comparative advantage. However, this approach may not be in line with the priorities of the agenda-setters in larger states, who may opt for technology-push approaches to incentivise policies and practices that may be of relevance to the wider economic interests but not necessarily to those of small states.

A counter-argument to the claim that small states are policy 'takers' is that small states need not resign themselves to the policies 'made' by others and may join forces to make their voices heard in unison against larger countries. Examples of joint force

actions by small states include: (a) the European Union Universities of Small States Association (EU²S²), which allows small state universities to join forces and to participate competitively in EU actions; and (b) the Network of the Insular Chambers of Commerce and Industry of the European Union (INSULEUR), which is a not-for-profit lobbying association to promote close cooperation for the economic and social development of islands in the EU. Sultana (2006) contends that within supra-national entities (such as the EU), small states may have power that is not commensurate to their size. This becomes mostly evident when both large and small nations have one vote and the same power to veto decisions. One example is Malta's active role in reducing telephony roaming costs in the EU. These and other examples demonstrate that small states may influence policy-making by joining forces in order to ensure that their voices are heard and that their interests are adequately represented.

2.5.3 Life-line to a patron and integration with international organisations

The third characteristic of small states relevant for this study is that small states tend to rely on larger neighbours and international organisations, such as the EU or the Commonwealth, to ensure sustainability and protection (Olafsson, 1995; Archer and Nugent, 2002; Thorhallsson, 2006; Pace, 2001). This alliance formation generally provides small states with an extra push, that would otherwise not be achievable with their limited capacities (Brandi, 2004; Worldbank, 2005; Antoniou, 2009). Some authors call this a life-line to a *patron* (Bertram, 2004), others to a *protector* (Baldacchino, 1993), while the more classical term is *metropolitan countries* (Armstrong, 1998). These patrons are often former colonial powers or geographically close neighbours. Some examples of these linkages include: Cyprus with its close

links to Greece; Iceland with its close links to the US and the other Scandinavian states; and Luxembourg, whose workforce comes primarily from Belgium, France and Germany.

Evidence suggests that small states with close linkages to larger prosperous states exhibit superior GDP *per capita* than those which are more peripheral (see (Armstrong *et al.*, 1996; Armstrong and Read, 2000; Easterly and Kraay, 2000; Cordina, 2004; Briguglio *et al.*, 2006; Briguglio, 2010). Other studies focus on the significance of geographic location to explain the important role of powerful neighbours (see: Gibson and Nero, 2008; McElroy and Medek, 2012; Watsa, 2009). McElroy and Lucas (2014) noted that “over half of [small] island welfare can be explained primarily by geographic proximity to world markets and affiliated political status” (p. 365). They conclude that the economic performance of small islands is inversely related to their remoteness from the rest of the world and positively related to their political affiliation to a large country.

However, the integration with a more powerful ally is the source of a continued debate in Iceland. Contrary to most of the other European small states (such as Cyprus, Malta and Luxembourg), Iceland has continuously opposed EU membership. This policy stance was severely criticised during and immediately after the financial crisis (2008-2011) since Iceland had to face most of its hardships on its own (Thorhallsson and Rebhan, 2011). In this regard, one of the most important lessons to be learned from Iceland’s economic crash is “the restricted scope of small economies to engage in the international global economy without a proper ally” (Thorhallsson, 2011a).

2.5.4 Vulnerability and resilience of small states

Vulnerability is defined as “the risk of being harmed, wounded (negatively affected) by unforeseen events” (Guillaumont, 1999, p. 4). The Vulnerability Hypothesis, which originated at a UNCTAD conference in 1988, proposes that small states are likely to be more vulnerable to risks and factors outside their control than larger states (Briguglio, 1992; 1993; Chander, 1996; UNCTAD, 1997; Easter, 1998; Easter, 1999; Crowards, 1999). This hypothesis has been subject to various studies and debates.

On the one hand, small states typically have a limited domestic market, which reduces their possibility to exploit economies of scale (Romer, 1986; Lucas, 1988). A higher cost per unit produced, may in turn, lead to a higher average cost *per capita* for public services (Alesina and Spolaore, 1997; Alesina and Wacziarg, 1998) with consequent limited institutional capacity and employment opportunities (Antoniou, 2009). Small states are also typically open economies as they depend highly on trade with other countries, thus increasing their susceptibility to economic conditions elsewhere across the world (Atkins *et al.*, 2000).

On the other hand, as studies on small states increased, it became evident that the risks to growth and development associated with vulnerability were not necessarily translated into lower *per capita* output levels (Cordina, 2004). A number of small states, such as Luxembourg, Singapore and Brunei, have managed to successfully attain relatively high levels of *per capita* income and high levels of development, despite their inherent disadvantages (Selwyn, 1975; Seers, 1983; Alesina *et al.*, 2003).

Briguglio *et al.* (2006) attribute this apparent paradox to the concept of *resilience*, which refers to the policy-induced ability of a country to (i) recover quickly from a shock; and to (ii) withstand the effect of a shock (Briguglio *et al.*, 2009). Briguglio (2003) links the concept of resilience with that of vulnerability. He maintains that vulnerability is confined to inherent features (termed as *inherent vulnerability*) which are permanent or quasi-permanent, while resilience is associated with intentional measures that enable a country to withstand or bounce back from the negative effects of external shocks (termed as *nurtured resilience*).

The combined characteristics emanating from this distinction led to the identification of four scenarios that are plotted in the matrix in Figure 2.2:

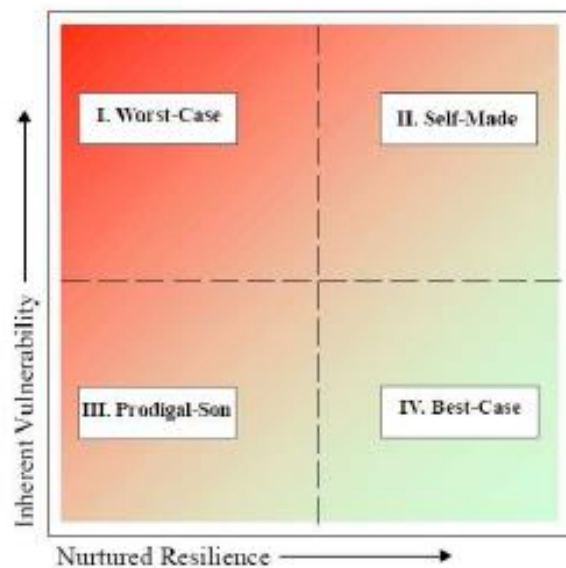


Figure 2.2: Vulnerability and resilience matrix

Source: Briguglio *et al.* (2006)

According to the matrix, the **Worst Case** arises when a country's low nurtured resilience is combined with high inherent vulnerability. Briguglio *et al.* (2006) contend that small countries with weak economic performance mostly fall within this quadrant. In the wake of the financial crisis of 2012-2013, Cyprus can be classified in this quadrant, at least temporarily, as the fast growth of its banking sector together with a large public sector are examples of how policies may offer little resilience to an inherently vulnerable economy.

The second quadrant of the matrix illustrates a **Self-Made** position by countries, which, despite their high inherent vulnerability, may take steps to mitigate this vulnerability by building their resilience. The study classifies Singapore and Brunei as clear examples of small states that have managed to address their high vulnerability exposures by careful policy-making.

Briguglio *et al.*, (2006) compare countries classified in the third quadrant to a **Prodigal son** in view of their low nurtured resilience in response to low inherent vulnerability. They argue that countries in this quadrant would probably be adopting policies that expose them to the adverse effects of exogenous shocks despite their relatively low degree of inherent vulnerability. For example, Luxembourg's position at the centre of the European hub may provide certain benefits that are not available to other peripheral countries like Cyprus, Iceland and Malta, particularly in terms of connections with larger countries and access to a larger market. However, if Luxembourg's policy-making fails to prepare for possible adverse conditions, such as a financial crisis, it may indeed be more exposed than other more vulnerable

countries which have diligently built a sufficient level of resilience to face the adverse conditions.

The **Best-case** is illustrated in the fourth quadrant, which places countries that have low inherent vulnerability and high nurtured resilience. This position requires countries to exploit their relatively low inherent vulnerability by adopting resilience-building policies. A study conducted by Bezzina *et al.* (2014) shows that the structure of the Maltese banking system has made Malta less vulnerable to the 2008 global financial crisis, while the risk management policies and attitude adopted by Maltese financial firms has placed Malta in a best-case position during the financial turmoil.

As the small states literature gradually shifted from the mere vulnerability consequences to opportunities associated with smallness (Thorhallsson, 2011a), studies also started focusing on the potential contribution that good management and administrative competence may have in addressing constraints caused by smallness. The inter-relationship between vulnerability and resilience underlines the necessity for small states to avoid being passive in the face of inherent limitations. By adopting policy measures and management strategies that enable them to improve their ability to cope with or to bounce back from external shocks, small states may aim for sustained development and growth, despite their size.

2.5.5 Scarce resources, dependence on human capital and brain drain

The fifth typical characteristic of small states is linked to territory and resources. The relatively small geographical territory often experienced by small states, coupled with

insularity and remoteness which often characterise islands, tend to render natural resources very scarce (Armstrong and Read, 2000; Alesina *et al.*, 2003), although Iceland is an exception in this regard, as it “is endowed with abundant natural resources” (Sigurjónsson 2011, p. 45). This not only increases small states’ dependence on imports and limits the potential for exports, but it also increases their dependence on human capital, which is considered to play a central role in the development of small states (Barro, 1991; Rauch, 1993; Simon and Nardinelli, 1996; European Commission, 2006; Crossley, 2008). Therefore, investment in education, training and skills acquisition assumes greater importance in small states because domestic labour is very often in short supply (Edwards, 1998; Easterly and Kraay, 2000).

This dependence on human capital and the limited alternative natural resources is definitely not risk free for small states. Lack of proper investment in human capital poses the risk that small states may lose their limited best brains to larger countries. This is the *brain drain* phenomenon, defined as the “migration of people endowed with a high level of human capital” (Beine *et al.*, 2001, p. 276). Some element of migration is often considered unavoidable in small states, particularly islands (Christensen and Mertz, 2010) as it has perennially served as the path to economic and social betterment (Baldacchino, 2011).

Common wisdom generally maintains that *brain drain* is detrimental for the country of emigration (Lucas, 1988), particularly for small and peripheral regions and states, which constantly face a strong migratory-pull of graduates to core regions (Boucher *et al.*, 2003). However, contrasting views exist on this phenomenon, as migration may

actually be seen as leading to *brain circulation* and not necessarily to *brain drain*. In this regard, Kirkland (2008) argues that:

In an increasingly competitive and global market, it is too simplistic to talk merely in terms of how many individuals have left the developing world to work elsewhere. In practice, things are more complex. Highly skilled individuals are now less likely to base their entire career in a single country. Many of those who do work abroad are doing so in fields that directly benefit their home nation. Even those who do not, may still bring an economic benefit. (p. 20)

Advocates of the concept of *brain circulation* argue that migrants who leave their peripheral region or small state of origin have the possibility of transforming developmental opportunities as they build professional and business connections to their home countries or regions (Saxenian, 2005). Thus, *brain circulation* increases their international mobility and has the potential to relay back the benefits to the country of origin (Crossley and Holmes 2001), even if the physical presence of highly skilled individuals is outside the region or country of origin (Saxenian, 2005).

2.5.6 Difficulties in achieving critical mass and specialisation

The high demand for human capital coupled with the scarcity of resources in small states, particularly small island states, exert constant pressures towards selectivity in the use of the limited resources. They are expected to identify niche areas of specialisation in which they have good potential to compete on the international market (Brandi, 2004). This quest for critical mass and specialisation is far from a simple task, for a number of reasons.

First, the extent of influence that international agendas have on local policy-making processes in small states becomes a determining factor for the state's ability to identify and exploit niche areas of comparative advantage. In their study on small

island states, Moncada *et al.* (2009) argue that EU policies do not always favour small islands because their dimensions are not always taken into consideration when it comes to planning or designing policies.

Second, a sufficient level of critical mass in identified priority areas is an essential pre-requisite for specialisation (Cooke and Leydesdorff, 2006). Critical mass refers to the minimum amount of resources required to render an investment viable in the longer term. For small states, this investment requires identifying areas of comparative advantage and garnering the necessary resources to attract and maintain some of the best brains in the selected priority areas. Small states must provide favourable working and living conditions, competitive salaries, access to advanced research infrastructures, international networks and sustainability of funding for the related area of research. However, this is not a simple task for small states, particularly small islands. According to Poirine (2014), specialisation creates what he terms as the *islands paradox* because on the one hand, islands need to specialise more to increase their scope for scale economies, but on the other hand they tend to gain less from specialisation because of their small internal market.

Third, the concept of a specialised professional tends to differ depending on the size of the country (Bray, 1991). Bray argues that in small countries, professional standards are likely to involve *breadth* rather than depth, as professionals need to be capable of adapting their knowledge to the peculiar conditions of small states (Bray, 1991). Therefore, specialised professionals in a small state are likely to be *multi-functional* (Farrugia and Attard 1989) and may be responsible for several functions

at the same time, which in larger countries may be catered for by separate individuals or groups. Besides inhibiting them from the possibility to specialise in their own respective fields, these conditions tend to exert significant pressures on their personal lives and professional development.

Baldacchino and Farrugia (2002) claim that these closely integrated roles for specialised professionals in small states can be advantageous, as they provide a broader and a more wide-ranging view of any particular situation. However, the multiplicity of roles may have negative effects as it may inhibit the development of the necessary levels of specialisation. In addition, specialised professionals may suffer a drain in their mental and physical well-being and it may not be possible for them to shift rapidly from one task to the next or from one decision-making situation to another (Baldacchino and Farrugia, 2002). Consequently, in a small state specialisation may be impossible to achieve under these conditions, where professionals cannot dedicate all their time and effort to concentrate on their respective fields.

A fourth constraint related to specialisation in small states can be attributed to the fact that small states are vulnerable and if they do not acknowledge this fact, they may engage in overly-ambitious activities that may cause their downfall. With reference to Iceland's 2008-2011 financial crisis and the subsequent economic collapse, Thorhallsson (2011b) uses the term *outvasion* to describe Iceland's over-ambitiousness of its financial sector. The small state budget, the small national currency and the small domestic market could not sustain the financial sector which has outgrown the domestic market's ability to defend it. Specialisation should

therefore, be accompanied by caution in small states and an awareness that over-dependence on one or few areas of specialisation may expose the small state to even further vulnerability (Magnússon, 2013a).

2.5.7 Prevalence of a national, publicly-funded, flagship university

The last general characteristic that is deemed relevant to this study is that small states are often characterised by the existence of a national, publicly-funded, flagship university which strives to attain a degree of autonomy from significant political influence (Nkrumah-Young *et al.*, 2008). A national university in a small state is usually considered a sign of national prestige and is seen as an attractive lure for potential donors and royal patronage (Lillis, 1993; Bray, 1992). It is also believed capable of responding with greater flexibility and appropriateness to national development needs, by providing more culturally-sensitive and relevant higher education than is available in larger metropolitan countries (Teasdale, 1993). Although other universities, colleges and research institutions may exist in small states (as is the case in Cyprus and Iceland), they are usually more specialised in particular areas, such as science and technology or vocational subjects, and they may not offer the wide range of services that are usually provided by a national, publicly-funded, flagship university.

While the existence of a number of universities (both privately and publicly-funded) in a large country are often taken for granted, it is legitimate to reflect on whether it is necessary and possible to have universities in small states, particularly island states. Bray (1992) argues that universities in large countries can more easily develop

economies of scale and offer specialised services. On the contrary, universities in small states are constrained in the range of services that they can offer because the low demand for them might not even justify their existence. He maintains that some small states may also find that they cannot operate universities at all. However, the need for any state (large or small) to have universities that can provide social and political leadership is a recognised fact (Bray, 1992). Indeed, universities exist in some of the smallest countries (e.g. Solomon Islands, Guyana, Samoa, Bhutan, San Marino and Andorra). By not having its own university, a small state is obliged to send its students abroad for further studies, with the risk that they may never return and consequently exacerbating the problem of *brain drain* as discussed earlier on. However, this view can be challenged, since the existence of a local university in a small state “may also promote emigration, as individuals who gain higher levels of education are more likely to have a broad understanding of the world and of the opportunities in other countries” (Bray and Packer, 1993, p. 35).

The extent to which a small state can provide university services of a certain depth takes vertical and horizontal dimensions. On a *vertical* scale a university is usually at the top end of the education provision in a country. In this regard, small states vary between them on the extent to which they are willing and able to provide an environment where higher education can flourish or otherwise rely on foreign universities to address the higher education needs of the country. For example, since its establishment in 1592, the University of Malta has provided the possibility to the local population to advance in higher education, whereas in Cyprus, most of the higher education requirements were met by sending students to foreign universities,

primarily in Greece, the UK and the US, until the establishment of a national publicly-funded university in 1989.

On the *horizontal* dimension, small states also vary in the range of services provided by their universities, whether they are teaching-only institutions or ones that embrace research and service to society strongly within their realms. According to Bray and Packer (1993) the basic question on the horizontal range is how far small states' universities can cater for the national demands. Teaching is often considered a necessary service that a university in a small state cannot undermine. Hence, when faced with several resource constraints, particularly financial, human and space requirements, research may be considered of secondary importance or even non-existent. This is where research management can make a difference in a small state university. It has the potential to provide strategic and operational input that enables a university to widen its scope on a horizontal level, particularly in research, which would probably not be provided within a small state, unless promoted by and within a university environment.

2.5.8 Conclusions on the general characteristics

This section has reviewed some salient general characteristics of small states. It has noted that the idiosyncratic nature of small states warrants that they are treated separately from larger states and that they should be studied within their particular contexts. From this review five basic propositions for university research management thinking arise.

First, the significant dependence of small states on human resources implies that the efforts of university research management should be directed towards attracting and maintaining best brains, providing constantly novel and challenging opportunities for researchers and ensuring a favourable environment for doctoral and post-doctoral researchers. Where it is not possible to attract excellent talent to migrate physically to the small island states, such states should aim to facilitate the *circulation* of talented individuals that can serve local small island constituencies while remaining plugged into cutting edge environments overseas.

Second, personal relationships in closely-knit societies pose a significant challenge in managing university research in small island states. On the one hand, they may be considered an asset, since there is the potential for nurturing and sharing knowledge more easily and effectively. But on the other hand, they may lead to rivalries and potential problems that the personalised style of management generates, particularly due to the public perception, which in small states can be easily and quickly transmitted from one person to another. Moreover, potential rivalries between community members may lead to duplication of efforts and costs, wastage of time and inefficient use of limited resources.

Third, the need for small states' to build critical mass through various initiatives with international organisations and the close links with patrons is likely to be reflected in the undertaking of numerous joint collaborative initiatives (for example in research projects). These initiatives provide a good playing field for small state universities to learn from joint collaborations and to showcase their potential. However, according to Farrugia (2002), the close links with patrons and economic integration may

perpetuate the concept of neo-colonialism within small states. This may happen if the local community becomes reliant on outsiders and places greater dependence on ideas, products and projects that originate overseas. University RMAs in small states need to understand that small states have an ecology of their own (Baldacchino, 2002) and should develop more home-grown initiatives, particularly to cater for their specific needs, even if this requires collaborating with other countries. They also need to be careful not to join too many initiatives and then not being able to sustain them or linking them fruitfully.

Fourth, the management and administration of research in small states need to be built around the concepts of vulnerability and resilience. On the one hand, the research management function needs to be aware of the inherent difficulties faced by small states, while on the other hand it needs to ensure sufficient resilience-building through good management and administrative competence to cater for adverse conditions.

Finally, the small state scenario implies that university RMAs may be constantly engaged in multiple assignments with several, sometimes unrelated responsibilities, such that they may not find the time and mental energy to deal with complex research management issues and projects. Constant mundane, ad-hoc chores that require immediate attention very often take precedence over efforts to implement a more strategic approach. According to Farrugia (2002), the situation becomes significantly frustrating when foreigners are called in to deal with specific situations, which the local RMAs could have easily and diligently addressed had they been given enough time to deal with them properly. While acknowledging that foreigners (such as other EU nationals) could provide an important workforce to fill in skill shortages that may

be experienced by small states, the argument being made here is that such foreigners may also be engaged in jobs for which the local RMAs could be adequately skilled and qualified.

After reviewing the salient general characteristics of small states, which are often common to small island states, the next section shall focus on the specific country contexts of each of the three small island states investigated in this study. Both the general characteristics and the specific country contexts provide a rich background against which the findings of this study can be understood and interpreted.

2.6 From general characteristics to the specific country context: An analysis of the Maltese, Icelandic and Cypriot contexts

As stated earlier, it is unwise to delve into the study of university research management in small island states without framing it within the specific country context of the study. This is particularly relevant in qualitative research, as “qualitative researchers are much more inclined than quantitative researchers to provide a great deal of descriptive detail when reporting the fruits of their research” (Bryman, 2004, p. 280).

In order to identify the key features of the specific country context, three aspects shall be addressed in the following sub sections. The first compares briefly the historical, geographical and political features of the three small island states; the second analyses their socio-economic environment; while the third focuses on the Research and Innovation ecosystem.

2.6.1 Geographical, historical and political context

Table 2.2 presents a summary of the population and territorial characteristics of the three small island states.

| | Cyprus | Iceland | Malta |
|----------------------------------|------------|---------|---------|
| Population (inhabitants) | 1,141,166* | 323,002 | 423,382 |
| Territorial size (sq. Km) | 9,240 | 100,250 | 320 |
| Density (inhabitants per sq. Km) | 124 | 3 | 1,323 |

* including the Turkish Republic of Northern Cyprus (TRNC)

Table 2.2: Population, territory and density of Cyprus, Iceland and Malta

Source: World Bank (2015b)

It is evident from this brief overview of the geographical and territorial characteristics that, despite their similarity in terms of islandness and peripherality, the three island states face different resource challenges. With a high population density, Malta faces significant challenges in terms of limited physical space, which is not equally experienced by the other two island states. The small territory brings with it scarcity of natural resources, a problem which, although in Cyprus is felt less than in Malta, is felt even much less in Iceland.

The geographical location presents particular challenges for each small island state. A particular concern is neighbourhood stability. Cyprus is situated in a currently (2015) very vulnerable area, with war conflicts persisting in Syria and Israel, political instability in Egypt, economic crisis in Greece and difficult relations with Turkey. Malta's closeness to Libya and Tunisia exposes it to a considerable element of

vulnerability as political tensions and instability in these North African countries often pose economic and political challenges, including those concerned with migration. On the other hand, Iceland's position at the north of Europe presents challenges in terms of its closer location and links to the US and the UK and in keeping pace with the other larger Scandinavian countries. However, as a result of their peripherality, the three island states have developed a more robust and independent approach over the years. Historically, all three islands have been subjected to foreign rule for many centuries, but eventually they all gained their independence: Iceland in 1918; Malta and Cyprus in the early 1960s.

The geographical position of the three island states tends to have an impact on their political context. Although all three are European countries, their geographical location positions them at a distance from the principal European hubs, in particular the European Union institutions. However, not all three states have had the same attitude towards the EU. Whereas Malta and Cyprus both became full members of the EU in 2004, Iceland has kept very close links to the US (at least until the closure of the US military base in 2006) and remained very sceptical towards EU membership.

In terms of legislative set up, Malta and Iceland are parliamentary republics whereas Cyprus is a presidential republic. While Iceland's parliament is characterised by coalitions between several political parties, Malta's political scene is characterised by a two-party system and a polarised political culture, which very often leads to debates and opposite views on most of the major issues affecting the country. Cyprus, on the other hand, has quite a unique hindrance when it comes to domestic politics,

that which is commonly known as *The Cyprus Problem*, which sees its origins in the division of the island between the Greek Cypriots and the Turkish Cypriots. This division degenerated into a military intervention by Turkish armed forces in 1974 and the creation of the Turkish Republic of Northern Cyprus (TRNC), occupying over 36% of the Cyprus territory and representing over 70% of Cyprus' economic potential at that time (MFA Cyprus, 2017). Forty years after this division, Cyprus is still devoting significant political energy in dealing with a sub-state which is not recognised by anybody except Turkey and with the scarcity of resources, particularly space, since the island is not fully accessible for the Cypriot government.

One particular aspect emanating from the legislative set up is the relative proximity of legislators to the people in small island states (Bray, 1991). *Table 2.3* confirms Bray's (1991) view that the small number of population per legislator in small states tends to bring politicians closer to the people while strengthening the arguments made in section 2.5.1 that small states are closely-knit societies.

| | Malta | Cyprus**** | Iceland |
|--------------------------------------|---------|------------|---------|
| Population (a) * | 423,382 | 865,900 | 323,002 |
| Number of parliamentary seats (b) ** | 69 | 56 | 63 |
| Population per seat (c) *** | 6,136 | 15,463 | 5,127 |

* source: World Bank (2015b)

** source: for Malta: www.parlament.mt; for Cyprus: www.parliament.cy; for Iceland: www.althingi.is

*** computed (a)/(b)=(c)

**** excluding Turkish Republic of Northern Cyprus (TRNC)

Table 2.3: Population per legislator in Cyprus, Iceland and Malta
(2015 data)

From this review of the geographical, historical and political context five important conclusions can be derived. First, all three small island states are characterised by peripherality, insularity and remoteness, thus requiring them to cope on their own while exposing them to an element of vulnerability. Second, while human capital is a crucial resource for all three island states, Cyprus and Malta are particularly dependent on human resources due to their limited natural resources, although Cyprus' recent success in gas exploration has, opened up some territorial advantages for the country. Third, the geographical locations and the neighbourhoods pose further challenges for each of the three small states. Fourth, EU membership provides Malta and Cyprus with greater exposure to EU policies and agendas than Iceland. Finally, the local political scene, with the relatively small government setup and the closeness of politicians to the people, indicate that there are certain similarities, yet each country has its own political challenges and trajectories.

2.6.2 Socio-economic context

The review of the socio-economic context is definitely conditioned by the global financial crisis that the world economy has faced towards the end of the first decade of the twenty first century. Although the crisis remains a global factor that has naturally left its mark in Malta as it has done in many other countries, the same cannot be said for Iceland and Cyprus. Both countries experienced a financial crisis, which extended to the collapse of their respective economies.

Iceland's primary economic contributors have traditionally been the fisheries and agricultural sectors. Nonetheless, during the period 1990-2008, when Iceland

experienced a growth of almost 25% in its population (Magnússon, 2013b), industrialisation expanded while the public sector and the banks became the leading forces in the Icelandic economy. However, this shift towards the services industry and the rapid growth of the banking sector subsequently contributed towards the collapse of the financial sector, a currency crisis and a currency shortage.

The economic collapse brought considerable social implications. Iceland became crippled with significant unemployment (18%) and high inflation (8%) in the period 2009-2011. In 2009 GDP fell by an unprecedented 6.8% (Thorhallsson, 2011b) and household and corporate debt became sky high. However, since then, Iceland has started its way to recovery, with unemployment in 2013 down to 5.8%, inflation to 3.9% and a GDP growth rate of 1.9% compared to those of 2009.

Cyprus' economy has followed a somewhat similar path to that of Iceland. After a period of robust GDP average growth rate of 4% p.a. in the first decade of the 21st century (Tsipouri and Athanassopoulou, 2013), Cyprus experienced an economic collapse in 2011 as result of the global financial crisis. A large public sector, high public debt and significant investments by Cyprus' banks in troubled Greek state bonds are considered as the primary culprits that led to the economic collapse. It can be argued that Cyprus' woes were probably softened by the support of the EU and IMF and by the fact that Cyprus did not suffer a currency crisis like Iceland. However, the support provided by the international organisations had several strings attached, such that the Cypriot economy on its way to recovery now faces many more restrictions than the Icelandic economy.

In contrast to Cyprus and Iceland, the Maltese economy continued to display resilience in the midst of major international economic and financial shocks. This is despite the fact that Malta's economy, similar to Iceland and Cyprus, has over the years experienced a shift away from the primary and manufacturing sectors, towards services and knowledge-intensive jobs. Therefore, whereas the Cypriot and Icelandic economies upheld the vulnerability of small states to external factors during the global economic crisis, the Maltese economy is a good example of the small states' ability to build resilience against adverse conditions.

Besides the economic crisis and the effects it had on the three small island states, other characteristics emerge from the analysis of their socio-economic contexts. A sectoral analysis of the three countries by World Bank (2015a) reveals that in 2015 the services sector in Cyprus contributed 87% of GDP compared to 83% in Malta and 70% in Iceland. The industry sector in Iceland in 2015 accounted for 24% of GDP, whereas in Malta and Cyprus it accounted for 16% of GDP and 11% of GDP respectively for the same year. Finally, the primary sector is strongest in Iceland, with a ratio of 6% of GDP compared to 2% of GDP in Cyprus and 1% of GDP in Malta. These figures illustrate that industry in Iceland provides a significant contribution towards the economy as compared to Malta and Cyprus. This is a factor that in Cyprus and in Malta may limit the absorptive capacity to transform research into innovative products on the market.

This comparative review of the socio-economic context highlights four important conclusions. First, a major difference in the way that the individual states experienced the recent global financial crisis relates to their economic management. Second, the

ability and pace with which Iceland and Cyprus can recover from the economic collapse is dependent on the extent of support and conditions imposed by external institutions. Third, the openness of small economies calls for a continuous drive to ensure international competitiveness by increasing productivity, sustaining the development of a knowledge-based economy and by facilitating the shift towards higher value-added economic activities. Fourth, the significant size of the services sector in each of the three small island states makes their economies heavily reliant on the welfare of Europe and the rest of the world. This exposes them to vulnerability which may be mitigated by careful resilience building.

2.6.3 The Research and Innovation context

If there is one context in which the three small island states do not perform similarly then it is the Research and Innovation (R&I) context. This context is being given particular attention in this study because it represents the landscape within which university research management is exercised. Appendix 1 provides an overview of the R&I systems in the three small island states during the period of the study.

In order to provide a concise understanding of the R&I context, this section analyses three independent platforms but which are related to each other, namely: (a) the Gross Expenditure on Research and Development (GERD) as a percentage of the Gross Domestic Product (GDP) (GERD/GDP ratio), also known as the Research and Development (R&D) intensity; (b) the 2016 European Innovation Scoreboard (EIS); and (c) the 2016 Global Innovation Index (GII). Subsequently, a summary

comparative analysis of the Strengths Weaknesses Opportunities and Threats (SWOT) for the three small island states in the R&I context is presented.

2.6.3.1 Analysis of R&D intensity

One common and primary measure of a country's R&I performance is the GERD/GDP ratio, which is often referred to as the national R&D intensity. Table 2.4 illustrates the GERD/GDP ratio of the three small island states between 2000 and 2015. It also includes the EU average (for 2015) and the target ratio for the year 2020.

| Gross Expenditure on Research & Development (GERD) as a percentage of Gross Domestic Product (GDP) | | | | | | | | | |
|--|-------------------|-------|---------------------|-------|--------------------|-------|--------------------|----------------|------------------------|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Iceland | 2.59 ^e | 2.87% | 2.86% ^e | 2.74% | : | 2.71% | 2.92% | 2.58% | 2.52% |
| Malta | : | : | 0.25% | 0.24% | 0.49% ^b | 0.53% | 0.58% | 0.55% | 0.53% |
| Cyprus | 0.23% | 0.24% | 0.28% | 0.32% | 0.34% | 0.37% | 0.38% | 0.40% | 0.39% |
| | | | | | | | | | |
| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | EU Avg 2015 | 2020 Trgt (in 2011) |
| Iceland | 2.65% | : | 2.49% ^{be} | : | 1.76% ^b | 2.01% | 2.19% | 2.03% | 4.00% |
| Malta | 0.52% | 0.62% | 0.67% | 0.83% | 0.77% | 0.75% | 0.77% ^p | 2.03% | 2.00% |
| Cyprus | 0.44% | 0.45% | 0.45% | 0.43% | 0.46% | 0.48% | 0.46% ^p | 2.03% | 0.50% |

:=not available e=estimated p=provisional b=break in time series

Table 2.4: Comparison of R&D intensity

Source: EUROSTAT (2017)

Table 2.4 shows that Iceland is performing on a different level compared to both Malta and Cyprus, with a GERD/GDP ratio constantly above 2% since 2000. These comparative statistics gain significance when one takes into account the fact that Iceland is performing well above EU average (2015), whereas the performance of Malta and Cyprus is still far below the EU average. Moreover, Iceland has set an

ambitious GERD/GDP target of 4% for 2020, which is well above the EU target of 3% and that of Malta (2%) and Cyprus (0.5%).

The GERD/GDP ratio is often analysed into five sub-components: the business enterprise sector (BERD), the government sector (GOVERD), the Higher Education (HE) sector, the private non-profit sector and the portion of GERD financed from abroad. This distinction is essential to demonstrate primarily the government's and the business' propensity to invest in R&I. A high business component is often considered a healthy sign that the R&I system is capable to fend on its own without the necessary reliance on government's limited public resources, although the government component ideally serves as a leverage for private investments in R&I. Table 2.5 illustrates the breakdown by country for 2015 according to EUROSTAT.

| | Business enterprise sector | Government sector | Higher education sector | Private non-profit sector | Abroad |
|---------|----------------------------|-------------------|-------------------------|---------------------------|--------|
| Iceland | 33.3% | 32.0% | 4.2% | 4.2% | 26.3% |
| Malta | 44.1% | 33.3% | 1.2% | 0.1% | 21.3% |
| Cyprus | 13.7% | 56.5% | 5.6% | 0.6% | 23.6% |

Table 2.5: GERD analysed by sub-components for 2015

Source: EUROSTAT (2017)

The table demonstrates that the three countries differ significantly in terms of the composition of GERD, with Cyprus being heavily reliant on public expenditure, while Malta's largest share of GERD is contributed by the business sector. In Iceland there is a balance between the two, with business expenditure prevailing slightly over public expenditure. In this regard, Iceland is a good example of how government expenditure acts as a leverage on private investment. Whereas Cyprus' R&I system

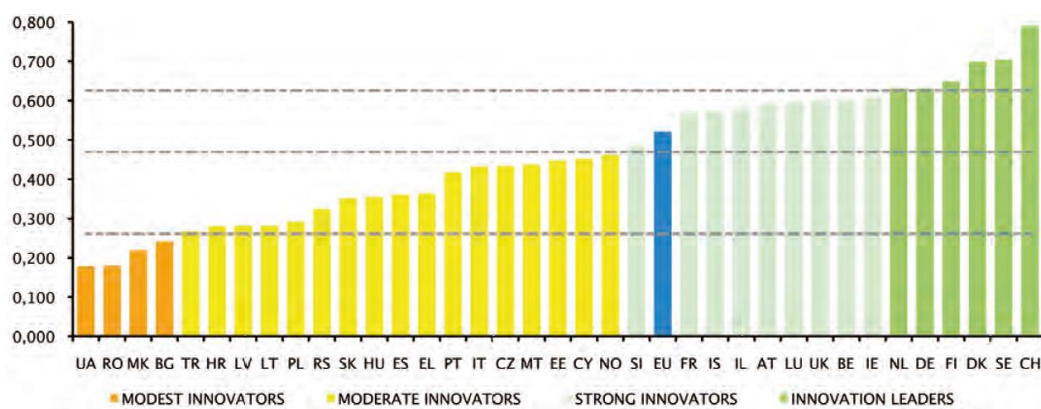
is still very dependent on government's expenditure, Malta has managed to attract a higher level of business expenditure than government's expenditure.

A further analysis of the GOVERD as per RIO 2015 country reports, reveals that 91% of Malta's GOVERD is devoted to Higher Education Institutions (HEIs) (see Warrington and Hristov, 2016). This is a relatively high percentage when compared to Cyprus (66%) (see Tsipouri *et al.* 2016) and Iceland (54%) (see Herjólfsdóttir Skogland, 2016). It further demonstrates that the R&I system is still in its infancy as governments still direct most of their R&I resources towards publicly-funded HEIs with limited support to other non-HEIs and industry. According to RIO 2015 country reports, each HEI group in Cyprus, Iceland and Malta is led by a national, publicly-funded university, namely the UCY, the UoI, and the UoM respectively, as the most substantial public research performers. The UoI leads a group of seven accredited HEIs in Iceland, of which four are publicly-funded and three are privately owned. In contrast to the UoI, which was founded in 1911, the UCY is a relatively young university as it was founded in 1989. Two other smaller publicly-funded universities and four private universities were subsequently founded in Cyprus. In contrast to Cyprus and Iceland, Malta has a different scenario, since the University of Malta (founded in 1592) is the only public university on the island (until 2017). It undertakes more than 80% of the public research in Malta but it is also by far the biggest contributor towards tertiary education in Malta (NSO Malta, 2012). Other smaller colleges and small private foreign universities complete the HEI sector in Malta. This diversity in the HEI context in the three small island states is of particular relevance to this study because it underlines the diversity in the contexts between the three universities, despite all being situated in small island states.

Following an interpretation of the statistical data on R&I and a brief description of the HEI environment, the analysis of the R&I context shall now focus on the performance of the three small island states on two widely used indices: the EIS and the GII for 2016. Whereas the former index has a European dimension, the latter has a worldwide dimension and includes more countries in its analysis, not just European.

2.6.3.2 Analysis of the R&I performance

As stated earlier, the measurement of a country's R&I performance is based on several components that are very often grouped and presented in the form of composite indices. The EIS classifies individual European countries according to their performance vis-à-vis the European average performance on a four-tier scale.



Key: Cyprus: CY; Iceland: IS; Malta: MT

Figure 2.3: Innovation performance in Europe (EIS 2016)

Source: Hollanders *et al.* (2016, p. 29)

The EIS for 2016 (see Figure 2.3), classifies Iceland as a strong innovator (second tier after innovation leaders), meaning that its innovation performance is between 90% to 120% of EU average, while Malta and Cyprus are classified as moderate innovators (third tier before modest innovators), meaning that their innovation

performance is between 50% and 90% of the EU average. A country profile for each of the three small states' performance on the EIS 2016 is presented in Exhibit 2.1, Exhibit 2.2 and Exhibit 2.3.

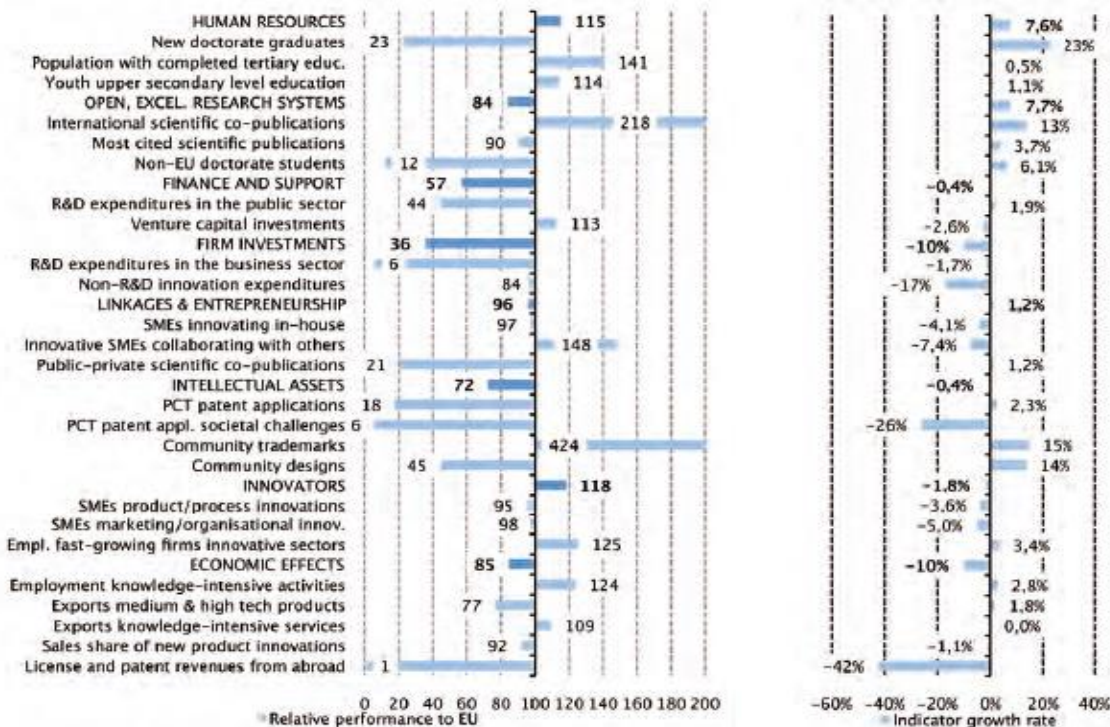
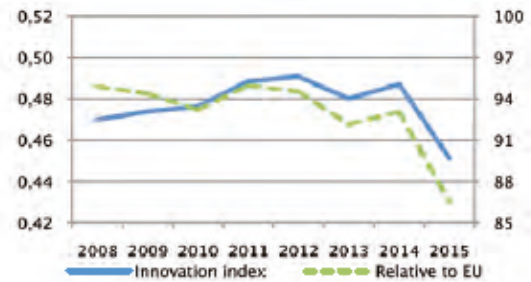
Exhibit 2.1: Cyprus – Country profile on EIS 2016

Cyprus

Cyprus is a **Moderate Innovator**. Innovation performance fluctuated over time, with a peak in 2012. The performance relative to the EU peaked in 2011 (95%), but has declined to 86.5% in 2015.

Cyprus performs below the EU average for most dimensions. At the indicator level, performance is well below average in License and patent revenues from abroad, R&D expenditures in the business sector, PCT patent applications in societal challenges, and Non-EU doctorate students. Relatively strong performance is observed for Community trademarks and International scientific co-publications.

Performance has improved in some dimensions, in particular in Open and excellent research systems (7.7%) and Human resources (7.6%). The indicator with the strongest growth is New doctorate graduates (23%). Performance has worsened most in Economic effects and Firm investments, in particular due to strong growth declines in License and patent revenues from abroad (-42%) and Non-R&D innovation expenditures (-17%).



Note: Performance relative to the EU where the EU = 100.

Source: Hollanders et al. (2016, p. 59)

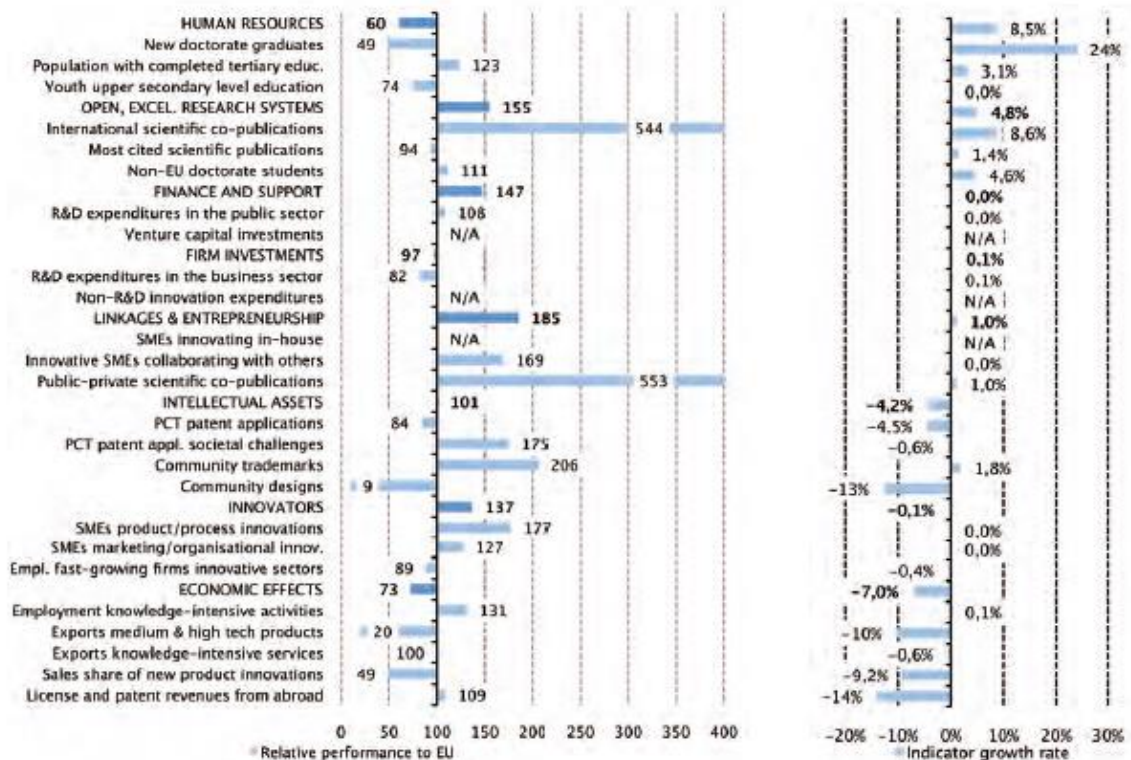
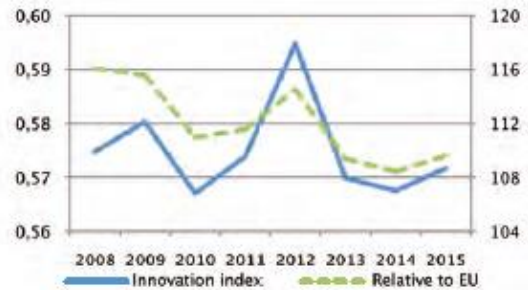
Exhibit 2.2: Iceland – Country profile on EIS 2016

Iceland

Iceland is a **Strong Innovator**. Despite some fluctuations, performance has remained relatively stable in the observed time period. In 2015, innovation performance was at the same level as in 2008. The performance relative to the EU has declined from being 16% above average in 2008 to 10% above average in 2015.

Iceland performs better than the EU average in most innovation dimensions. The overwhelmingly strongest relative strengths for Iceland in terms of indicators are International scientific co-publications, Public-private co-publications and, to a lesser extent, Community trademarks. Relative weaknesses are in Community designs, Exports in medium and high tech products, Sales share of new innovations, and New doctorate graduates.

For Iceland, time series data are not available for all indicators. For about half of the dimensions and about half of the indicators, performance has improved. The highest growth is observed in New doctorate graduates (24%) and International co-publications (8.6%). Fairly significant declines in performance are observed in License and patent revenues from abroad (-14%), Community designs (-13%), Exports in medium and high tech products (-10%), and Sales share of new product innovations (-9.2%).



Note: Performance relative to the EU where the EU = 100. No data for Venture capital investments, Non-R&D innovation expenditures and SMEs innovating in-house.

Source: Hollanders et al. (2016, p. 75)

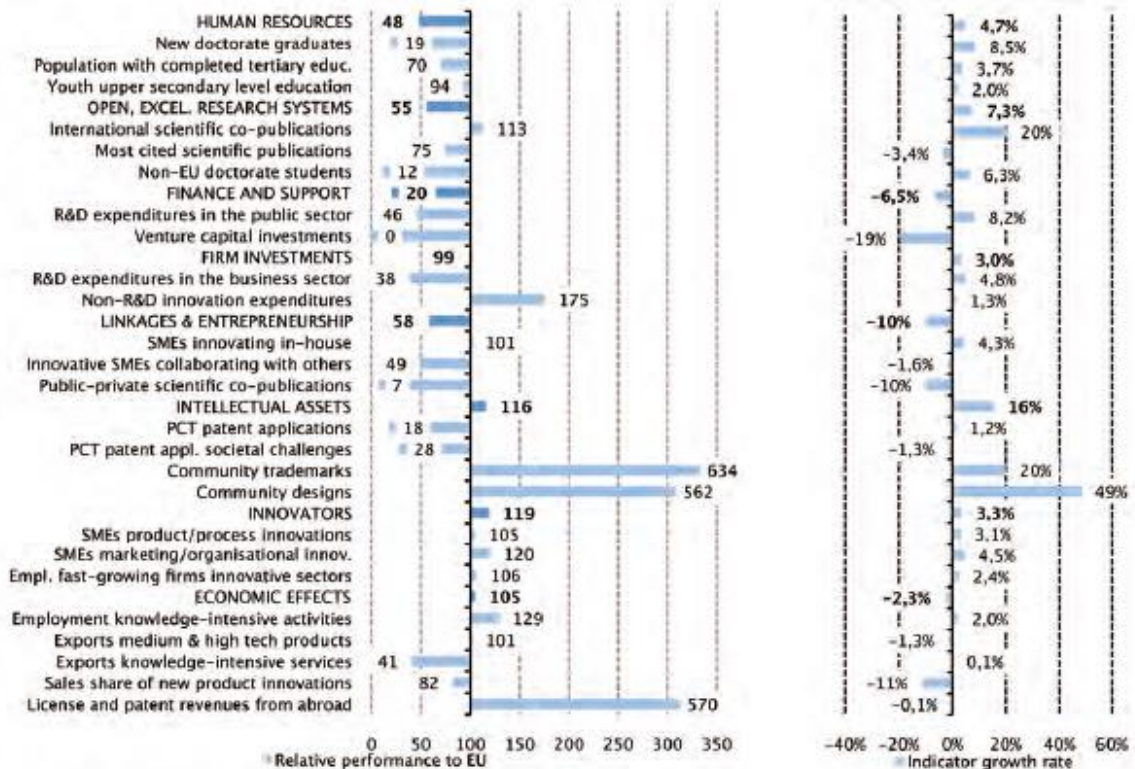
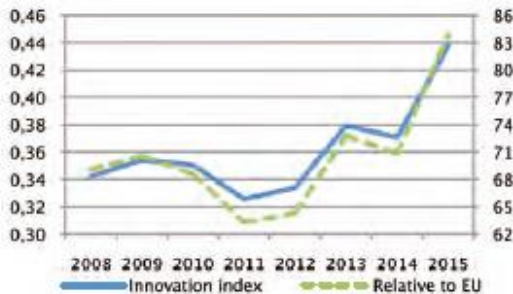
Exhibit 2.3: Malta – Country profile on EIS 2016

Malta

Malta is a **Moderate Innovator**. Innovation performance was fairly stable until 2012 after which it increased strongly in 2013 to 2015. The performance relative to the EU was 69% in 2008 and reached almost 84% in 2015.

Malta is performing below the average of the EU for most dimensions and indicators. The strongest relative weaknesses are in Venture capital investments, Non-EU doctorate students, and Public-private scientific co-publications. Relative strengths are in particular in Community trademarks, License and patent revenues from abroad, and Community designs.

A strongly growing innovation dimension is *Intellectual assets*, in particular the indicators Community designs and Community trademarks. Performance for most indicators has improved, with other large increases observed in International scientific co-publications (20%) and New doctorate graduates (8.5%). Declining performance is observed in particular for Venture capital investments (-19%), Sales share of new product innovations (-11%) and Public-private co-publications (-10%).



Note: Performance relative to the EU where the EU = 100.

Source: Hollanders et al. (2016, p. 64)

It can be noted that while Malta and Cyprus are performing below EU average on most of the indicators, hence the classification as moderate innovators, Iceland performs better than the EU average on most indicators, hence the classification as a strong innovator. A closer look at individual components of the EIS for each country's profile indicates that, on the one hand, the three countries have a broadly similar (above EU average) performance on a number of indicators such as new doctorate graduates, international scientific co-publications and sales share of new product innovations. On the other hand, they have significantly diverging performances (either above or below EU average) on several indicators, including community designs, community trademarks, public-private scientific co-publications and non-EU doctorate students in particular.

In contrast with the EIS, the GII ranks countries from around the world in terms of their enabling environments for innovation inputs and their innovation outputs. Table 2.6 presents an extract from the GII 2016 rankings for the three small island states (see Appendix 2 for complete 2016 GII rankings).

| | Cyprus | Iceland | Malta |
|---|---------------|----------------|--------------|
| Global Innovation Index Rank | 31 | 13 | 26 |
| <i>Innovation Input sub-index Rank</i> | 33 | 24 | 35 |
| <i>Innovation Output sub-index Rank</i> | 29 | 6 | 12 |
| <i>Efficiency Ratio Rank</i> | 26 | 3 | 2 |

Note: The total number of countries ranked is 128

Table 2.6: The performance of, Cyprus, Iceland and Malta on the 2016 Global Innovation Index

Source: Dutta *et al.* (2016)

As in the EIS, these rankings confirm that Iceland is ahead of the other two small island states on R&I performance. However, the GII is also composed of two sub-indices that classify each country according to their input into the R&I system and the output derived from the R&I system. This combination classifies Malta 2nd among the 128 countries on the Innovation Efficiency ratio (ratio of outputs to inputs), followed by Iceland (3rd) and Cyprus (26th). Therefore, whereas the input sub-index confirms the difficulties faced by the three small island states where resources are concerned, the output sub-index demonstrates that the three small island states are different in their outputs relative to the inputs, despite their limited resources. On this ratio, Malta and Iceland place before some of the bigger R&I spenders, including France, Singapore, Canada and Japan.

A profile of each of the three small states' performance on the GII 2016 is presented in Exhibit 2.4, Exhibit 2.5 and Exhibit 2.6. Similarly to the EIS, the GII indicates that the performance of the three small island states converges on some indicators and diverges on others. Relative strengths can be observed for all three countries on the knowledge and technology outputs and the creative outputs, hence their relatively strong performance on the innovation output sub-index, particularly for Iceland and Malta. On the other hand, relative weaknesses exist in terms of market sophistication for all three small island states, although Cyprus indicates above-average performance in some respects. Relative common weaknesses are also experienced on the British Quacquarelli Symonds (QS) university rankings.

Exhibit 2.4: Country Profile on the 2016 Global Innovation Index – Cyprus

| Cyprus | | | |
|---|----------------------------------|-------------------------------------|-----------|
| Key indicators | | | |
| Population (millions) | 1.2 | | |
| GDP (US\$ billions) | 19.3 | | |
| GDP per capita, PPP\$ | 32,785.5 | | |
| Income group | High income | | |
| Region | Northern Africa and Western Asia | | |
| | | Score 0–100 of value (hard data) | Rank |
| Global Innovation Index (out of 128) | 46.3 | | 31 |
| Innovation Output Sub-Index | 40.8 | | 29 |
| Innovation Input Sub-Index | 51.9 | | 33 |
| Innovation Efficiency Ratio | 0.8 | | 26 |
| Global Innovation Index 2015 (out of 141) | 43.5 | | 34 |
| 1 Institutions | 81.6 | | 20 |
| 1.1 Political environment | 75.3 | | 27 |
| 1.1.1 Political stability & safety* | 79.9 | | 35 |
| 1.1.2 Government effectiveness* | 70.6 | | 28 |
| 1.2 Regulatory environment | 86.3 | | 19 |
| 1.2.1 Regulatory quality* | 71.9 | | 28 |
| 1.2.2 Rule of law* | 73.5 | | 28 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 8.0 | 1 | ● |
| 1.3 Business environment | 83.3 | | 22 |
| 1.3.1 Ease of starting a business* | 89.2 | | 53 |
| 1.3.2 Ease of resolving insolvency* | 79.0 | | 16 |
| 1.3.3 Ease of paying taxes* | 81.7 | | 38 |
| 2 Human capital & research | 38.7 | | 44 |
| 2.1 Education | 63.1 | | 14 |
| 2.1.1 Expenditure on education, % GDP [Ⓞ] | 6.6 | | 19 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓞ] | 38.3 | | 9 ● |
| 2.1.3 School life expectancy, years | 14.2 | | 58 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 9.7 | | 23 |
| 2.2 Tertiary education | 48.4 | | 21 |
| 2.2.1 Tertiary enrolment, % gross | 53.1 | | 49 |
| 2.2.2 Graduates in science & engineering, % | 19.0 | | 64 |
| 2.2.3 Tertiary inbound mobility, % | 14.3 | | 10 ● |
| 2.3 Research & development (R&D) | 4.8 | | 75 |
| 2.3.1 Researchers, FTE/mn pop. | 749.8 | | 50 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.5 | | 62 |
| 2.3.3 Global R&D companies, avg. expend. top 3, mn \$US | 0.0 | | 45 ○ |
| 2.3.4 QS university ranking, average score top 3* | 0.0 | | 73 ○ |
| 3 Infrastructure | 41.6 | | 71 |
| 3.1 Information & communication technologies (ICTs) | 49.5 | | 68 |
| 3.1.1 ICT access* | 70.4 | | 48 |
| 3.1.2 ICT use* | 48.9 | | 51 |
| 3.1.3 Government's online service* | 47.2 | | 68 |
| 3.1.4 E-participation* | 31.4 | | 97 ○ |
| 3.2 General infrastructure | 25.8 | | 101 ○ |
| 3.2.1 Electricity output, kWh/cap | 4,931.0 | | 41 |
| 3.2.2 Logistics performance* | 3.0 | | 56 |
| 3.2.3 Gross capital formation, % GDP | 11.9 | | 122 ○ |
| 3.3 Ecological sustainability | 49.5 | | 43 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 10.0 | | 31 |
| 3.3.2 Environmental performance* | 80.2 | | 40 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 2.0 | | 47 |
| 4 Market sophistication | 56.8 | | 20 |
| 4.1 Credit | 82.5 | | 4 ● |
| 4.1.1 Ease of getting credit* | 65.0 | | 39 |
| 4.1.2 Domestic credit to private sector, % GDP | 251.5 | | 1 ● |
| 4.1.3 Microfinance gross loans, % GDP | n/a | | n/a |
| 4.2 Investment | 30.8 | | 90 |
| 4.2.1 Ease of protecting minority investors* | 66.7 | | 25 |
| 4.2.2 Market capitalization, % GDP | 17.4 | | 69 ○ |
| 4.2.3 Total value of stocks traded, % GDP | 0.2 | | 70 ○ |
| 4.2.4 Venture capital deals/bn PPP\$ GDP | 0.0 | | 38 |
| 4.3 Trade, competition, & market scale | 57.2 | | 79 |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | | 9 |
| 4.3.2 Intensity of local competition [†] | 71.5 | | 45 |
| 4.3.3 Domestic market scale, bn PPP\$ | 27.5 | | 109 ○ |
| 5 Business sophistication | 40.6 | | 32 |
| 5.1 Knowledge workers | 40.6 | | 54 |
| 5.1.1 Knowledge-intensive employment, % | 35.8 | | 34 |
| 5.1.2 Firms offering formal training, % firms | n/a | | n/a |
| 5.1.3 GERD performed by business, % of GDP | 0.1 | | 60 |
| 5.1.4 GERD financed by business, % [Ⓞ] | 12.1 | | 68 |
| 5.1.5 Females employed w/advanced degrees, % total | 24.1 | | 10 |
| 5.2 Innovation linkages | 41.6 | | 28 |
| 5.2.1 University/industry research collaboration [†] | 53.2 | | 39 |
| 5.2.2 State of cluster development [†] | 48.2 | | 51 |
| 5.2.3 GERD financed by abroad, % [Ⓞ] | 19.6 | | 22 |
| 5.2.4 JV-strategic alliance deals/bn PPP\$ GDP | 0.1 | | 5 ● |
| 5.2.5 Patent families 2+ offices/bn PPP\$ GDP | 0.7 | | 28 |
| 5.3 Knowledge absorption | 39.7 | | 24 |
| 5.3.1 Intellectual property payments, % total trade | 0.5 | | 51 |
| 5.3.2 High-tech imports less re-imports, % total trade | 3.3 | | 114 ○ |
| 5.3.3 ICT services imports, % total trade | 7.4 | | 1 ● |
| 5.3.4 FDI net inflows, % GDP | 3.7 | | 45 |
| 5.3.5 Research talent, % in business enterprise | 20.8 | | 54 |
| 6 Knowledge & technology outputs | 42.4 | | 20 |
| 6.1 Knowledge creation | 25.2 | | 36 |
| 6.1.1 Patents by origin/bn PPP\$ GDP | 1.9 | | 49 |
| 6.1.2 PCT patent applications/bn PPP\$ GDP | 1.8 | | 22 |
| 6.1.3 Utility models by origin/bn PPP\$ GDP | n/a | | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 37.2 | | 16 |
| 6.1.5 Citable documents H index | 113.0 | | 70 |
| 6.2 Knowledge impact | 43.2 | | 34 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | (0.4) | | 95 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 13.7 | | 7 ● |
| 6.2.3 Computer software spending, % GDP | n/a | | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 10.0 | | 37 |
| 6.2.5 High- & medium-high-tech manufactures, % | 13.8 | | 69 |
| 6.3 Knowledge diffusion | 58.7 | | 6 ● |
| 6.3.1 Intellectual property receipts, % total trade | 0.0 | | 69 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.5 | | 77 |
| 6.3.3 ICT services exports, % total trade | 9.1 | | 1 ● |
| 6.3.4 FDI net outflows, % GDP | 9.9 | | 7 ● |
| 7 Creative outputs | 39.2 | | 35 |
| 7.1 Intangible assets | 43.4 | | 61 |
| 7.1.1 Trademarks by origin/bn PPP\$ GDP | 68.1 | | 25 |
| 7.1.2 Industrial designs by origin/bn PPP\$ GDP | 3.1 | | 38 |
| 7.1.3 ICTs & business model creation [†] | 55.7 | | 73 |
| 7.1.4 ICTs & organizational model creation [†] | 50.2 | | 75 |
| 7.2 Creative goods & services | 30.6 | | 41 |
| 7.2.1 Cultural & creative services exports, % of total trade [Ⓞ] | 0.6 | | 22 |
| 7.2.2 National feature films/mn pop. 15–69 | 2.3 | | 53 |
| 7.2.3 Global ent. & media market/th pop. 15–69 | n/a | | n/a |
| 7.2.4 Printing & publishing manufactures, % | 2.9 | | 7 ● |
| 7.2.5 Creative goods exports, % total trade | 0.0 | | 109 ○ |
| 7.3 Online creativity | 39.5 | | 23 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 73.1 | | 8 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 5.5 | | 51 |
| 7.3.3 Wikipedia edits/mn pop. 15–69 | 5,408.8 | | 22 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Square brackets indicate a top 10 or 100 or below sub-pillar ranking in the presence of a relevant number of missing variables; see page 172 of this appendix for details.

Source: Dutta *et al.* (2016, p. 204)

Exhibit 2.5: Country Profile on the 2016 Global Innovation Index – Iceland

| Iceland | | |
|--|-------------------------------------|------------|
| Key indicators | | |
| Population (millions) | 0.3 | |
| GDP (US\$ billions) | 16.7 | |
| GDP per capita, PPP\$ | 46,097.0 | |
| Income group | High income | |
| Region | Europe | |
| | Score 0–100 or value (hard data) | Rank |
| Global Innovation Index (out of 128) | 56.0 | 13 |
| Innovation Output Sub-Index | 55.3 | 6 ● |
| Innovation Input Sub-Index | 56.6 | 24 |
| Innovation Efficiency Ratio | 1.0 | 3 ● |
| Global Innovation Index 2015 (out of 141) | 57.0 | 13 |
| 1 Institutions | 86.4 | 16 |
| 1.1 Political environment | 87.2 | 14 |
| 1.1.1 Political stability & safety* | 93.7 | 6 ● |
| 1.1.2 Government effectiveness* | 80.6 | 18 |
| 1.2 Regulatory environment | 86.2 | 20 |
| 1.2.1 Regulatory quality* | 74.7 | 20 |
| 1.2.2 Rule of law* | 90.0 | 17 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 13.0 | 48 |
| 1.3 Business environment | 85.9 | 17 |
| 1.3.1 Ease of starting a business* | 92.4 | 35 |
| 1.3.2 Ease of resolving insolvency* | 81.7 | 14 |
| 1.3.3 Ease of paying taxes* | 83.7 | 32 |
| 2 Human capital & research | 47.3 | 30 |
| 2.1 Education | 60.7 | 22 |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 7.0 | 11 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 20.2 | 54 |
| 2.1.3 School life expectancy, years [Ⓔ] | 19.0 | 6 |
| 2.1.4 PISA scales in reading, maths, & science | 484.5 | 31 |
| 2.1.5 Pupil-teacher ratio, secondary | n/a | n/a |
| 2.2 Tertiary education | 40.8 | 41 |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 82.2 | 11 |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 15.6 | 81 ○ |
| 2.2.3 Tertiary inbound mobility, % [Ⓔ] | 6.2 | 27 |
| 2.3 Research & development (R&D) | 40.3 | 29 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 5,993.1 | 7 |
| 2.3.2 Gross expenditure on R&D, % GDP | 1.9 | 19 |
| 2.3.3 Global R&D companies, avg. expend. top 3, mn \$US | 53.7 | 35 |
| 2.3.4 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 55.9 | 26 |
| 3.1 Information & communication technologies (ICTs) | 71.3 | 26 |
| 3.1.1 ICT access* | 93.7 | 2 ● |
| 3.1.2 ICT use* | 81.1 | 8 |
| 3.1.3 Government's online service* | 61.4 | 43 |
| 3.1.4 E-participation* | 49.0 | 64 |
| 3.2 General infrastructure | 55.9 | 12 |
| 3.2.1 Electricity output, kWh/cap | 54,915.2 | 1 ● |
| 3.2.2 Logistics performance* | 3.4 | 36 |
| 3.2.3 Gross capital formation, % GDP | 18.8 | 94 ○ |
| 3.3 Ecological sustainability | 40.6 | 75 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 2.2 | 119 ○ |
| 3.3.2 Environmental performance* | 90.5 | 2 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 3.0 | 32 |
| 4 Market sophistication | 48.2 | 45 |
| 4.1 Credit | 49.1 | 26 |
| 4.1.1 Ease of getting credit* | 60.0 | 53 |
| 4.1.2 Domestic credit to private sector, % GDP | 98.8 | 27 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |
| 4.2 Investment | 44.8 | 33 |
| 4.2.1 Ease of protecting minority investors* | 68.3 | 20 |
| 4.2.2 Market capitalization, % GDP [Ⓔ] | 19.9 | 66 ○ |
| 4.2.3 Total value of stocks traded, % GDP [Ⓔ] | 4.8 | 45 |
| 4.2.4 Venture capital deals/bn PPP\$ GDP | 0.2 | 10 |
| 4.3 Trade, competition, & market scale | 50.7 | 102 ○ |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.1 | 36 |
| 4.3.2 Intensity of local competition [†] | 63.8 | 82 |
| 4.3.3 Domestic market scale, bn PPP\$ | 14.3 | 123 ○ |
| 5 Business sophistication | 45.3 | 22 |
| 5.1 Knowledge workers | 59.8 | 21 |
| 5.1.1 Knowledge-intensive employment, % | 48.2 | 6 |
| 5.1.2 Firms offering formal training, % firms | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP | 1.1 | 21 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 39.2 | 37 |
| 5.1.5 Females employed w/advanced degrees, % total | 21.5 | 19 |
| 5.2 Innovation linkages | 41.4 | 29 |
| 5.2.1 University/industry research collaboration [†] | 60.3 | 24 |
| 5.2.2 State of cluster development [†] | 49.6 | 46 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 20.1 | 20 |
| 5.2.4 JV–strategic alliance deals/bn PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 2+ offices/bn PPP\$ GDP | 1.9 | 19 |
| 5.3 Knowledge absorption | 34.8 | 37 |
| 5.3.1 Intellectual property payments, % total trade | 1.3 | 20 |
| 5.3.2 High-tech imports less re-imports, % total trade | 5.3 | 90 ○ |
| 5.3.3 ICT services imports, % total trade | 1.9 | 20 |
| 5.3.4 FDI net inflows, % GDP | 4.4 | 34 |
| 5.3.5 Research talent, % in business enterprise [Ⓔ] | 37.7 | 34 |
| 6 Knowledge & technology outputs | 41.2 | 22 |
| 6.1 Knowledge creation | 49.1 | 15 |
| 6.1.1 Patents by origin/bn PPP\$ GDP | 6.4 | 20 |
| 6.1.2 PCT patent applications/bn PPP\$ GDP | 3.0 | 15 |
| 6.1.3 Utility models by origin/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 64.8 | 1 ● |
| 6.1.5 Citable documents H index | 198.0 | 39 |
| 6.2 Knowledge impact | 35.8 | 64 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 0.3 | 84 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 9.5 | 12 |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 4.7 | 63 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 7.1 | 85 ○ |
| 6.3 Knowledge diffusion | 38.7 | 27 |
| 6.3.1 Intellectual property receipts, % total trade | 1.9 | 9 |
| 6.3.2 High-tech exports less re-exports, % total trade | 1.4 | 57 |
| 6.3.3 ICT services exports, % total trade | 2.4 | 40 |
| 6.3.4 FDI net outflows, % GDP | 0.2 | 77 |
| 7 Creative outputs | 69.5 | 1 ● |
| 7.1 Intangible assets | 60.8 | 15 |
| 7.1.1 Trademarks by origin/bn PPP\$ GDP | 105.8 | 11 |
| 7.1.2 Industrial designs by origin/bn PPP\$ GDP | 2.7 | 45 |
| 7.1.3 ICTs & business model creation [†] | 73.0 | 22 |
| 7.1.4 ICTs & organizational model creation [†] | 73.7 | 13 |
| 7.2 Creative goods & services | 61.1 | 1 ● |
| 7.2.1 Cultural & creative services exports, % of total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | 30.5 | 1 ● |
| 7.2.3 Global ent. & media market/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing manufactures, % [Ⓔ] | 6.4 | 1 ● |
| 7.2.5 Creative goods exports, % total trade | 0.1 | 87 ○ |
| 7.3 Online creativity | 95.3 | 1 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 100.0 | 1 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 86.0 | 6 ● |
| 7.3.3 Wikipedia edits/mn pop. 15–69 | 13,529.2 | 1 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Square brackets indicate a top 10 or 100 or below sub-pillar ranking in the presence of a relevant number of missing variables; see page 172 of this appendix for details.

Source: Dutta *et al.* (2016, p. 224)

Exhibit 2.6: Country Profile on the 2016 Global Innovation Index – Malta

| | | Malta | |
|---|-------------------------------------|-----------|---|
| Key indicators | | | |
| Population (millions) | 0.4 | | |
| GDP (US\$ billions)..... | 9.8 | | |
| GDP per capita, PPP\$ | 35,825.6 | | |
| Income group..... | High income | | |
| Region..... | Europe | | |
| | Score 0–100 of value (hard data) | Rank | |
| Global Innovation Index (out of 128)..... | 50.4 | 26 | |
| Innovation Output Sub-Index | 49.9 | 12 | |
| Innovation Input Sub-Index..... | 51.0 | 35 | |
| Innovation Efficiency Ratio..... | 1.0 | 2 | ● |
| Global Innovation Index 2015 (out of 141) | 50.5 | 26 | |
| 1 Institutions..... | 78.7 | 28 | |
| 1.1 Political environment | 79.1 | 20 | |
| 1.1.1 Political stability & safety*..... | 90.6 | 11 | |
| 1.1.2 Government effectiveness*..... | 67.6 | 31 | |
| 1.2 Regulatory environment..... | 87.3 | 17 | |
| 1.2.1 Regulatory quality*..... | 72.1 | 27 | |
| 1.2.2 Rule of law*..... | 77.2 | 24 | |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 | ● |
| 1.3 Business environment..... | 69.7 | 66 | |
| 1.3.1 Ease of starting a business*..... | 78.4 | 99 | ○ |
| 1.3.2 Ease of resolving insolvency*..... | 44.8 | 74 | |
| 1.3.3 Ease of paying taxes*..... | 85.9 | 22 | |
| 2 Human capital & research..... | 41.1 | 38 | |
| 2.1 Education..... | 66.3 | 11 | |
| 2.1.1 Expenditure on education, % GDP..... | 6.8 | 16 | |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 41.6 | 5 | ● |
| 2.1.3 School life expectancy, years..... | 14.6 | 54 | |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a | |
| 2.1.5 Pupil-teacher ratio, secondary..... | 7.8 | 3 | ● |
| 2.2 Tertiary education..... | 35.6 | 63 | |
| 2.2.1 Tertiary enrolment, % gross..... | 45.1 | 59 | |
| 2.2.2 Graduates in science & engineering, % ⁽²⁾ | 19.1 | 62 | |
| 2.2.3 Tertiary inbound mobility, %..... | 5.9 | 28 | |
| 2.3 Research & development (R&D)..... | 21.2 | 45 | |
| 2.3.1 Researchers, FTE/mn pop..... | 2,133.0 | 34 | |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.8 | 38 | |
| 2.3.3 Global R&D companies, avg. expend. top 3, mn \$US..... | 34.5 | 40 | |
| 2.3.4 QS university ranking, average score top 3*..... | 0.0 | 73 | ○ |
| 3 Infrastructure..... | 51.3 | 40 | |
| 3.1 Information & communication technologies (ICTs)..... | 59.5 | 44 | |
| 3.1.1 ICT access*..... | 90.4 | 7 | ● |
| 3.1.2 ICT use*..... | 60.5 | 31 | |
| 3.1.3 Government's online service*..... | 40.2 | 79 | |
| 3.1.4 E-participation*..... | 47.1 | 70 | |
| 3.2 General infrastructure..... | 34.4 | 66 | |
| 3.2.1 Electricity output, kWh/cap..... | 5,366.7 | 38 | |
| 3.2.2 Logistics performance*..... | 3.1 | 49 | |
| 3.2.3 Gross capital formation, % GDP..... | 19.1 | 92 | ○ |
| 3.3 Ecological sustainability..... | 59.8 | 13 | |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 13.7 | 11 | |
| 3.3.2 Environmental performance*..... | 88.5 | 9 | |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.1 | 43 | |
| 4 Market sophistication..... | 39.5 | 88 | ○ |
| 4.1 Credit..... | 26.7 | 88 | ○ |
| 4.1.1 Ease of getting credit*..... | 10.0 | 124 | ○ |
| 4.1.2 Domestic credit to private sector, % GDP ⁽²⁾ | 111.8 | 22 | |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a | |
| 4.2 Investment..... | 36.9 | 64 | |
| 4.2.1 Ease of protecting minority investors*..... | 63.3 | 35 | |
| 4.2.2 Market capitalization, % GDP ⁽²⁾ | 44.1 | 38 | |
| 4.2.3 Total value of stocks traded, % GDP ⁽²⁾ | 0.7 | 62 | ○ |
| 4.2.4 Venture capital deals/bn PPP\$ GDP..... | n/a | n/a | |
| 4.3 Trade, competition, & market scale..... | 54.9 | 85 | ○ |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 | |
| 4.3.2 Intensity of local competition [†] | 80.7 | 11 | |
| 4.3.3 Domestic market scale, bn PPP\$..... | 14.1 | 124 | ○ |
| 5 Business sophistication..... | 44.6 | 25 | |
| 5.1 Knowledge workers..... | 48.0 | 34 | |
| 5.1.1 Knowledge-intensive employment, %..... | 39.3 | 25 | |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a | |
| 5.1.3 GERD performed by business, % of GDP..... | 0.5 | 35 | |
| 5.1.4 GERD financed by business, %..... | 50.0 | 21 | |
| 5.1.5 Females employed w/advanced degrees, % total..... | 12.0 | 56 | |
| 5.2 Innovation linkages..... | 40.9 | 30 | |
| 5.2.1 University/industry research collaboration [†] | 47.6 | 50 | |
| 5.2.2 State of cluster development [†] | 49.3 | 48 | |
| 5.2.3 GERD financed by abroad, %..... | 21.5 | 18 | |
| 5.2.4 JV-strategic alliance deals/bn PPP\$ GDP..... | n/a | n/a | |
| 5.2.5 Patent families 2+ offices/bn PPP\$ GDP..... | 2.5 | 14 | |
| 5.3 Knowledge absorption..... | 44.8 | 15 | |
| 5.3.1 Intellectual property payments, % total trade..... | 3.0 | 5 | ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 8.1 | 57 | |
| 5.3.3 ICT services imports, % total trade..... | 1.0 | 62 | |
| 5.3.4 FDI net inflows, % GDP ⁽²⁾ | 4.1 | 40 | |
| 5.3.5 Research talent, % in business enterprise..... | 59.8 | 12 | |
| 6 Knowledge & technology outputs..... | 38.3 | 28 | |
| 6.1 Knowledge creation..... | 30.4 | 30 | |
| 6.1.1 Patents by origin/bn PPP\$ GDP..... | 4.5 | 26 | |
| 6.1.2 PCT patent applications/bn PPP\$ GDP..... | 4.5 | 11 | |
| 6.1.3 Utility models by origin/bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 18.0 | 40 | |
| 6.1.5 Citable documents H index..... | 75.0 | 94 | ○ |
| 6.2 Knowledge impact..... | 58.6 | 2 | ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | (0.9) | 102 | ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 17.3 | 1 | ● |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a | |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 33.0 | 5 | ● |
| 6.2.5 High- & medium-high-tech manufactures, % ⁽²⁾ | 24.5 | 50 | |
| 6.3 Knowledge diffusion..... | 26.0 | 58 | |
| 6.3.1 Intellectual property receipts, % total trade..... | 2.1 | 7 | |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 5.7 | 30 | |
| 6.3.3 ICT services exports, % total trade..... | 0.9 | 80 | ○ |
| 6.3.4 FDI net outflows, % GDP ⁽²⁾ | (92.9) | 118 | ○ |
| 7 Creative outputs..... | 61.4 | 4 | ● |
| 7.1 Intangible assets..... | 67.0 | 6 | ● |
| 7.1.1 Trademarks by origin/bn PPP\$ GDP ⁽²⁾ | 132.8 | 3 | ● |
| 7.1.2 Industrial designs by origin/bn PPP\$ GDP..... | 13.2 | 11 | |
| 7.1.3 ICTs & business model creation [†] | 65.4 | 36 | |
| 7.1.4 ICTs & organizational model creation [†] | 59.3 | 41 | |
| 7.2 Creative goods & services..... | 52.5 | 5 | ● |
| 7.2.1 Cultural & creative services exports, % of total trade..... | n/a | n/a | |
| 7.2.2 National feature films/mn pop. 15–69..... | 6.5 | 28 | |
| 7.2.3 Global ent. & media market/th pop. 15–69..... | n/a | n/a | |
| 7.2.4 Printing & publishing manufactures, % ⁽²⁾ | 36.2 | 1 | ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.5 | 59 | |
| 7.3 Online creativity..... | 59.2 | 13 | |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 99.1 | 4 | ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 8.8 | 44 | |
| 7.3.3 Wikipedia edits/mn pop. 15–69..... | 9,424.4 | 5 | ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a | |

NOTES: ● indicates a strength ○ a weakness; * an index; † a survey question.

⁽²⁾ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Square brackets indicate a top 10 or 100 or below sub-pillar ranking in the presence of a relevant number of missing variables; see page 172 of this appendix for details.

Source: Dutta *et al.* (2016, p. 247)

In terms of differences, while Malta and Iceland are performing relatively well on business sophistication, Cyprus still lags behind. Moreover, the infrastructure indicators highlight some of Iceland's relative strengths as compared to Cyprus and Malta, particularly in relation to the utilisation of natural resources for electricity consumption and the environmental performance. Moreover, human capital is an area in which Cyprus and Iceland are out-performing Malta, particularly in terms of expenditure on education in general and tertiary education in particular. However, Iceland performs best in terms of the researchers' headcount per million population, well ahead of Cyprus and Malta.

After analysing the performance of the three small island states on the R&D intensity, the EIS and the GII, it is important to note that these are relative measures, as they gauge the performance of a country vis-à-vis its own internal capabilities (e.g. GDP, institutions, market sophistication, infrastructures, etc.). While this relationship is adequate for comparing country performances, it masks the size of an R&I system in terms of absolute expenditure. As an alternative, Table 2.7 provides a comparison of the absolute R&D expenditure using 2015 data (latest available) of the three small island states and of the country leader for each of the four EIS categories.

This comparative overview indicates that GDP size is a key determinant of R&D expenditure and indeed makes a difference in terms of the true input into the economy on R&D. For example, when comparing Cyprus and Malta with Norway, as the country that tops the EIS moderate innovators category, the absolute expenditure on R&D of Norway is 51 to 52 times higher than that of Cyprus and Malta. Similarly,

| Comparison of absolute expenditure on R&D (2015)** | | | | | | | |
|--|------------------|--------------------|--------------------|------------------|--------------------|------------------|-------------------|
| | Iceland | Malta | Cyprus | Bulgaria | Norway | Ireland | Switzerland |
| IES 2016 classification | strong innovator | moderate innovator | moderate innovator | modest innovator | moderate innovator | strong innovator | innovation leader |
| GERD/GDP % (a) | 2.19% | 0.77% | 0.46% | 0.96% | 1.93% | 1.51% | 2.97% |
| GDP (PPS EUR mln) (b) | 11,777 | 11,558 | 19,941 | 97,705 | 240,350 | 237,316 | 386,424 |
| Absolute Expenditure on R&D (EUR mln)** (c) | 258 | 89 | 92 | 938 | 4,639 | 3,583 | 11,477 |

* GERD/GDP % is based on 2015 latest available data

** calculated (a) x (b) = (c)

Table 2.7: Comparison of absolute expenditure on R&D

Source: EUROSTAT (2015)

within the strong innovator category, Ireland's absolute expenditure on R&D is 14 times higher than that of Iceland, even though both countries are classified as strong innovators. Sharp contrasts also exist on the top and bottom categories of the IES 2016. Therefore, although R&D intensity, the EIS and GII methodology, provide adequate measures for comparing performance, they need to be interpreted with caution as they do not show the actual size of a country's R&I resources/system. In order to frame the R&I system of the three small island states, one has to look at the absolute expenditure on R&I (as illustrated in Table 2.7), which shows that the expenditure of small island states on R&I remains low compared to larger states.

In conclusion to the analysis of the R&I context in the three small island states, the next sub-section presents a comparative SWOT analysis of the R&I context in the three small island states. As in the previous two platforms, SWOT analysis demonstrates similarities and differences which underline the uniqueness of each context.

2.6.3.3 Comparative SWOT analysis of the R&I context

The SWOT analysis is being presented in this section to evaluate and summarise the strengths, weaknesses, opportunities and threats of the R&I context in each of the three small island states. This summary relies on different sources of data (as indicated separately for each country in Table 2.8, Table 2.9 and Table 2.10, in order to provide a comprehensive comparison of the characteristics of the R&I systems in each of the three small island states against which research management in the three selected national universities will be analysed.

This SWOT analysis highlights the fact that the R&I systems in small island states face certain structural challenges mainly due to their size. For example, the following is an extract from 2014 Malta's R&I strategy on the characteristics of Malta's R&I system:

Malta's R&I system is very young and very small, two characteristics which are reflected in fragmentation and sub-optimal critical mass. There is also a lack of homegrown, R&I-intensive private sector companies. Public research institutes are largely inexistent, and there are no large scale research infrastructures. This means that, while efforts at increasing human resource capacity in R&D have been ongoing for a number of years, there is still little to attract local and foreign researchers. Private financial support remains a major concern. The lack of an R&I culture and a 'quick-win' mentality mean that R&I is perceived as something extraneous or ancillary, the value of which is highly overlooked. (MCST, 2014, p. 13)

The R&I ecosystem of Cyprus faces similar challenges, as it is considered to be still in its infancy and highly fragmented, with few researchers, limited research supporting infrastructures and research opportunities (Tsipouri and Athanassopoulou, 2013). In Iceland, despite the progress and the above-EU average performance, the Icelandic Science and Technology Policy Council (STPC) acknowledges that the

R&I system remains small and at times fragmented, with limited financial capabilities in absolute terms in the area of science and technology (Heijs *et al.*, 2014).

| Strengths | Weaknesses |
|---|---|
| Strategic geographical position in the South Eastern Mediterranean between three continents | Very low rate of GERD/GDP and insufficient research infrastructure |
| Strong presence of dynamic tertiary sector institutions | Low expenditure of the private sector in R&I |
| Increased number of University and other research institutions | Limited demand for R&I |
| High educational/training level of the population | Limited human resources for research |
| A relatively young but ambitious national university | Limited propensity to innovate |
| Favourable climatic conditions for the utilisation of Renewable Energy Sources | Limited number of high-tech companies in the country |
| R&I is key to address the effects of the economic crisis | Low foreign investment in new technology sectors |
| Employment in knowledge-intensive activities increased rapidly over recent years | Limited cooperation between businesses and research centres |
| Researchers' salaries are quite competitive compared to other professions and to other R&I -oriented countries | Too broad research orientation in need of more prioritisation (fragmentation) |
| | Relatively high unemployment rate following the crisis |
| | Low level of domestic graduates in science and engineering professions |
| | |
| Opportunities | Threats |
| Smart Specialisation | Political instability and conflict in the geographical area |
| Exploitation of Information and Communication Technologies to increase the economy's productivity | The effects of the economic crisis offer a constant threat to a country which is in the process of recovery |
| Participation in the single European research Area | Small size of the domestic market |
| Opportunities for utilisation of economies of scale with the adoption of good practices from other countries in terms of business cooperation | The political and geographic divide between the Turkish Republic of Northern Cyprus (TRNC) and the rest of Cyprus (known as the Cyprus Problem) |
| Opportunities for cross-border cooperation and participation in programmes and projects co-financed by EU funding instruments | Increase in the number of Cypriot tertiary education graduates staying abroad due to better conditions of employment |
| Unemployment due to the economic crisis and the collapse of the banking system offer an opportunity for furthering studies and research at tertiary level | Close connections with Greece, the biggest trade partner, but which has suffered significantly from the economic crisis |
| Attracting back Cypriots who went abroad to study is an opportunity to capitalise on the knowledge they gained from other countries | The size and structure of the economy and the immaturity of the R&I system risk running into a vicious circle of wasted investments |
| Potential for the use of new technologies for the utilisation of renewable energy sources | Relative delay in the establishment of a multi-annual national R&I strategy |
| Possibility to implement modern technology (in businesses, government services to citizens, etc.) in order to alleviate the phenomenon of isolation of remote areas | |
| Opening of the Turkish-Cypriot area represents an opportunity of increased resources, economies of scale, ease of access, political stability | |
| Access to European structural funds offers an opportunity to enhance research infrastructures | |

Table 2.8: SWOT analysis of Cyprus' R&I context

Source: Planning Bureau (Cyprus) (2013); Tsipouri and Athanassopoulou (2013); Deloitte (2015a); EURAXESS Cyprus (2016); Tsipouri, Athanassopoulou and Gampfer (2016)

| Strengths | Weaknesses |
|--|--|
| Abundance of natural resources | Low levels of competitive research funding |
| R&I is key to address the economic crisis | Insufficient research prioritisation |
| Strong entrepreneurial culture with significant participation of the business sector in R&I activity | A general weakness in public governance |
| Access to a well educated workforce | Focus on research rather than innovation |
| Salaries for researchers compare relatively well to other similar professions and are differentiated according to the scientific domain | General cuts in R&I expenditure were unavoidable during and after the crisis and this is expected to continue until the country fully recovers from the effect of the crisis |
| Specific funding for doctoral and post-doctoral researchers | General lack of trust among different parties in the political system allegedly blocking reform and action |
| A relatively high share of human resources employed in science and technology | Political scepticism to prioritise and invest especially due to the economic crisis |
| International scientific co-publications and licence and patent revenues from abroad are major strengths in Iceland | Key actors in Iceland (universities, research institutions and industry) could benefit from cooperating, but simply find it difficult or expensive to do so |
| A long history and tradition of 'peer' or 'external' review of different parts of its socio-economic policy domains, including science, technology and innovation policy | Lack of evidence on the efficiency and effectiveness of STI policy measures, leading to a lack of transparency and accountability |
| A strong strategic drive at the University of Iceland to climb up the University rankings ladder, particularly through R&I (publications and impact) | Fragmentation of the R&I system, with universities operating independently from the research institutes (under the ministries) |
| Existence of an Icelandic association of Research Managers and Administrators (IceARMA) | Universities have a high academic autonomy but low autonomy in organisational, financial and staffing issues |
| Opportunities | Threats |
| More attention to industry-science collaboration | Small size of the domestic market |
| Preparation and implementation of a smart specialisation strategy to exploit areas of comparative advantage | Unstable currency |
| Close relationship with the other Scandinavian countries, with high propensity towards R&I | Unstable economic environment |
| Iceland may be a bridge between Europe and the US | Strict foreign exchange controls |
| Expansion of activity outside the Reykjavik area offers significant new opportunities not exploited so far | High levels of debt |
| Availability of renewable energy sources and the possibility to sell energy to the rest of Europe | General lack of investments |
| Increasing the levels of competitive funding would make research prioritisation easier and increase the quality of Icelandic research in the budget appropriations | Not being a member of the EU and the changing relationship with the US leaves Iceland without a strong 'protector' in times of need |
| New opportunities arise in R&I if the industry has easier access to skilled labour force | Exodus of educated workforces to other countries |
| A well established R&I evaluation system at the University of Iceland has a strong potential to attract and retain researchers in Iceland | Climate conditions may pose a threat to live in the country |
| Potential to exploit a relatively high level of excellence in many research areas and to enhance the organisational environment for doctorates and post doctorates | Environmental hazards |
| Launch of 'grass-root' initiatives after the crisis in order to develop new ideas and create new market opportunities | R&I strategy for 2013-2016 lacks a longer term vision for Iceland |

Table 2.9: SWOT analysis of Iceland's R&I context

Source: Sigurjónsson (2011); Sigurðsson (2013); Deloitte (2015b); EURAXESS Iceland (2016); Herjólfsdóttir Skogland (2016)

| Strengths | Weaknesses |
|--|---|
| A stable local political, economic and financial system | Very young and very small R&I system |
| Strategic geographical position at the centre of the Mediterranean between the African continent and the rest of Europe | Fragmentation and sub-optimal critical mass |
| Some high value-added economic sectors (e.g. Pharmaceutical, manufacturing, gaming and financial services) | Lack of home-grown, R&I-intensive private sector companies |
| An increasing focus on knowledge-intensive activities | Lack of public research institutes and large scale research infrastructures |
| Established industrial base with a good reputation of retaining Foreign Direct Investment | One main university that has to cater for most of the tertiary education and research |
| Well connected airport infrastructure | Limited incentives to attract local and foreign researchers |
| Established employment and training infrastructure | Low level of spending in R&D |
| Diversified and accessible educational system | Doctorate graduates and post doctorates are very limited |
| | |
| Opportunities | Threats |
| High value-added economic sectors with low indigenous private-sector R&I investment is an opportunity to be explored | R&I is still perceived as something extraneous or ancillary |
| Geographic location and EU membership provide an opportunity to build and foster international linkages with foreign research groups and R&I intensive companies | Open economy and susceptibility to external shocks, international economic, political and financial instability is a threat to Malta's economy in general |
| Small internal market provides opportunities for improved economies of scale | Brain drain of talented and qualified individuals |
| Small size may be an opportunity for promoting Malta as a test-bed for new technologies prior to roll out on a larger scale | General skew of EU policy approaches towards larger countries or countries with more established R&I systems |
| Diasporas of Maltese researchers, innovators and entrepreneurs offer opportunities to be harnessed in strengthening international linkages | Over-utilisation of finite resources |
| Developing opportunities for researchers in the public sector particularly for post-doctorates | A relatively high percentage of early school leavers |
| Smart specialisation focusing on niche areas of comparative advantage | Insufficient take-up of science-based studies |
| Broadening the base of enterprises undertaking R&I activities | Small size of the domestic market |

Table 2.10: SWOT analysis of Malta's R&I context

Source: Warrington (2013); MCST (2014); Ministry of Finance (Malta) (2014); Deloitte (2015c); EURAXESS Malta (2016); Warrington and Hristov (2016)

However, it is clearly evident from the SWOT analysis that the three small island states have managed to build relative strengths in the area of R&I. They also have significant potential and opportunities that can be exploited. The next section presents a number of propositions for addressing university research and completes the contextual analysis presented in this chapter.

2.6.3.4 Conclusions on the specific country context

Section 2.6 was intended for descriptive and comparative purposes, in order to provide a holistic (wider) perspective to the study. From the analysis of the specific context of the three small island states, a number of propositions for university research management thinking can be identified and are presented briefly below.

First, a complex economic context (particularly in Cyprus and in Iceland in the wake of an economic crisis), funding constraints and limited domestic markets, call for university RMAs to be cautious and sensitive towards the vulnerability of small island states, including that exposed by external agenda-setting.

Second, it has been argued that close relationships with a reliable ally can offer protection, may ease economic burdens and provide important economic and political assistance in times of need. Iceland's close links with the other Scandinavian countries, the US and the EU, as well as EU membership in the case of Cyprus and Malta offer a significant potential for university RMAs to seek external support for high quality research to compensate for the lack of local financial resources for research.

A third proposition derives from the analysis of the R&I context. The analysis has shown that Iceland is a forerunner when it comes to expenditure on R&I, whereas Cyprus and Malta lag significantly behind. However, Iceland can serve as a benchmark for the other two island states. On the one hand, it is an example to follow for Cyprus, in tackling the economic crisis and on the other hand it can serve as a model for Malta, which has set relatively ambitious targets for the years to come in relation to research. Moreover, it was noted that in all three small island states there is significant scope for further collaborations with industry. It is therefore the task of RMAs to bridge this gap by working closer with both researchers and industry in order to foster collaborations and new opportunities for research.

The analysis of the GII 2016 presents a fourth proposition for university research management. Whereas the innovation input sub-index confirms the challenges faced by the three small island states in dedicating resources for input into research, the innovation output sub-index classifies each state relatively highly compared to other countries. This contrast demonstrates that the three small island states are making a good use of their limited resources since they are leading to greater returns in terms of outputs. The research management function is at the crossroads between the university inputs into research and the outputs of university research and is therefore critical in terms of resource efficiency utilisation in the three small island states.

Finally, it was argued that the three small island states perform differently on the EIS. Whereas Iceland is classified as a strong innovator, Malta and Cyprus are classified as moderate innovators. A closer look at the disparities in performance shows that investment in human resources is crucial in the path towards improving performance.

RMA in the three small island states are required to focus more on the development of human resources and in creating favourable working conditions for researchers to conduct quality research in and/or with universities in small island states.

These propositions need to be taken into consideration when attempting to make sense of the findings of this study. This is because they are expected to condition the way research is managed within the three universities, while framing the respondents' behaviours within a wider context. The next section presents a summary and concludes this chapter.

2.7 Summary

This chapter has provided a comprehensive review of the wider context of this study. First it was necessary to clarify that defining a small island state is not a straightforward task. An operational definition of small island states to be used in this study was presented. Reference was also made to the evolution of literature on small island states. Subsequently, the general characteristics of small states and the specific country context of Cyprus, Iceland and Malta were reviewed. Finally a number of propositions for research management thinking deriving from the analysis of the wider context were briefly presented, to serve as a link between the contextual realities of the three small island states and the research management practices that shall be explored later on in this study. In the next chapter the phenomenon of research management is evaluated.

CHAPTER 3

UNDERSTANDING THE PHENOMENON OF RESEARCH MANAGEMENT

CHAPTER 3 – UNDERSTANDING THE PHENOMENON OF RESEARCH MANAGEMENT

3.1 Introduction

Having introduced the general theme and the context of this study in the previous two chapters, the overall aim of this chapter is to organise and review the relevant literature pertaining to research management. It is acknowledged that research management faces a conceptual problem owing to the fact that no single all-encompassing definition has yet been produced to reflect the true nature and wide spectrum of research management in its entirety. Probably such a definition is impossible to achieve because of the rapidly changing nature of the tasks that fall within the remit of research management (Poli and Toom, 2013) and the continuous evolution of a profession which is still relatively very young (Thys-Clément, 2002). In addition, research management is also conditioned by the underlying element that is being managed, namely *research*, which is also a highly dynamic endeavour with distinctive characteristics. Nonetheless, the difficulties in defining research management have not prevented the profession from developing and having its own identity.

After walking briefly through the development of the research management profession and the distinctive characteristics of research, a detailed evaluation of the research management phenomenon is presented in this chapter. A working definition for research management and for RMAs is being proposed specifically for this study. This combination is intended to shed light, not only on the conceptualisation of

research management as a phenomenon, but also on the roles played by the core members of the research management profession, namely the RMAs. The development of the profession is discussed first, in the next section.

3.1.1 Development of the research management profession

Research management is nowadays recognised as a profession in its own right (see (Kirkland, 2005; Shelley, 2010; Shambrook and Roberts, 2011; Poli, 2018). Yet its origins demonstrate that it is still a relatively young profession, and in a continuous process of development. The rise of the profession is often attributed to the 1940's as the US government's investment in research during and after World War II started expanding rapidly. This expansion in research investments served as a catalyst for the emergence of RMAs since a group of professionals were required to support scientific research (Beasley, 2006).

Subsequently, the 1950's and 1960's saw the establishment and growth of professional associations, which started to focus on supporting the growth of research management as an emerging profession (Trindade and Agostinho, 2014). The National Council of University Research Administrators (NCURA), the now inactive National Conference on the Administration of Research (NCAR) and the Society of Research Administrators International (SRAI) were all set up during this period in the US. The publication of the *Journal of Research Administration* (JRA) by SRAI and the *Research Management Review* (RMR) by NCURA demonstrated not only the growing professionalisation of research management, but also “the increasing interest in improving management practices and guidelines based on an increasing, empirical

evidence base” (Derrick and Nickson, 2014, p. 16). In Europe the development of the profession is more recent. The European Association of Research Managers and Administrators (EARMA) was established in 1995. Other professional associations of research managers, such as the UK Association of Research Managers and Administrators (ARMA) and the Danish Association of Research Managers and Administrators (DARMA) have achieved recognition by the profession through the establishment of professional development frameworks for RMAs (Poli and Toom, 2013). From an academic point of view, a number of Master’s degree programmes and certifications existing today contribute towards more commonly understood curricula for the profession (Katsapis, 2012).

These developments in research management have undeniably unfolded in response to the pathways that the research enterprise as an academic and professional entity has embarked on (Gabriele and Caines, 2014). Research management has therefore become more intrinsic to research rather than serving as just a practice. According to Vargas and Hanlon (2007), the research management profession “was founded on the need for service and the efficient delivery of our ‘product’ – research” (p. 46). Therefore, it has evolved simultaneously with the way researchers’ needs have evolved and the development of the profession can in no way be segregated from the developments in the research enterprise. Indeed, as research programmes have become more multi-disciplinary and international in scope, involving collaborations among researchers from multiple countries and disciplines (OECD, 1999), research management has become a more institutionalised and international activity (Langley and Ofosu, 2007), bringing together RMAs from different countries. In turn this has led to the need for international certifications in research management.

Developments in research have primarily occurred because of the acknowledgement by governments, private entities and the general public that research can provide an essential contribution towards the well-being of society in general. This has brought greater investment in research, although this investment has remained a function of a country's relative resources available for research. Greater investments brought about the need for greater accountability, regulatory constraints and higher compliance requirements (Cosico, 2006; Myers, 2007). Consequently, the research activity has itself experienced a paradigm shift. In this regard, Langley and Oforu (2007) argue that:

As sponsors and regulatory frameworks have become more complex, the need for the management of research administration to move away from the principal investigator (or her/his administrator) to resource-entities with relevant skill sets has become essential. Dedicated research support offices and professional officers are now common in the larger, research active institutions, and these have had to adapt and invariably grow as a consequence of the changes in complexity, size and scope of research programmes (p. 39)

The paradigm shift in research as well as the significant oversight obligations on research, have created the need for the specialised dedicated role of RMAs, which could not be filled by the researchers themselves (Myers and Smith, 2008). It may therefore be argued that although the scope of the research management profession is closely linked to the scope of the research enterprise, the profession has also started developing a higher profile because of its ability to respond to the needs of the surrounding environment. However, this response by the profession has so far been characterised by a conceptual problem, that pertaining to the definition of research management. This is discussed in the next section.

3.2 Research management: acknowledging the conceptual problem

The relatively fast pace with which both the research management profession and the research enterprise developed have possibly left a lacuna that has not yet been resolved by researchers in the profession: no single all-encompassing definition of research management has yet been established. In the introductory section of this chapter, it was argued that most probably such a definition is only utopic and cannot be achieved. One can provoke further debate by arguing that even if such a definition were found, it would probably become outdated after a period of time because research management is a dynamic concept.

This view on the difficulty in defining research management can be challenged by the fact that, as stated earlier, the number of curricula for obtaining formal academic recognition in research management developed to date is possibly evidence that some common grounds in defining research management exist. However, an analysis of some of these curricula, indicates that they have developed concurrently with a continuously evolving profession, one which is multi-faceted and is still establishing its own formal identity.

The variety in course structures, duration and topics covered by these curricula are some examples that complicate rather than clarify the definition of research management. For instance, the online master's in research administration by the University of Central Florida covers subjects ranging from introduction to research administration, leadership and organisation models, to intellectual property, research proposal development, and research integrity. On the other hand, EARMA, in

collaboration with UK ARMA, offers a suite of three professional work-based qualifications, namely Certificate in Research Administration (CRA), Certificate in Research Management (CRM) and Certificate in Research Leadership (CRL). This distinction demonstrates that there are varying stages in a research management career which may not be easily captured by one single definition or term. Moreover, a careful analysis of the course promotion content for the CRM (the most popular course from the three offered by EARMA) indicates that the target audience for this course can be “individuals with at least four years of experience in research management and administration” (EARMA, 2017). This promotion is acknowledging that while the course leads to a professional recognition in research management, there may already be more experienced staff within the profession who are considered as professionals without having obtained a formal qualification in research management. Finally, the Master’s degree offered by John Hopkins University specialises in a number of specific areas, namely programme administration and facilitation, financial management of sponsored programmes and compliance and regulatory issues. This variety reflects the different facets of research management and augments the challenges in adopting a clear all-encompassing definition for all aspects of the profession.

The conceptual problem is exacerbated by two different but related aspects, one concerning *research* and one concerning the *management of research*. With respect to the first aspect, it can be argued that research can take many forms and there is no single and uniform way to manage research (Andersen, 2018). This creates a problem in understanding research management, since the definition of the basic underlying element of research management (i.e. research) is also wide-ranging and open to

discussion. With respect to the second aspect, the term ‘research management’ is inundated with inconsistencies, variations and misunderstandings on even the most basic elements. Derrick and Nickson (2014) argue that research management is still regarded by the literature as an abstract concept. In view of these complexities, it is deemed appropriate to delve deeper into each of these two aspects first, in an attempt to clarify some of the contentious issues and to be in a better position to suggest working definitions that are relevant for this study.

3.2.1 Defining what is being managed: research

Understanding research management is not possible unless one attempts to rationalise what research is being managed. The OECD Frascati Manual (2015) defines research as the:

creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge. (p. 29)

This definition sheds light on three broad types of research activity defined in the same manual. First, *basic research* is the experimental or theoretical work conducted primarily with the aim to acquire new knowledge of underlying basic phenomena. Second, *applied research* is also considered as an original investigation aimed at acquiring new knowledge, but is driven primarily by a specific practical aim or objective. Finally, *experimental development* draws on existing knowledge acquired from research and/or practical experience, and directs that knowledge towards producing new or improving existing materials, products, processes, systems and services.

The existence of various types of research activities is only one aspect that influences the form of research. Another variable in research stems from the mode in which research is undertaken (Harman, 2010). *Mode One* research is undertaken in *traditional* disciplinary settings and can be attributed to individual research which is often undertaken by academics or researchers almost exclusively in their own area of specialisation, within their own ‘laboratories’. Outputs of such research take the form of personal publications, including under-graduate, master’s and doctorate level research which is not part of a research project.

Mode Two research is multi-disciplinary and has a greater emphasis on knowledge application. Very often it responds directly to societal needs and involves a level of collaboration between different research performers (Huisman *et al.*, 2004). According to Schuetzenmeister (2010), this contemporary drive in research is usually organised in collaborative research projects, with planned work phases distributed among partners and evaluation of results against set objectives within a limited time span.

This brief discussion on research activities and the mode of research is aimed at demonstrating the complexity of defining research management, not least because identifying what constitutes a research activity is in itself not an easy task. As indicated in Chapter One, the type of research that falls within the scope of this study is *university-based research*, which is usually undertaken on behalf of a university *institution* in collaboration with partners which may span across disciplines and countries (i.e. Mode Two). Funding for this type of research is often competition-based and accompanied by several compliance requirements. It is this type of research

that very often requires institutional support from university RMAs in order to alleviate Principal Investigators (PIs) from unnecessary administrative burdens. The next section discusses the main hurdles for defining research management that emanate inherently from the profession.

3.3 Defining research management: an evaluation

As explained earlier, the second aspect that exacerbates the difficulties in understanding the phenomenon of research management concerns the profession itself, its members and the way it is perceived by stakeholders. This pertinent problem with research management is not unique to this study. According to Derrick and Nickson (2014), “the huge variety in how [research management] is delivered across the sector, and the constant restructuring of research services within universities suggests a lack of understanding regarding how it can most effectively be delivered” (p. 12). As a consequence, the lack of consistency and standardisation in the definition of research management means that it is more difficult for those outside the profession to understand its value and function.

The complexity in defining research management derives in part from the way authors have associated certain attributes to the profession. For example, Kirkland (2008) defines research management as an ‘activity institute’ which attempts to add value to the research activity but without being part of the research itself. Although Kirkland’s view of the profession may be relevant to our understanding of research management, it portrays RMAs as a “passive group of professionals separated from the activity of researchers and yet members of the same profession” (Derrick and

Nickson, 2014, p. 26). Other literature contributions have arguably contradicted Kirkland's view by defining RMAs as servant-leaders, gate keepers, enablers, facilitators, intermediaries and brokers (Carlsson and Fridh, 2002; Krauser, 2003; Siegel *et al.*, 2003). These alternative descriptions indicate that rather than being a passive, peripheral process to research, research management has an active role in the research process and RMAs are not isolated from the researchers and from what they do. This contrasting perspective accounts for the fact that the concept of research management and the role of RMAs in the literature remain relatively unclear and ill-defined.

To further demonstrate the lacuna in defining research management, reference is being made to five direct quotations which attempt to define research management in the literature, exhibited in Table 3.1. These definitions are presented intentionally in an order, starting from the more generic to the more detailed and comprehensive definitions.

From these definitions, four salient observations can be identified. First, four of the five definitions use the term *research management* whereas one uses the term *research administration*. A further discussion in the next section is intended to ascertain whether this distinction is the result of differences in terminology only or whether there is a specific conceptual meaning behind the use of different terms.

Second, it is evident that some definitions are more detailed than others. Whereas the first two definitions attempt to explain the concept of research management in fewer words, the last three definitions provide an elaborate, more detailed description of

| | |
|---|---|
| <p>(1) Hazelkorn (2005, p. 7)</p> <p>Research management encompasses a variety of factors and problems: principles of active cooperation between research and private sector to foster innovation; research policy; research culture; research careers; the potential 'leak' of scientific potential into more developed countries, etc.</p> | <p>(2) Bushaway (2007, p. 142)</p> <p>Research management refers to the duties and responsibilities commensurate with the successful implementation of the research strategy and its daily operational implications, the control and co-ordination of specific research projects, their quality and related tasks of sponsor management.</p> |
| <p>(3) Schuetzenmeister (2010, p. 10)</p> <p>Research management refers to the day-to-day activity in which the complex and permanently changing institutional environment of scientific work has to be taken into account in order to make research possible. It is characterised by competition and collaboration of actors who have different, sometimes conflicting goals and varying access to organisational resources, power, and assets.</p> | <p>(4) Campbell (2010, p. 1)</p> <p>Research administration refers to the activities and work associated with developing, administering, accounting for and complying with requirements, guidelines and laws relating to extramurally-funded projects. The profession of research administration is a critical part in ensuring the continued functions of the larger research enterprise.</p> |
| <p>(5) Association of Commonwealth Universities (ACU) and the Global Research Management Network (GRMN) (2008, p. 4)</p> <p>Research management embraces anything that universities can do to maximise the impact of their research activity. It includes assistance in identifying new sources of funds, presenting research applications and advice on costing projects and negotiating contracts with external sponsors. It incorporates project management and financial control systems. It also involves help in exploiting research results – through commercialisation, knowledge exchange and dissemination to wider society.</p> | |

Table 3.1: Five definitions of research management extracted from the literature

what they intend to infer. One may ask: does this diversity in the extent of detail result from some authors missing out on certain essential features of research management or is it because the concept is so wide that the way it is defined depends on the particular author's perspective?

Third, research management is a multi-setting phenomenon. The definition by Hazelkorn (2005) focuses more on the management of research at a national level, while the other four definitions define research management within an organisational context. This distinction (which will be discussed in detail in section 3.3.2) demonstrates that there are various settings in which research can be managed and which need to be clearly identified in order to minimise misconceptions.

Fourth, research management is a wide and complex phenomenon. In fact, the five definitions attempt to define the phenomenon by focusing on different aspects. The definition by Hazelkorn (2005) highlights the cooperation between research and the private sector that has an impact on research policy, research culture and research careers. In contrast, the definition by Bushaway (2007) focuses on the research strategy, its daily operational implications, and the control and co-ordination of research projects. In his definition, Schuetzenmeister (2010) acknowledges that research management is an activity that requires human interaction in order to make research possible. But because it is an activity based on human interaction, conflicts may arise due to incompatible goals and different access to organisational resources. The definitions by Campbell (2010) and ACU/GRMN (2008) are probably the most comprehensive as they hint at the instrumental role of research management in making research possible, although the latter definition is narrowed down to a university environment. In contrast to the first three definitions, the last two definitions cover the whole lifecycle of a research project, from proposal submission to funding, financial control, dissemination and exploitation of results. However, despite being broader than the other three definitions, they make no reference to research strategy and to the role of research management therein.

Notwithstanding their usefulness for understanding the concept of research management, these definitions still lack clarity on certain basic elements. Whereas they imply a range of tasks required from RMAs (see Bushaway; ACU/GRMN) they fail to specify the *roles and skills* expected from RMAs. Similarly, while an element of conflict is foreseen in the research management process (see Schuetzenmeister), it is not clear at what *stages* research management is undertaken and therefore where conflict may occur during the project lifecycle. Moreover, these five definitions do not specify in which *setting* the research management process is undertaken, whether in a university or a business environment or at a national level. Finally, the use of the term research management extends from strategic aspects to day-to-day administrative and middle management functions. This broad use of the term and the inter-changeable use of the terms *research administration* and *research management* explain the conflicting *perceptions* in the minds of RMAs, researchers and other stakeholders.

Drawing from these definitions, five primary complexities in the understanding of the research management phenomenon have been identified and are illustrated in Figure 3.1. Each of these five complexities are discussed in the following sections with the aim to contribute towards the formulation of working definitions that are relevant for this study.

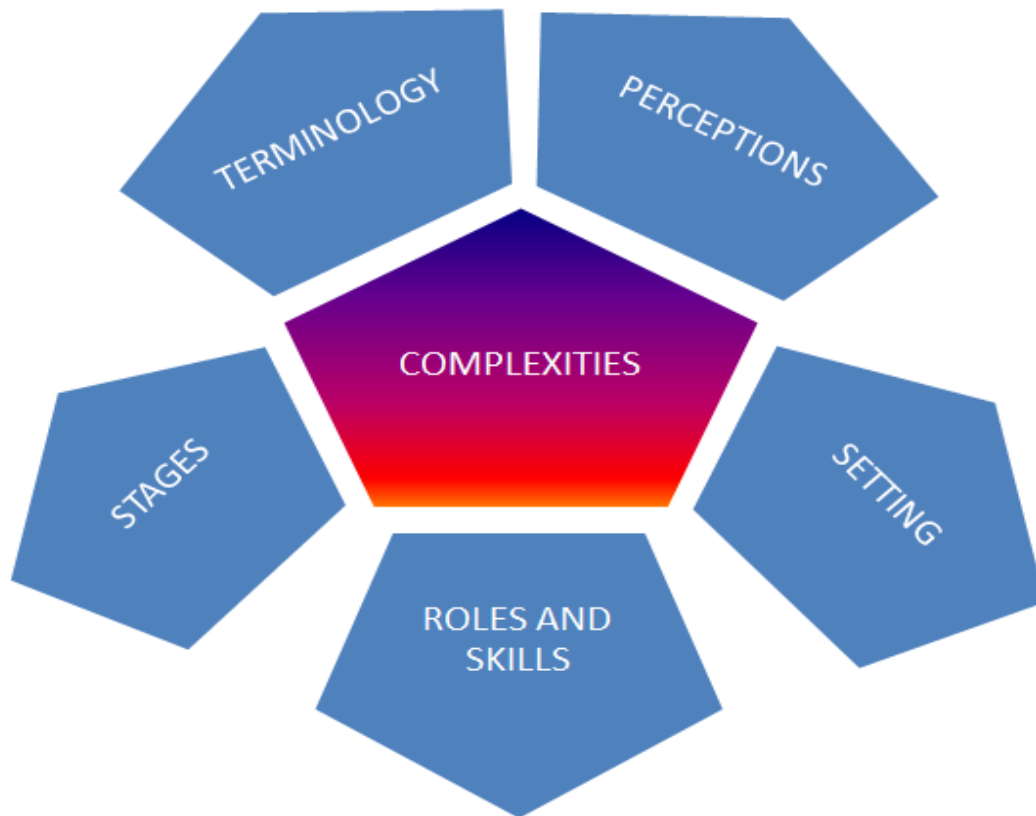


Figure 3.1: Five main complexities of the research management phenomenon

3.3.1 Terminology

The primary complexity in the definition of research management derives from the terminology used: *research administration*, *research management* and *research leadership*. Although this distinction may be considered an etymological matter, it is more a reflection that the profession is multi-faceted. On the one hand, the profession is considered to have an *operational* role, which undertakes, among others: the day-to-day administration of research activities; identification of funding sources; costing and financial management of research projects; reporting; and audit. On the other hand, the profession is also considered to have a *managerial* role. Activities include: policy development and implementation; providing support in project portfolios; conflict management; the management of legal and regulatory requirements; and

optimisation of organisational resources. At the most senior levels, the profession has a *leadership* role, which is concerned mainly with: driving organisational research effectiveness; research leadership; working with political institutions; the development of research talent; and strategic management of research performance. Figure 3.2 provides a diagrammatic representation of the various roles exercised by the profession.



Figure 3.2: Roles and facets of the research management profession

The distinction between the various roles and facets of the profession is also reflected in some of the academic courses that were highlighted in section 3.2. The suite of three professional work-based qualifications offered by EARMA relate to three separate certificates. The CRA addresses the operational tasks, the CRM addresses

the managerial tasks and the CRL addresses the strategic end of the research management profession.

However, this distinction between the various professional levels is more an academic than a practical one. In practice, all three aspects may be addressed interchangeably by the same function. A review of the literature shows that very often one single term is used to refer to all facets of the profession. Yet, there seems to be divergences even in the use of the single term that exacerbate the complexity of understanding what the profession is all about. Most US-based literature contributions use the term *research administration* to refer to the profession and the term *research administrators* to refer to the members of the profession. This terminology is also reflected in the names given to the professional associations in the US, such as the SRAI and NCURA. In contrast, the European-based literature prefers the term *research management and administration* to refer to the profession and the term *research managers and administrators* to refer to the members of the profession. As with the US, this distinction is reflected primarily in the names of most European professional associations, including EARMA, the UK ARMA, DARMA and the Icelandic Association of Research Managers and Administrators (IceARMA).

In the absence of any specific empirical research to study the implications of the different terminologies, two specific conclusions can be drawn: First, the interchangeable use of the terms should not diminish the dynamism of the profession or create a division between its multiple facets. In as much as *taxation*, *auditing* and *corporate finance* fall under the general term of *accounting*, the functions of *research administration*, *research management* and *research leadership* are different aspects

that comprise a single profession. In this study, the term *research management* incorporates all facets while the term *RMA*s is used to refer to members of the profession. The motivation for using these terms is purely contextual, since this study is focused on universities situated within Europe.

A second conclusion suggests that it is practically impossible to distinguish precisely between work which is purely administration, management or leadership, especially when all three aspects are undertaken by the same person or function. While this element of multi-tasking can potentially enhance the role of *RMA*s encouraging them to be more holistic, it can also lead to an identity crisis for *RMA*s as well as to role ambiguity, since they may be inundated with tasks required to address all three aspects without actually specialising in any of them. This may create confusion between what the *RMA*s are expected to do and what they can actually deliver.

3.3.2 The research management setting

The second complexity has already been unveiled earlier and concerns the setting in which research is managed. Figure 3.3 illustrates the various levels at which research may be managed within the national research landscape. The diagram is intentionally presented in a stacked Venn form to distinguish between the macro levels (national; funding agencies) and the micro levels (organisational; research groups).



Figure 3.3: Research management settings

On a macro scale, research management at the *national level* is concerned with the management of national research systems (Schuetzenmeister, 2010) by funding projects in defined priorities, addressing the needs of specific stakeholders and capacity building. Examples of research management functions at this level include: (i) decisions on funding more applied research instead of basic research (priority-setting); (ii) a strategic move to enhance university-industry collaborations; (iii) investment in large-scale research infrastructures; (iv) the allocation of more research funds for education; and (v) exploiting a strategic area of comparative advantage with the aim to strengthen the competitiveness of a country.

Research management at the level of *funding agencies* is aimed at translating societal problems into research opportunities (Schuetzenmeister, 2010). RMAs at this level attempt to relate new research areas to political agendas by formulating and

implementing operational programmes through which national or supra-national objectives are addressed.

On a micro level, research management may be exercised at an *organisational level*, by research entities including universities. With the recognition that research is essential for the advancement of knowledge and competitiveness, the need for accountability and higher compliance requirements have led to greater *controls* in organisational research, particularly publicly-funded research (Kirkland, 2005; Nickson, 2014). Research entities have started to adopt managerial controls similar to those adopted in businesses, a process known as *Managerialism* (Deem, 2006) and which is explored further in Chapter Four.

In addition, the organisational level of research management may be further divided into two hierarchical sub-levels (Connell, 2004; Shelley, 2010; Chun, 2010; Temples *et al.*, 2012). First, is research management at the *departmental* level, which is conducted at the level of a faculty, department, centre or research institute within a university. This level is more involved in “providing information, helping with the mechanisms of research fund bidding and other more generic roles” (Shelley, 2010, p. 47). The second is research management at the *central* level, which has “a wider focus on the implementation of institutional research policy decisions, national or international-related contracted research work or hold specific research expertise” (Shelley, 2010, p. 47). Studies have shown that departmental RMAs are usually more linked to the administrative work of the faculty than university-wide administration and management (Bowonder, 1980; Butler, 2000; Cole, 2007; Allen-Collinson, 2007; Kulakowski and Chronister, 2006). They are very often considered to bridge the gap

between the academic world and the university's central administration (Campbell, 2010).

At the most micro level, research is managed at the level of *research groups* or *research clusters* within centres, departments or even individual, personal research. According to Schuetzenmeister (2010), this is the level at which “research work is actually done and where decisions are made with reference to the societal environment of research as well as to the cognitive dynamics of a scientific field” (p. 4). He maintains that, at this level it is possible for a lead scientist, usually a professor, to work with a research group that includes students, post-doctorates and technicians, who are all essential in order to conduct research *collectively*. This level, although considered the most micro of all the other levels, is highly influenced by the other three levels described before. Decisions taken at the other three levels give direction, limit or make possible research at the individual and research group level.

The existence of the four different levels described above highlights the need to clarify at which level research management is being examined in this study. Strategies, processes and structures adopted at one level may not be applicable to another level. Moreover, the players and stakeholders involved in research management at one level may not necessarily be the same at another level. This will also impinge on the definition, skills and roles of RMAs. For example, the RMA at the national level could be the national policy-maker, whereas the RMA at the institutional level could be a senior university manager.

As already stated earlier, research management for the purposes of this research shall be studied at the *organisational level*, and more specifically within a *publicly-funded university* environment. Using the scale of levels described above, this is an intermediary level, where the management of university research is influenced by policies and strategies adopted at the national level, while in turn has the potential of influencing research conducted at the individual or research group levels.

3.3.3 Stages vs. processes of research management

Another aspect that makes the understanding of research management more complex is the distinction between stages and processes of managing the research. One perspective is to view research management as made up of stages that mirror the research process, as illustrated in Figure 3.4.

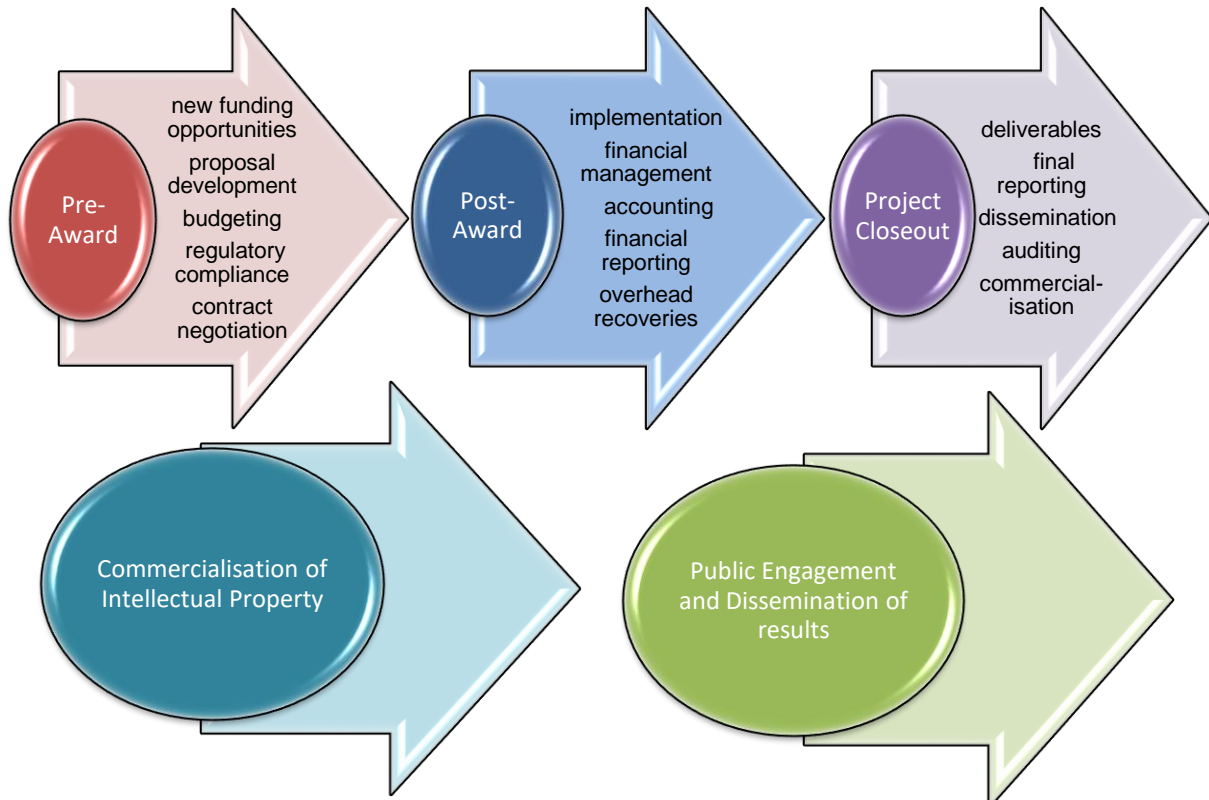


Figure 3.4: A sequential perspective of research management

NCURA identifies two principal stages of research management at an institutional level: the *pre-award stage* and the *post-award stage* of a research project. The *pre-award stage* is the proposal phase, which deals with the search for new funding opportunities, assistance in proposal development, budgeting, regulatory compliance and contract negotiation. The *post-award stage* is concerned mainly with project implementation, technical deliverables, financial management, liaising with auditors, reporting, and overhead recoveries. As shown in Figure 3.4, these two stages follow a specific sequence in all cases.

However, some authors make further distinctions in the stages of implementing the research project. Chun (2010) segregates the project implementation stage from the project closeout stage and the auditing stage. Similarly, Luglio and Bertazzoni (2010) consider the commercialisation of intellectual property and the dissemination of research results as two supplementary stages in research management, in addition to the pre-award and post-award stages. On the other hand, Kirkland (2005) considers these two supplementary stages as integral to the post-award stage and not additional to it.

An alternative perspective incorporates public engagement activities as one of the stages in research management (Sugihara *et al.*, 2014). This is within the scope of the Kyoto University Research Administration office (KURA) in Japan. This is a distinct feature and contrasts with the US and European-based literature on research management which tends to distinguish mainly between the pre-award and the post-award stages (and some variants of it as seen above). The addition of public engagement activities within the scope of research management adds a relatively new

dimension to the role of RMAs (also reflected in ARMA UK's professional development framework). It focuses on their involvement in the interaction of research with the external stakeholders directly, something which had not featured in other literature contributions so far. The inclusion of external stakeholders in the field of management studies is not a new phenomenon. Scholarly works by Weaver (2007) in the field of project management; Helin *et al.* (2013) and Tantalo and Priem (2016) in the field of strategic management and Yang *et al.* (2011) in stakeholder management, are only some examples of the importance given to stakeholder engagement in the management of organisations nowadays.

Besides this additional dimension to the role of RMAs, the inclusion of public engagement activities may potentially blur the clear distinction that exists between the pre-award and the post-award stages. In the way that NCURA, Chun (2010) and Kirkland (2005) present the stages of research management, it is clear that these stages do not overlap. Rather they tend to follow a natural sequence. However, with the additional dimension introduced by KURA, as presented by Sugihara *et al.* (2014), the perspective towards research management started to move away from the traditional sequential one towards a more interactive one. The public engagement activities are not necessarily held at the end of a project, after the post-award stage, but rather all along the chain, including the pre-award stage. This alternative perspective to research management is illustrated in Figure 3.5 in which the stages are distinct but less sequential than in Figure 3.4.

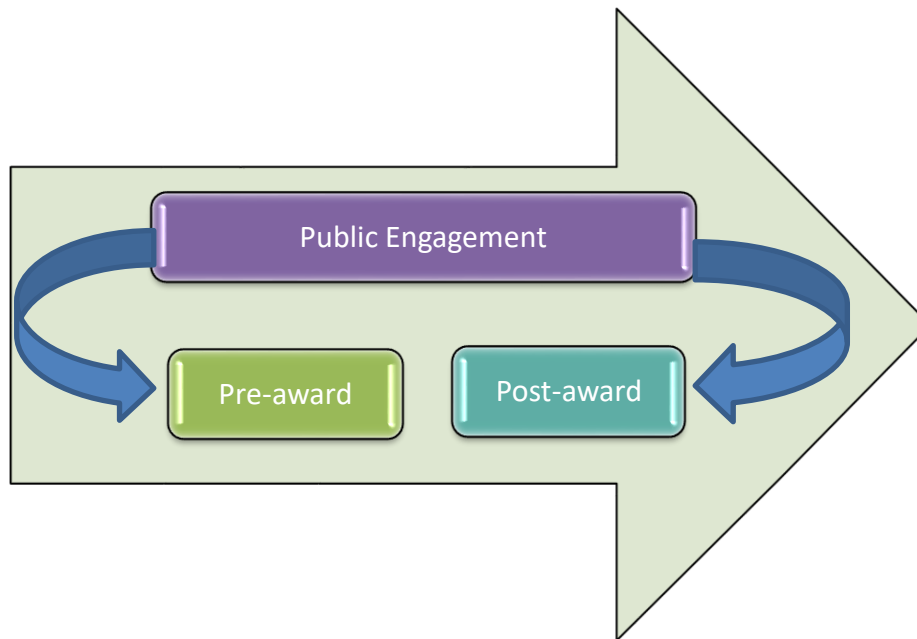


Figure 3.5: An alternative perspective to the sequential stages of research management

Apart from the novelty offered by KURA's model, the traditional sequential approach to the research management cycle is challenged by Cole (2010). She argues that research management is a *service-delivery system* made up of people and organisations that supply research knowledge, products and services in *processes* rather than in stages. Interactions in this system arise between employees, the academic community, sponsors, the environment, society and the nation in general.

Therefore, research management is made up of processes classified as:

The research process, the evaluation process, and the control process. These processes are all interdependent. ... The [research management] system converts dollars and other inputs into value (service) that helps project and research effectiveness. The quality of a system's output can be defined as the perception of consumers and stakeholders about the value of those services. Perceptions (feedback) about that value are used to govern future resource allocations and changes to system processes (Cole, 2010, p. 12).

Cole's perspective on research and research management depicted in Figure 3.6, indicates that various processes intermingle not in a fixed sequence to merge into one research activity. This perspective gives a different dimension to research management, whereby research is not managed in a sequential order but as an interaction of various processes which are inter-dependent and concurrent to each other to produce the research activity.



Figure 3.6: The management of interactive processes in a research activity

From Cole's perspective of research management, an important point of contention emerges. Whereas stages tend to remain predominantly fixed and sequential, processes tend to be more flexible and prone to change. Therefore, research management from a *process* perspective can be seen as being more dynamic and able to adapt to the needs of the researchers rather than research management from a *stages* perspective, which is attributed to a step-by-step, sequential approach. As discussed before, the dimension presented by Sugihara *et al.* (2014) is already a primary challenge to the traditional sequential approach to research management based on

stages. However, the *process* perspective changes completely the way research management can be defined and the ways in which research can be managed.

This study explores strategies, policies and structures adopted by universities in small island states at various stages of the research activity. It also seeks to uncover the processes followed in managing the university research and how they are influenced by specific circumstances. The stages versus processes approach to research management may have an impact on the roles and skills required from RMAs. The points of contention regarding the roles and skills of RMAs are discussed in the next section.

3.3.4 The roles and skills of RMAs

Whereas the discussion in the previous three sections was centred on research management as a profession or activity (terminology, setting and stages/ processes), this section focuses on RMAs and the complexities that are often attributed to their roles and skills. Since the early days of research management studies, the identity of RMAs has been a key point of contention for various motives.

First, a formal standard professional profile of an RMA that serves as a role model and benchmark is lacking. Trindade and Agostinho (2014, p. 39) argue that “research managers at science-intensive institutions appear as a continuously evolving group of professionals whose identity is somewhat fragmented, even to themselves”. From an academic point of view, Shelley (2010) contends that the more RMAs possess characteristics that are similar to those possessed by academics, such as holding

doctorate degrees, having publications in peer reviewed journals and research funding experience, the more the research management field gets closer to the academic field.

However, Whitchurch (2006a, 2006b) argues that the role of an RMA is distinct from that of the academic/researcher's role. She maintains that a new *hybrid* professional manager is emerging, one that combines the characteristics of academics, managers and administrators within the context of higher education. She claims that:

the terms *administration* and *management* not only lack precision as descriptors of the activities of professional staff, but have been contested in an academic environment: administration for its association with unwanted bureaucracy, and management for its association with what is perceived as an erosion of academic autonomy, as institutions respond to competitive markets and government accountability requirements. (Whitchurch, 2008b, p. 379)

Whitchurch's view of a hybrid professional manager complicates the process of understanding the research management phenomenon and contrasts with the more rational view, (presented in Section 3.3.1) that research management has a clearly distinguished administrative side, a managerial side and a leadership side. In her studies, Whitchurch (2006a, 2006b, 2008a, 2008b) concludes that RMAs form part of a new professional workforce and hold *niche* functions by occupying a *third space* between academic and managerial domains, sharing the characteristics of both, yet moulded into a distinct profession in its own right. Whitchurch's concept of a *third space* will be discussed in more detail in Chapter Four, as part of the conceptual framework of this study.

A second point of contention on the identity of RMAs is that pertaining to the route that they follow to become recognised within the profession. As argued in Section 3.1.1, an increasing amount of specialisation in research management has led to more

commonly understood curricula for the profession (Katsapis, 2012). However, in practice most RMAs have either joined the profession without a formal qualification in research management or they are carrying out work within the research management profession without knowing that their work falls within a distinct profession. With the proliferation of academic programmes awarding professional qualifications, this trend could possibly change. To date, there is no evidence of this in the literature.

The range of specialist skills often required by RMAs opens up various routes for joining the profession. Some authors recognise that RMAs require technical skills, such as Intellectual Property (IP) management, commercialisation, budgeting, costing and project management skills (Connell, 2004; Green and Langley, 2009). Others focus on the interpersonal skills of RMAs. For instance, Landen and McAllister (2006) contend that RMAs require effective negotiation and communication skills, backed by a sound grasp of research and administrative processes, a broad understanding of the relevant legal, financial and academic fields, and good leadership qualities. Kerridge and Scott (2017) analyse the skill-set of RMAs from the perspective of their role. They argue that RMAs in leadership and managerial positions require more soft skills, such as communications, project management, and conflict resolution compared to RMAs in operational positions, who require more hard skills, such as proposal development and costing. Finally, Tauginienė (2009) argues that an RMA may have to simultaneously master the roles of manager, lawyer, financier and quasi-researcher, while rendering assistance to faculties in carrying out research and representing university needs and strategic priorities. Given these range of skills requirements, individuals may join the research

management profession having qualified in another profession, such as accountancy, law, management, business studies and/or public administration.

This ‘transfer’ from other professions to research management is due to the lack of specific academic programmes from early stages. Currently, the programmes offering qualifications in research management require the student is already engaged professionally in the area. Thus, RMAs have to first ‘join’ the profession through employment and then obtain the recognised qualifications in research management. Derrick and Nickson (2014, p. 26) argue that “a new professional base for research administrators has developed that includes professionals who do not necessarily possess an academic background or direct experience in academic research”. If viewed in this way, the research management profession could possibly never free itself from the legacies with other professions such that the origins of its members could remain prevalently extrinsic to it. This trend may change if academic qualifications in research management become more widely recognised and are made compulsory in higher education institutions worldwide.

The definition of RMAs relevant for this study includes employees whose daily work is primarily related to *facilitating, supporting, administering or managing the research process, including the dissemination of its results*. This typically includes those employed *specifically within a Research Management Office (RMO)* and others who are employed within the Legal Office, the Human Resources Management Office, the Finance Office or the Knowledge Transfer Office, but who are *primarily engaged in the research management process*. It excludes employees, such as the university Rector or the university Pro-rector for research, whose positions within the

university are likely to have a significant influence on the direction of research rather than as a support function. However, despite not being called RMAs, these high level university employees still fall within the scope of this study in view of their potential impact on the direction of research and its management.

3.3.5 The perceptions towards research management

The last complexity associated with research management is that pertaining to perceptions towards the profession and RMAs by stakeholders. In their study among top rated universities in the UK, Green and Langley (2009) ascertain that for the majority of RMAs their role within the university is not well understood by both academic and non-academic stakeholders. This *expectations gap* between what the stakeholders expect of RMAs and the actual role of RMAs may be the result of the other complexities discussed before.

Moreover, the research management function often tends to be underestimated when compared to other academic units within universities. A survey conducted among RMAs in the US in 2007, known as the Research Administrators Stress Perception Survey (RASPerS 2007) and which was repeated in 2010 (known as RASPerS 2010), revealed that “research administrators perceive this work to be often done in a stressful environment with little recognition from their non-administrative colleagues to whom they are providing a service” (Shambrook and Roberts, 2011, p. 20). In the same vein, Green and Langley (2009) argue that, although research activity is considered to be a key indicator of institutional performance, few universities

recognise that the RMO, with its direct contact with funders and researchers, is best placed to monitor and influence income streams and university performance.

An attempt to find an explanation for the *neglect* of the research management profession by the academic field is made by Hockey and Allen-Collinson (2009). They contend that the possession of academic capital has elevated the status of the role of researchers relative to other occupational groups within the social system. This, they argue, has allowed researchers to label themselves exclusively as central to the university mission to the detriment of other groups which are then labelled as peripheral (Kimber, 2003) and classified as *support staff*. Moreover, since the research management function is not always organised through a dedicated unit (as discussed in the previous section on *direct* and *indirect* research management), such as finance or human resources, it becomes more difficult to separate out the role of RMAs within a university.

The source of the incorrect perceptions towards the role of RMAs is highly debatable. However, it is not the scope of this study to resolve this. The conceptual framework presented in Chapter Four provides a basis upon which this expectations gap may be better understood. In order to address this perception problem and in reflecting on a working definition of research management for this study, it is opportune to refer to the four fundamental principles of research management, as summarised by Tauginienė (2009) below.

The first principle compares RMAs to the oil in a complex mechanism. Their core work consists of *reducing friction and keeping the process moving* (Eurich, 1967).

The second principle is articulated by Beasley (1970), who argues that RMAs should serve as *mediators-expeditors* of the grants process. As a third principle, Woodrow (1978) portrays RMAs as *facilitators of research*. Their role is to make research possible for researchers who in turn can do their work unencumbered by administrative burdens. Rodman and Dingerson (1979) best express the fourth principle by claiming that RMAs must have the *trust* of the faculty and represent the voice of the faculty when mediating between the interests of the sponsor and those of the university.

While these fundamental principles provide the pillars upon which the profession is built, they may, at the same time, constitute a source of contention. On the one hand, if conveyed appropriately by RMAs, these principles have the potential to encompass the entire mission of research management. On the other hand, these principles may be the cause of confusion because they may give the impression that RMAs have the potential to solve all the problems that are encountered during the research process. These may give rise to unrealistic expectations given the numerous challenges faced by RMAs in research management, namely the multi-disciplinarity of university research, limited resources, several compliance requirements and diverging interests of stakeholders.

In order to understand and possibly reduce the expectations gap, the fundamental principles of the profession need to be considered in conjunction with the development process which the profession has followed to date over its lifetime. According to Campbell (2010), research management has developed along four

themes emanating from the above-mentioned fundamental principles. First, RMAs are often seen as *servant-leaders*. The concept of *servant-leadership* was originated by Greenleaf in 1977 and further enhanced through contributions by (Frick and Spears, 1996; Greenleaf, 2003). This concept shall be discussed in more detail in Chapter Four.

Second, research management is a *reactionary developed profession*. Regulatory and competitive pressures, increased reporting requirements, calls for higher accountability and a fast changing environment are considered as important factors that have led to the rise of the profession in a reactionary manner. Third, in research management *policy follows process*. As RMAs strive to address the needs of the institution, to support faculties and to provide advice to researchers, their work seems to first follow a process which is then ensued by formal policy. Finally, the research management profession is often considered to be *more example-based than theory-based*. Formal curricula in research management have, up to a few years ago, been practically non-existent. Training programmes are very often being conducted in a sporadic way, such that RMAs dealing with research in one country are likely to be trained differently than those in another (Campbell, 2010). However, there are several initiatives underway including conferences, seminars and symposia that are regularly organised by associations of RMAs which are contributing to achieve coherence in professional practices and the sharing of best practices among RMAs.

The discussion on perceptions towards research management indicates that RMAs need to communicate their roles proactively to academics and other stakeholders, in

order to gain their trust and recognition. This requires the research management profession to be Janus-faced, since it needs to promote and preserve its fundamental principles on the one hand, while responding to the continuous social, economic and political demands on the other (Hansen and Moreland, 2004).

This section has completed the discussion on five complexities that can influence the definition of research management. The objective of the next section is to formulate two working definitions, one for research management and one for RMAs that serve as guidance for the rest of the study. These definitions are presented purposely at the end of this chapter as they stem from the insights derived from the preceding discussion.

3.4 How will research management be defined for the purposes of this study?

This chapter has raised various issues about research management and has looked into many of its caveats and paradoxes that may lead to confusion or points of contention. In order to ensure clarity and to acknowledge the contextual realities described in Chapter Two, this section proposes working definitions for university research management and for university RMAs.

For the purposes of this study, university research management is defined as: *the combination of processes through which university-based Research Managers and Administrators, either through a central office or in conjunction with other administrative functions or faculty offices, provide managerial and administrative*

support, both operationally and strategically to the entire research process, including the relationships involved between researchers and various stakeholders.

This operational definition acknowledges the fact that research management entails the management of both processes and relationships. This interpretation seeks to strike a balance between the need for universities to meet their organisational objectives and the need for academics to perform research.

In addition to the working definition of research management, a working definition of RMAs is also formulated. For the purposes of this study RMAs are those *university employees who, irrespective of whether they are in possession of a professionally recognised qualification in research management, are engaged in a managerial or administrative role or a combination of both and who are involved predominantly in managing or supporting the research process, directly or indirectly.*

The parameters of these definitions are based on the following assumptions: First, the study focuses on a European context, hence the terms *research management* and *RMAs* are used to refer to the profession and to its members, as opposed to *research administration* and *research administrators*. However, the author acknowledges the fact that during the data collection phase, these terms may be used interchangeably and any reference to one is assumed to be referring to the other.

Second, a Research Management Office (RMO) is deemed to exist when the university has in place a central office, which either on its own or in conjunction with other decentralised functions, co-ordinates the management and support of the

research process. Therefore, in order for the research management profession to be considered present and active, the university needs to have in place, at the minimum, a centralised RMO. Without this in place, the research management process would be too fragmented to allow proper investigation.

Third, university RMAs are all assumed to understand the idiosyncratic nature of universities. This means that despite the fact that they might have diverse academic backgrounds and previous work experience, RMAs can contribute collectively through the pooling of individual specialised expertise to provide the necessary management and support to the research process.

Finally, in the absence of formal possession of professional qualifications in research management, RMAs can possess or acquire the qualities and skills that are deemed necessary to support the entire research process. This can be done through practice-based learning that can be translated into formal policies and guidelines.

The discussion on the complexities of research management, the working definitions and the underlying assumptions in this chapter acknowledged the intricacies in understanding the phenomenon of research management. This chapter revealed that in all probability these intricacies cannot be avoided as they are inherent in the way the profession has evolved and is structured. Therefore, it is the task of the researcher to acknowledge these complexities, to be reflexive about them and to clarify the application of the concepts to his/her own study, through working definitions and contextual insights.

3.5 Summary

In this chapter the phenomenon of research management has been evaluated in detail. After walking through the developments and the rise of a distinctly-recognised profession, a number of definitions were presented. Specific lacunae were highlighted in these definitions. It was argued that a single, all-encompassing definition of research management is impractical due to the emerging dynamics of the profession, the expectations gap with stakeholders and the diverse academic backgrounds of RMAs. However, further complexities can be mitigated by formulating working definitions applicable for the study. Two working definitions were therefore formulated, one for research management and one for RMAs. Both definitions attempt to mitigate confusion and to simplify the complexities associated with the research management phenomenon.

The next chapter presents the conceptual framework of this study. Given the scarcity of specific literature on university research management in small island states, the framework borrows knowledge from existing literature, both in the field of research management and other related fields and classifies it around three underlying pillars: *contextual realities*, *relationships* and *organisational structures*. Understanding each of these three elements and the interaction between them is deemed critical to address the research questions of this study.

CHAPTER 4

CONCEPTUAL FRAMEWORK

CHAPTER 4 – CONCEPTUAL FRAMEWORK OF THE STUDY

4.1 Introduction

This chapter proposes a conceptual framework for this study, which is constructed around three pillars: (1) context, (2) relationships and (3) organisational structures. A diagrammatic illustration of the conceptual framework is presented in Figure 4.1 and is explained in more detail below.

The context is represented by the external environment (discussion commenced in Chapter Two) and the internal university environment. At the very core of the illustration are the relationships and structures which, despite being treated as two separate pillars of the conceptual framework, are influenced by the contextual realities of the university, the external environment and their interaction. The core relationship in this study is between (a) managers and administrators, who are positioned in the managerial and administrative domains of a university; and (b) researchers/academics, who are positioned in the academic domain of a university. The characteristics of both domains converge within the *third space* (a concept originated by Whitchurch, 2004), where principles of managerialism are combined with the academic values in the conduct, management and administration of institutional research. This interaction creates what Whitchurch describes as a different group of professionals, called RMAs, who are different from the researchers/academics and managers/administrators as understood in a traditional sense. The *third space* is represented by the innermost part of the framework, where

the two domains converge represented by the lighter part of the relationships and structures section in Figure 4.1.

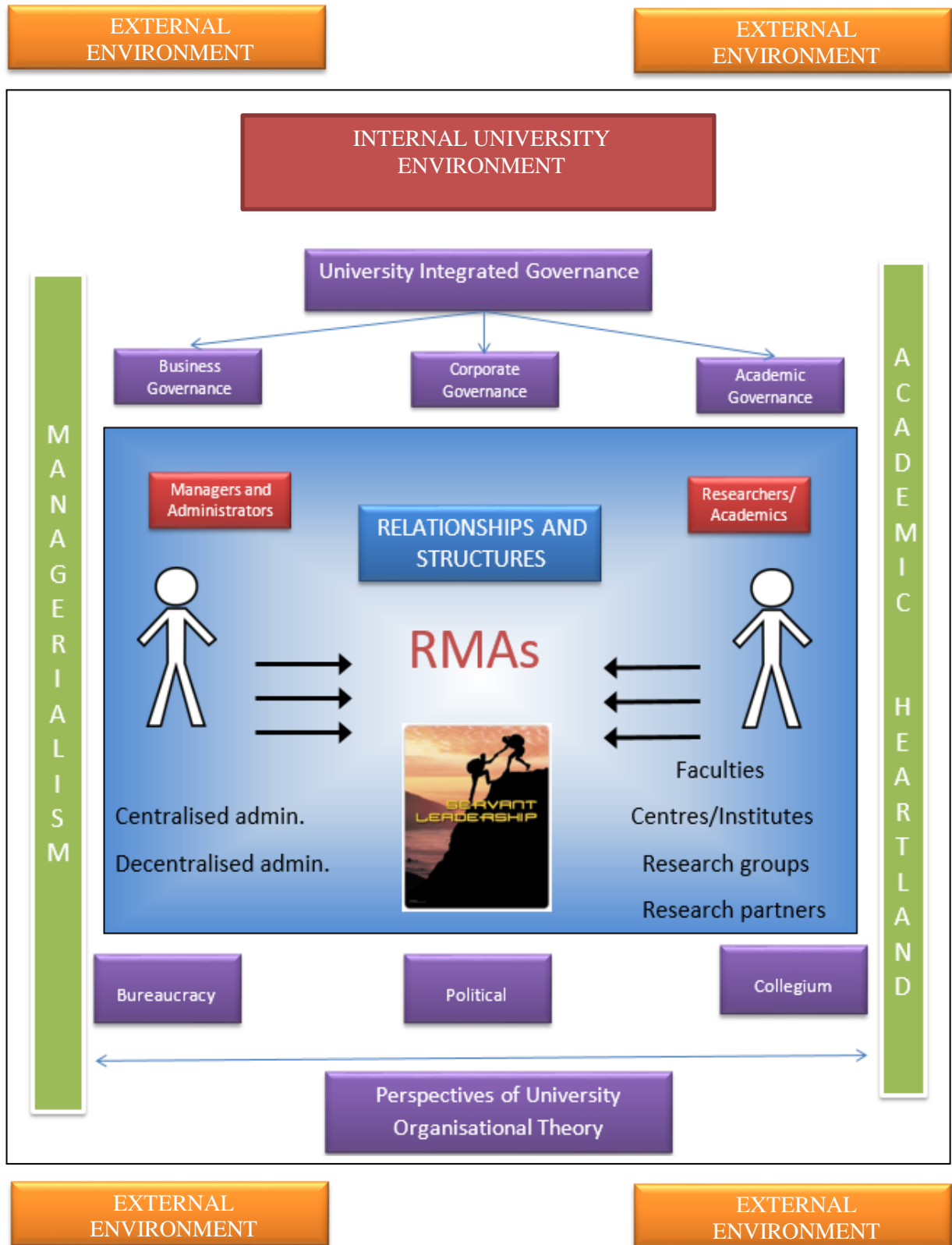


Figure 4.1: Illustration of the conceptual framework of university research management for this study

This convergence is represented by the arrows pointing towards the centre from both managerial/administrative domain and the researcher/academic domain. The core of this relationship is illustrated by an image that is often attributed to servant-leadership (originated by Greenleaf, 1977), as the key concept that governs RMAs in their primary role of addressing researchers' needs.

The interaction between managers/administrators and researchers/academics is examined within a university internal environment. The left hand side of the illustration is the business realm of the university, with managerialism, business governance and bureaucratic principles comprising one side of the university context. On the right hand side is the academic realm, with academic governance and collegialism comprising the other side of the university context. Generally, university researchers originate from the academic realm while RMAs generally originate from the managerial/administrative realm. However, within the *third space*, the more RMAs possess characteristics that are similar to those of researchers and academics, the closer the academic field and the management field become to each other (Shelley, 2010). Selected perspectives of university organisational theory and governance also feature in the illustration. The third pillar of the conceptual framework focuses on the university structures for research management. This pillar includes models of research management, strategies and set-ups in which relationships occur.

The interaction of the three pillars within a university environment can be explored from the *systems theory* perspective. This theory considers organisations as living

systems, made up of different parts, which are inter-related and are affected by all other parts in the system to form a holistic perspective of the entity (Mele *et al.*, 2010). Therefore, understanding the whole requires making sense of the individual parts and the way in which they interact with each other (Chikere and Nwoka, 2015). Systems theory within the context of universities considers the integration and synchronisation of different elements of the academic community, management and contextual realities, both internal and external to the university environment.

University research management finds its links with systems theory through the *theory of loose coupling*, as professed by Weick (1976), Perrow (1984), and Orton and Weick (1990). This theory acknowledges that universities are made up of loosely coupled systems (e.g. faculties, departments, institutes) each with their own agendas and objectives. Research management is considered the ‘glue’ that is holding the loosely coupled systems in a university together. It needs to constantly strike a balance between the strategic objectives of the institution and the loose functions that undertake research. On the one hand university research management may itself *be moulded* according to the extent to which university systems are loosely coupled. Some examples include: managing decentralised academic units; less emphasis on central top-down decision-making; and academic freedom. On the other hand, university research management may itself *influence* the ways in which various university systems interact together through the strategies, policies and structures implemented to support the research process. This means that understanding university research management from a systems approach requires an understanding of the inter-connectedness between the contextual realities, the relationships and the

structures that characterise it. These are the pillars of the conceptual framework whose individuality and inter-connectedness within a university context shall be discussed in turn below.

4.2 Pillar 1: Contextual realities

The first pillar of the conceptual framework concerns the *context* within which university research management takes place. A diagrammatic representation of the university context in a small island states is illustrated in Figure 4.2.

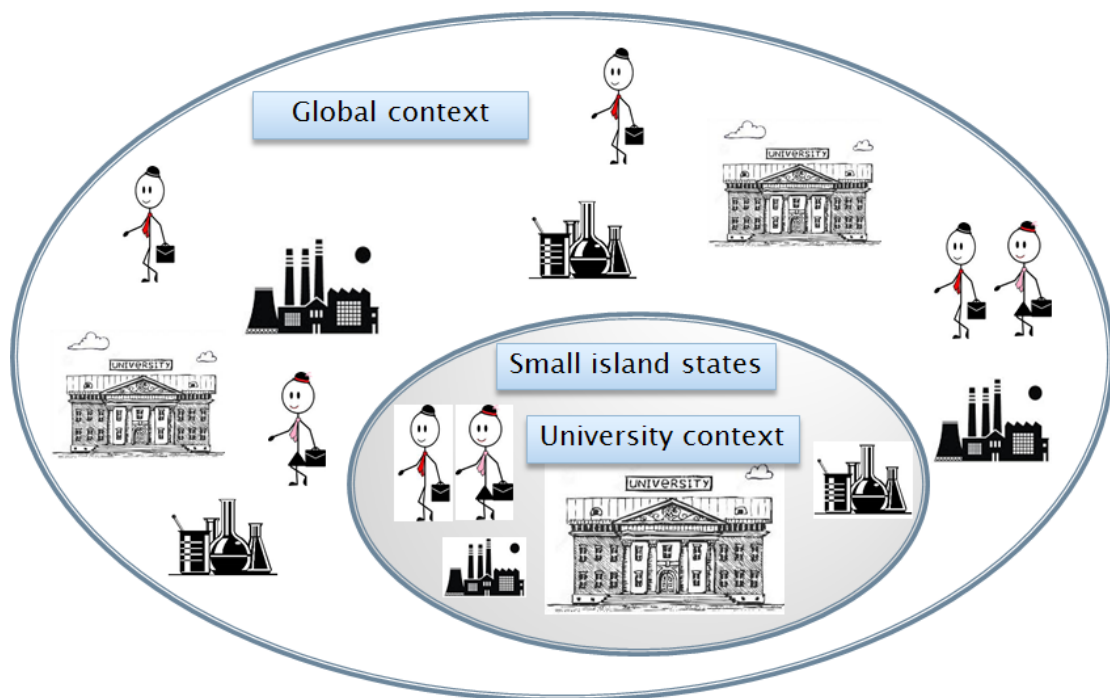


Figure 4.2: The context of university research management in small island states

A distinction between the organisational (university) and the wider external context (national/global) is necessary in order to understand the manner in which contextual

realities mould universities in small island states. Such a distinction is inspired by Hofstede's view that "culture at the national level and culture at the organisational level – corporate culture – are two very different phenomena" (Hofstede, 1993, p. 92). He argues that cultures exhibited at the *organisational* level tend to be acquired by socialisation between the organisation's members, whose practices may be consciously changed or adapted, as opposed to *national* cultures which can change only very slowly, if at all. At the organisational level, Ravasi *et al.*, (2012) argue that identities are constructed through cognitive categories that characterise the institution's own environment and that distinguish it from comparable organisations. This view purports that the engagement of collective practices with an organisation's history determines its identity while activating 'historical imperative' processes to act in continuation with an organisation's corporate memory. In the same way as historical artefacts are collected and displayed in museums, the organisation's history and its members' engagement, create an *organisational museum* that venerates historical identity. These become sense-making and sense-giving devices guiding the organisation's actions. Therefore, a distinction between the national and organisational contexts is relevant for this study, because they can both influence the way in which research management is conceived and operationalised.

A detailed review of the external context of small island states and specifically that of the three countries (national context) was presented in Chapter Two. This section shall now focus on the university context. First a discussion on the idiosyncratic nature of universities is presented. Subsequently theories that shed light on the functioning of RMAs within a small island state university are explored.

4.2.1 The idiosyncratic nature of universities

The need to develop a contextually-sensitive understanding of universities arises due to the fact that universities have developed characteristics which distinguish them from other organisations. These distinctive features include: multiple governance structures, numerous professional identities, variations in the adoption of norms and values among academics and non-academics, bureaucratic compliance, and significant external pressures (Bess and Dee, 2008). Consequently, managing universities is a complex exercise due to a number of factors.

First, universities need to reconcile the interests of various stakeholders and steer individual personalities to pursue the same goals (Oosterlinck, 2004). They are faced by a seemingly ‘herculean’ task to “transmit, preserve, and create knowledge through *teaching and research while simultaneously enacting social change*” (Manning, 2012, p. 25). This has traditionally been reflected in three core missions of universities: knowledge creation (through research), knowledge distribution (through teaching) and knowledge transfer (through the service to society) (Oosterlinck, 2004). These roles have been gradually integrated into the realms of university functions. The first academic revolution in the nineteenth century is deemed to have integrated research into the academic mission (Rodrigues, 2011). Universities are expected to allow both teaching and research missions and yet, conducting research within a university is not the same as conducting research within an R&D laboratory or a research entity (Hendriks and Sousa, 2013). It becomes more complex to manage research when having to concurrently manage teaching and the balance between the two. In addition, the second academic revolution in the twentieth century is deemed to have brought universities closer to societies through “the translation of research

findings into intellectual property, a marketable commodity, and economic development” (Etzkowitz and Webster, 1998, p. 21).

Second, the modern university environment is very dynamic as universities combine different roles in different scenarios, with varying levels of engagements and interactions (Uyarra, 2010; Flanagan *et al.*, 2010). Universities nowadays operate in a *constantly changing environment*, which is shaped by “pressure on funding, an emphasis on quality assurance and the increasing impact of globalisation, marketisation and new technology” (Taylor, 2006, p. 1). This puts universities “in the focus of intense academic and policy interest” (Daraio *et al.*, 2011, p. 5) but also makes them “crucial national assets [for] developing skilled personnel, attracting talent and investment and providing sources of new knowledge and innovation” (Green and Langley, 2009, p. 1).

Third, universities operate in a *triple helix*, based on a pattern of inter-dependent tripartite relations between universities, society and government (Etzkowitz and Klofsten, 2005; Marques *et al.*, 2006). All three parties have their own agendas. While on the one hand, universities aim to address their core missions, they may strive to do so as autonomously as possible. This is a significant challenge, particularly in national, publicly-funded, flagship universities in small island states, which can face constant pressures to advance the government agenda while not falling short of society’s expectations (Tight, 2006). This challenge needs to be addressed while attempting to maintain a balance between the three core missions. Otherwise, according to (Oosterlinck, 2004):

A disequilibrium can cause a university to become a research institute, a specialised vocational school or an economic actor. Although all of these have their own *raison d'être*, none of them can ever be a university. Without a balance of the three core activities, there can be no university. (p. 125)

Universities in small island states cannot afford a disequilibrium in favour of one role at the expense of another. If a university, particularly a national university, fails to address satisfactorily the needs of the stakeholders, the whole socio-economic ecosystem of the small island state can be jeopardised. The next section reviews the limited literature that exists on university research management in small contexts and sheds more light on the complexities of managing research in these idiosyncratic settings.

4.2.2 University research management in small contexts

It has already been argued that literature on research management in small island states is practically non-existent. The closest literature contributions relate to the concept of Predominant Undergraduate Institutions (PUIs), a specific term that is primarily used in the US to refer to those institutions:

With an undergraduate enrolment of 3,000 or less, that are independent, and that do not have the research administration benefits, resources, and structures available from central offices off-site. We further frame small PUIs as institutions that have a strong research-oriented and grant-active faculty and staff (Cuhel-Schuckers *et al.*, 2017, p. 81).

Although the three universities under study in this research are larger in terms of enrolment and research support structures, literature on PUIs is of relevance in view of the insights that could be generated for understanding the organisational context of small island state universities. Miceli and Albarado (2015) argue that the national research enterprise is not made up of only 'big' research universities with large

doctoral programmes and very high research volumes. A nation's research landscape includes PUIs which together can generate significant impact. While these considerations draw from a large country (the US), they shed light on the significance of small contexts and their role within larger landscapes.

However, whereas PUIs in the US make up a fraction of the wider research landscape, universities in small island states represent the majority of the country's research landscape. Indeed, a major difference between PUIs and the small island state universities is that research and research management in the latter has a strong national dimension. On the other hand, PUIs are only small contributors to the entire research agenda of a large country like the US and hence they can only contribute towards the state-wide research enterprise that is spearheaded by larger research universities.

Despite this major difference, PUIs and small island state universities share several characteristics in common. Like small island state universities, PUIs are characterised by a heavy teaching load as the primary mission. Therefore, the development of suitable research infrastructures can be viewed as a luxury (Alenzi and Salem, 2007). This prevalence towards teaching to the detriment of research in small contexts can be attributed to: (a) *resourcing*: teaching being relatively cheaper than research, hence less resources are required; and (b) *tradition/psychology*: the research mission started being embraced by universities after the teaching mission, thus making it rather automatically a secondary mission in smaller contexts with limited resources. A heavy teaching load means that RMAs face a tough job to convince academics to

engage in grant applications as part of the search for extramural funding to sustain their research.

Another characteristic of PUIs that sheds light on the operations of small island state universities is that pertaining to selectivity decisions. Miceli and Albarado (2015) argue that a key to building a research culture at a PUI is to make it as inclusive as possible, so that all disciplines share a sense of collective purpose. Therefore, choosing between one discipline over another is often not an option in a small context, where bottom-up approaches replace top-down selectivity while the sharing of limited resources among the entire population of researchers may become a common strategy. The RMA in a one- or –few-person shop is often referred to as a *generalist administrator* since he/she is largely responsible for a range of tasks that are often managed collectively by a team of individuals in larger contexts (Cuhel-Schuckers *et al.*, 2017). This term is a mirror reflection of the term *multi-functional administrator* that is often used in small (island) states literature and which was introduced in Chapter Two.

As a direct consequence of multi-functionality, RMAs in a small context may inevitably experience stress in the form of *role overload* and *role ambiguity* in their jobs. Although these stressors are synonymous with the research management profession in general (Katsapis, 2012), they may be exacerbated by the characteristics of small contexts. *Role overload* arises with an increasing and unreasonable workload which is unsupported by available resources (Osipow, 1998). Limited opportunities for professional development, lack of training, a feeling of incompetence and a

feeling of working in isolation are all potential contributors to *role overload* for RMAs in small contexts. *Role ambiguity* can occur because of the expectations gap that may exist between what researchers expect from RMAs and what RMAs can actually provide (see: Atkinson 2002, 2005; Allen-Collinson, 2007; Erickson *et al.*, 2007). Role ambiguity could potentially contribute to role overload as the expectations gap can lead to the addition of new tasks to the RMA portfolio on an ongoing basis.

The configuration of organisational structures can also contribute towards multi-functionalism and work stress. The literature underlines the reality that research support structures in PUIs are very often centrally-focused as they tend to lack the monetary resources to support a more decentralised function (Temples *et al.*, 2012). As a result, the generalist administrator not only tends to undertake tasks pertaining to the centralised RMO, but also functions that a decentralised RMA would undertake at larger and more research-intensive institutions (Miceli and Albarado, 2015). This ‘remedy’ places a heavy burden on the generalist administrator and calls for additional resources to provide the required administrative support.

The extent of investment required in additional resources depends on the life-cycle of an institution’s research support structures. Cuhel-Schuckers *et al.* (2017) propose a five stage model for PUIs which is also of relevance to a small island state university context. First is the *Start-up* phase, which is often characterised by a lack of internal expertise and the general lack of a research culture. Second, is the *Development* phase in which a number of trained RMAs and certain basic procedures are in place.

However, in this phase demand for support may outstrip available resources and academics may lose trust in the RMAs if they do not deliver the expected support. The third is the *transitional* phase, which reflects the increasing maturity of the research support mechanisms but which are ‘not there yet’. Hence, there can be an element of dissatisfaction on the part of academics who are not fully supported in their research endeavours and on the part of RMAs who might not be given the necessary training required to provide a high level of service. The fourth stage involves the achievement of the *mature office*, where structures are no longer personalised and individualistic but formalised and institutionalised. Continuity plans are in place to accommodate staff training and possibly staff turnover with minimal disruption. Discussion revolves around increasing numbers (such as the number of extramurally funded research projects) and how growth is going to be managed. The model also includes a fifth stage, the *disruptive stage*. Disruption can occur due to restructuring, turnover of key personnel and economic crisis among others, which can cause significant impediments but which can also lead to enhancements.

The level of maturity of research support mechanisms vary between institutions depending on their contextual characteristics. According to Aubry *et al.* (2009) research management mechanisms are socially-constructed and their evolution must be studied along with their historical co-evolution within the context of which they form part. Research support offices may also experience characteristics that span across a number of stages. This movement may not necessarily imply forward progress but may move back and forth along one stage and another if progress is not

sustained or is not consistent. Developments in RMOs do not happen without the input of RMAs. The next section focuses on university RMAs within a context.

4.2.3 University RMAs in a context

The terms *generalist* or *multi-functional* administrator have already been used to refer to the typical RMA in a PUI or a small island state university. Cuhel-Schuckers *et al.* (2017) argue that irrespective of the volume of an institution's extramurally funded research projects and their size, it is still required to comply with all applicable rules and regulations attached to extramural public funding. Here one must observe that the administrative burden on a small country institution/PUI can prove heavy. This is also due to the fact that the rules and regulations of the funders are very often not tailored to address the circumstances of these institutions. For example, little attention is usually given to the fact that such institutions do not have the required capacity in place and that they require dedicated resources including time and funding to build it up. The RMAs working for such institutions need to "understand the 'soup-to-nuts' process of identifying, applying for, negotiating, managing, and closing out an award" (Cuhel-Schuckers *et al.*, 2017, p. 84).

In addition, RMAs working for institutions in small contexts may also face a problem of recognition. This problem can span on two levels: institutional and/or national. Within PUIs, the role of the RMA may not be widely understood and clearly distinct from other administrative roles at the *institutional* level. However, such role may be better understood on a *national* level due to the existence of RMAs in other, larger

(non-PUI) contexts. In contrast, in small island states, the problem of recognition is more acute, since RMAs are limited in numbers due to one or few universities in the country. Therefore, RMAs in a small island state university may face the added burden of not being professionally recognised at both institutional and national levels. The next section reviews two theoretical constructs that provide the basis for understanding better RMAs within a context, namely *Person-Environment (P-E) / Person-Organisation (P-O) fit theory* and *career adaptability theory*.

4.2.3.1 Person-Environment (P-E) / Person-Organisation (P-O) fit theory

Individuals' ability to adapt to the surrounding environment was identified by Cuhel-Schuckers *et al.* (2017) as one of the determinant factors that draw RMAs to work in a small PUI. This revelation invokes the relevance of the *Person-Environment (P-E) / Person-Organisation (P-O) fit theory*, which has been given significant attention by scholars for decades (see Dawis, 1992; Edward *et al.*, 1998; Muchinsky and Monahan, 1987; Schneider *et al.*, 1997). P-E/P-O fit refers to the "congruence, match, or similarity between the person and the environment/organisation" (Edwards, 2008, p. 168). P-E/P-O fit theories propose two broad types of fit: *demands-abilities fit* (where an individual's abilities meet the demands of the organisation) and *needs-supplies fit* (where the individual's needs are fulfilled by the organisation) (Morley, 2007). Congruence between organisation supplies and demands on one hand and individual abilities and needs on the other, contribute towards P-E/P-O fit that is manifested through job satisfaction (Schaffer, 1953; Katzell, 1964; Locke, 1976), vocational congruence (Holland, 1997; Dawis and Lofquist, 1984) and a positive organisational climate (Chatman, 1989; 1991). Incongruence can lead to a misfit

between individuals and organisations, which may contribute towards job stress and dissatisfaction (McGrath, 1970, 1976; French and Kahn, 1962; French *et al.*, 1974).

The P-E/P-O fit theory is of relevance to the conceptual framework of this study because it sheds light on the factors that enable RMAs to find congruence between their personalities, aspirations and needs with the environment/organisation (the context) they work in. Such congruence (or the lack of it) is mostly attributed to the distinction between *rational fit* and *relational fit* as proposed by Oh *et al.* (2014). Rational fit places an employee within an organisation and concerns rational and impersonal aspects of work (person–organisation and person–job fit), whereas relational fit places employees in a community and concerns relational or interpersonal aspects of work (person–group and person–supervisor fit). This distinction is of relevance because, as explained in the introduction to this chapter, the conceptual framework of this study includes both structures and relationships and contextual aspects.

A number of theories contribute towards understanding *rational fit*. Lewin's field theory proposes that behaviour is a function of *both* the person and the environment [$B = f(P, E)$] and not one or the other alone (Lewin, 1935; Lewin, 1951). Despite several criticisms to this theory, it has inspired further contributions that keep building on its underlying principles. In fact, Schneider's Attraction-Selection-Attrition (ASA) framework, while recognising the importance of Lewin's theory, suggests that the environment is also a function of persons and their behaviours [$E = f(P, B)$] (Schneider, 1987, p. 438). Dawis and Lofquist (1984) and French *et al.*

(1982) assert that there is no reason why both functions (behaviour and the environment) cannot co-exist. This implies that the environment and behaviour are mutually dependent on each other such that individuals adapt to their surrounding environment but the environment can also influence their adaptation.

Insights on the rational fit of employees with their organisational environment can also be generated through theories on stress and the demands-abilities / needs-supplies misfits. Stress arises when an imbalance is perceived between environmental demands and the response capability of the focal organism (McGrath, 1970). This imbalance can be exhibited in an overload (demands exceed capabilities) or an underload (demands fall short of capabilities) and gains significance when the individual believes that the consequences of failing to meet the demands are important. Perception, exhibition and importance are very person-dependent (subjective) and do not affect every employee in the same manner. A misfit between demands and abilities needs not only to be perceived by an individual but also to be considered important in order to lead to stress. Emphasis here is being made on the individual's expectations about the organisational environment. Hence, understating RMA's behaviour requires recognition of these factors and their subjective nature in the determination of rational fit with an organisation or structure.

Relational-fit acknowledges the importance of relationships and the community aspect of working in organisations (beyond a structural one). Werbel and Gilliland (1999) contemplate a person-workgroup fit as “the match between the new hire and the immediate workgroup (i.e. co-workers and supervisors)” (p. 217). This view of

P-E/P-O fit recognises the fact that employees fit (or otherwise) in an organisation depending on the people they relate with at the workplace (peers, supervisors). It proposes a ‘community’ view that gives weight to group performance, the collection of skills and interpersonal attributes that can serve as motivation (or otherwise) to P-E/P-O fit. An RMA may ‘fit’ (or otherwise) within a university not simply/only due to congruence (or incongruence) with the university structures and resources but also because of the relationship with co-workers/supervisors and his/her integration (or lack of it) within the group.

4.2.3.2 Career adaptability theory

While P-E/P-O fit theory sheds light on the necessity for congruence between a person and the environment/organisation, *career adaptability theory* provides deeper insights in relation to employee career development and well-being (Johnston, 2016). Career adaptability theory sees its origins in Savickas (1997, 2002, 2005) and Savickas and Porfeli (2012) who argued that career adaptability, rather than career maturity, is the central construct in career development theory. Savickas (1997) defined career adaptability as “the readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustments prompted by the changes in work and work conditions” (p. 254). Therefore, the career adaptability construct promotes the individual’s psycho-social resources to cope with and successfully manage occupational challenges, uncertainties, transitions and work traumas (Weigl *et al.*, 2010; Uy *et al.*, 2015), including those imposed by the context (Brown *et al.*, 2012; Coetzee and Stoltz, 2015).

This psycho-social perspective of career development is rather ground-breaking and wide reaching, since it asserts that individuals need not be passive in the face of contextual constraints (Tolentino *et al.*, 2014a). Proactive individuals with a high propensity to adapt are likely to seek opportunities that are congruent with their specific needs. According to Savickas (2011), this adaptation of individuals to diverse work experiences emanates from four dimensions of career adaptability, namely: *concern* (planning and being planful), *control* (being decisive and taking decisions), *curiosity* (being inquisitive and exploring) and *confidence* (problem solving and being efficacious). These dimensions are used by individuals to explore their work environment and to make adaptive transitions (Hirschi *et al.*, 2015).

Although the majority of research about career adaptability is closely associated with change and with how people deal with it in times of job insecurity, job loss, unemployment and economic crisis (Klehe *et al.*, 2011; Hamtiaux *et al.*, 2013), a niche group of researchers have viewed career adaptability from the perspective of employees who are still following a rather stable career path within the same organisation and career fields (Biemann *et al.*, 2011; Guan *et al.*, 2013; Ng and Feldman, 2007; Tolentino *et al.*, 2014a; 2014b). These employees are likely to experience *career entrenchment*, which is defined by Carson *et al.* (1996) as the employees' feelings of "immobility resulting from substantial economic and psychological investments in a career that make change difficult" (p. 274).

According to Zacher *et al.*, (2015), career adaptability is negatively related to career entrenchment. The more employees possess psycho-social resources that make them

more adaptable in the work environment (i.e. career adaptability), the less worried they are likely to feel about the socio-emotional implications of career challenges. This view suggests that individuals possess psycho-social *self-regulatory competencies* (such as being proactive and flexible) that shape career adaptability strategies and behaviours at work (Brown *et al.*, 2012). Therefore, the level of adaptability depends on individual personality and the capacity of self-regulation. However, Bocciardi *et al.* (2017) maintain that career adaptability resources, such as *concern, control, curiosity* and *confidence*, are competencies that can also be *acquired*. Therefore, individuals and organisations may engage in activities through which adaptability resources can be developed, including training, coaching and counselling interventions (Johnston *et al.*, 2013; Potgieter, 2012; Savickas, 2005).

By combining personality traits with career interventions to develop career adaptability resources, it is possible to develop a framework for understanding university RMAs in small island states. The small island state context can be associated with the concept of career entrenchment for university RMAs, since the insularity, the restricted labour market and smallness offer limited alternatives for career development to RMAs. These perspectives on career adaptability and entrenchment, and the possibility to acquire adaptability resources (personally or through interventions) complete the discussion on the context as the first pillar of the conceptual framework. The focus turns next on the 'relationships' in university research management.

4.3 Pillar 2: Relationships in university research management

The second pillar of the conceptual framework concentrates on the *relationships* in university research management. Relationships arise primarily between university RMAs and researchers in the undertaking of university research endeavours. Other relationships exist between the RMAs themselves; between researchers/academics; between RMAs and other university administrative departments; and between RMAs/researchers and funders of research. These interactions are first examined through two main concepts: (1) the *third space* concept (introduced in Chapter Three), which represents the playing field that combines the world of administrators/managers with the world of academics/researchers within a university (Whitchurch 2004; Whitchurch 2006; Whitchurch 2008a; Whitchurch 2008b); and (2) the *servant-leadership* concept, which purports that one must first serve, and then, through one's service, be recognised as a leader (Greenleaf, 1977). The discussion shall be supplemented with a review of power forces within a university and selected perspectives of organisational theory in order to provide a wider understanding of the complexities of relationships within universities.

Figure 4.3 provides a diagrammatic illustration of the relationship between RMAs and researchers that occurs within the *third space* but which has become fundamental for the recognition of RMAs as independent professionals and servant-leaders.

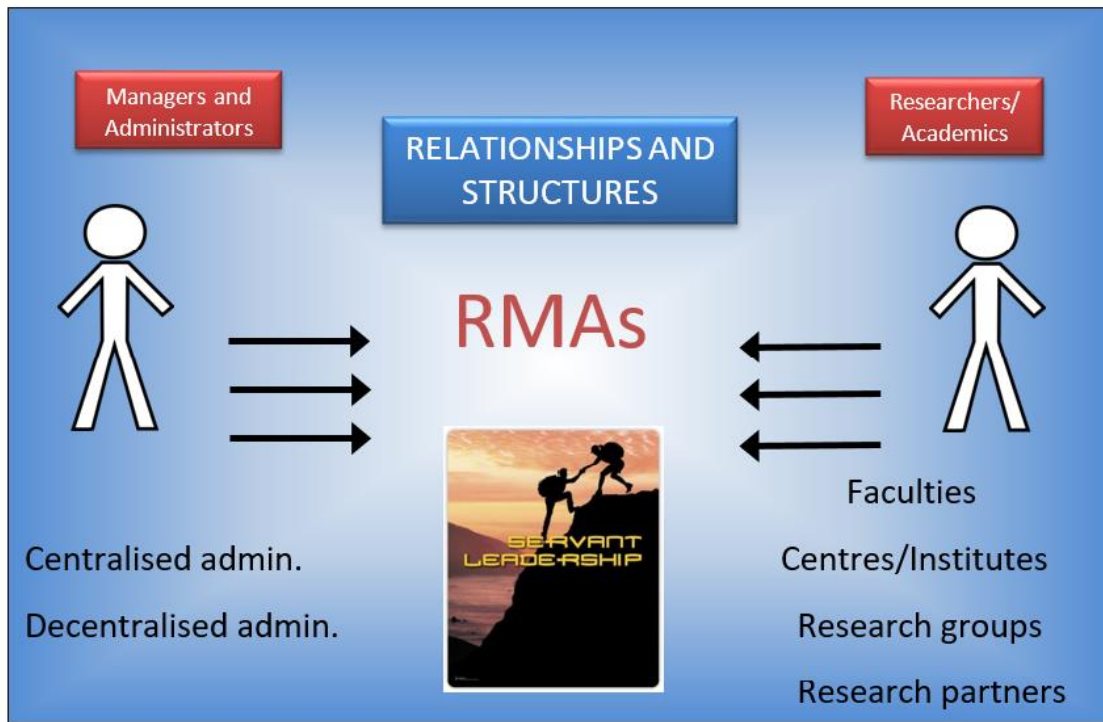


Figure 4.3: A diagrammatic illustration of the integration between the third space concept and the relationship between RMA's and researchers within a university

The relationship between RMAs and researchers is represented by two distinct domains at the far end of each other. On the one hand there is the *managerial/administrative domain* made up of managers/administrators, who are either providing their services in a centralised office or in decentralised offices within faculties, institutes and centres at the university. On the other hand there is the *academic domain*, which comprises researchers/academics employed by the university within faculties, institutes/centres, research groups and potentially in conjunction with other research partners. The domains converge towards the centre in a *third space* occupied by RMAs, whose role is a hybrid from the two extreme domains. RMAs are entrusted with managing and addressing the needs of researchers through the servant-leader role. The *third space* concept shall be examined first in the next section, followed by the servant-leadership concept in section 4.3.2.

4.3.1 University research management exercised within a *third space*

The basic tenet of the *third space* concept in research management is that, with the emergence of RMAs as separate professionals within universities, the traditional distinction between the academic domain and the management or administrative domain has become significantly blurred. According to Whitchurch (2008a), a *third space* has been created between the academic roles and the managerial/administrative roles (referred as ‘professionals’). University academics and professionals are nowadays “moving laterally across functional and organisational boundaries to create new professional spaces, knowledges, relationships and legitimacies” (Whitchurch 2008a, p. 1). Some examples of roles that fall within these new spaces include: working on institutional initiatives that require a combination of specialist and academic skills for policy-making; bidding for structural funding; and engaging in university outreach activities to promote research and other university initiatives. These roles are neither wholly academic nor wholly administrative, but hybrid roles that are increasingly being attributed to distinctly separate professionals, namely the RMAs.

The *third space* concept is diagrammatically explained by Whitchurch (2008b, p. 385) and reproduced in Figure 4.4. At one end of the spectrum she distinguishes between the generalist, specialist and niche functions undertaken by professional staff, classified as *bounded professionals*. These individuals, whose roles are largely prescribed within a university, are mostly concerned with continuity, adherence to processes and standards. At the other end of the spectrum she distinguishes between

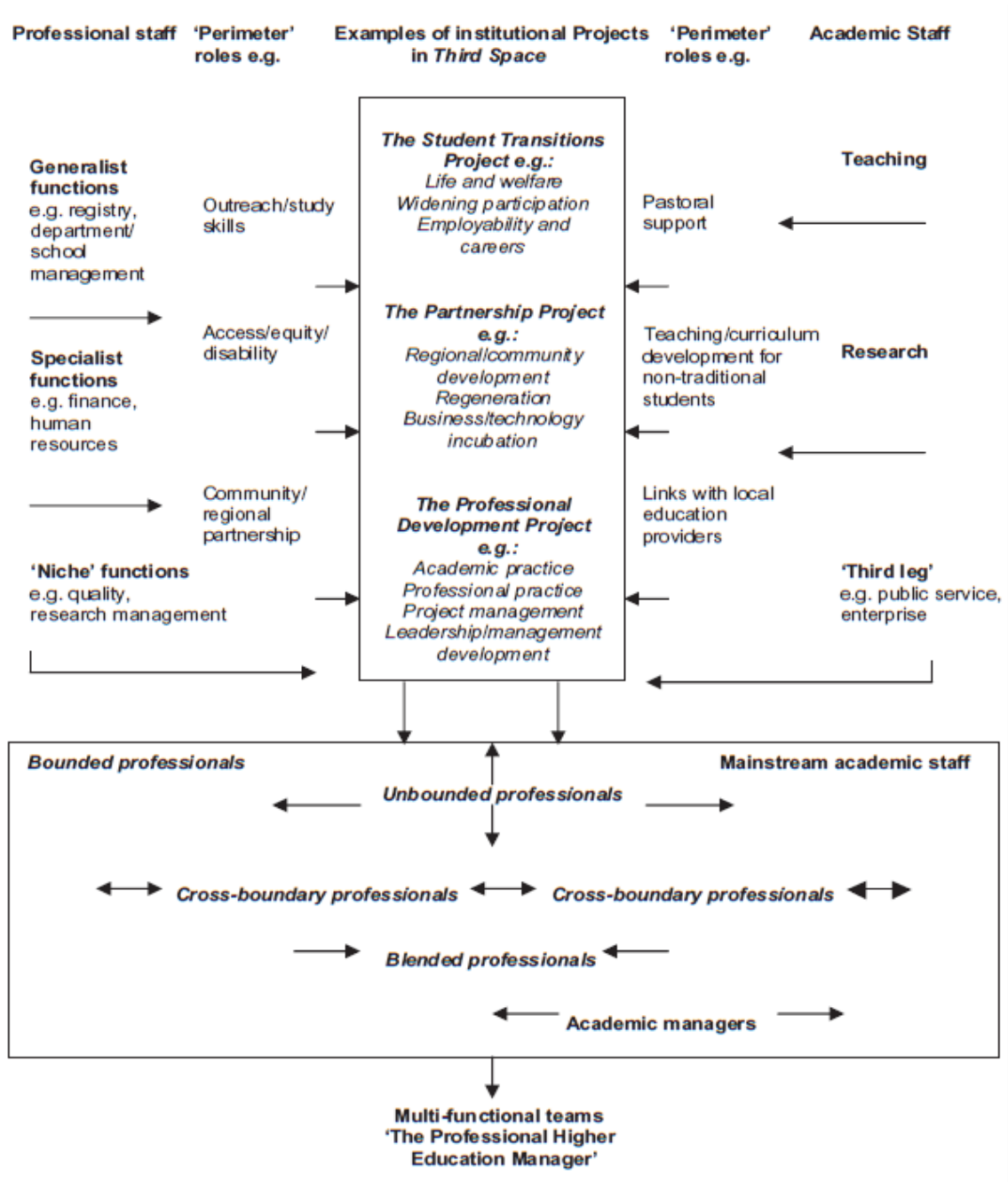


Figure 4.4: The emergence of a third space between professional and academic domains

Source: Whitchurch (2008b, p. 385)

the teaching, research and service functions undertaken by academic staff, which are classified as *mainstream academic staff*. The interaction of both ends of the spectrum occurs in the middle space through *perimeter roles* that tend to result in *institutional*

projects in the third space, as they bring together the qualities, characteristics and know-how of both ends. Eventually, their results cannot be attributed solely to either the academic or the professional staff but to both.

According to this concept, RMAs fill up the *third space* in different forms. For example, *academic managers* originate from the academic end but their working time is spent more in an office than in a laboratory, as they oversee the work of research groups, write grant proposals, negotiate with funding agencies and seek new research ideas and new collaborations with partners (Hackett, 2005). *Unbounded professionals*, are not limited by any specific boundary but rather they may focus on university-wide projects or research and development work that draws on their external experience and contacts. *Blended professionals* have dedicated appointments that span across academic and professional domains, such as in areas of regional partnerships, outreach and learning support. *Cross-boundary professionals* actively use boundaries for strategic advantage by capitalising on their knowledge of either side of the spectrum while exercising negotiation and political skills and interacting with the external environment. (Whitchurch, 2008b). The relevance of the *third space* concept for this study is evaluated in the next section.

4.3.1.1 Relevance of the third space concept for this study

Whitchurch's model provides a comprehensive understanding of the playing field in which university RMAs exercise their profession and it sheds light on five main implications that are of relevance for this study. First, the model explains why defining research management and RMAs is a complex matter because there is more

than one point of entry into the profession. This issue becomes even more complex because of the diversity in academic qualifications held by individuals who *enter* the profession. Moreover, in fulfilling the role, an RMA professional may take on various dimensions of *unbounded*, *bounded*, *cross-boundary* and *blended professionals*.

Second, the model suggests a fairly diverse range of professionals that could be exercising their role in the *third space*. This diversity could lead to contrasting views. On the one hand it can be argued that these professionals can all be considered as RMAs because they are exercising their roles in the *third space*. On the other hand, if RMAs are not purely academic or purely administrative staff, then everything that occurs within the *third space* may fall within the scope of the RMA definition. Consequently, “new forms of *third space* professional[s] will continue to emerge” (Whitchurch, 2008b, p. 394). Poli and Toom (2013) do not agree that all professionals who interact within the *third space* are RMAs but rather:

Research managers [and administrators] seem mostly to belong to the group of *blended professionals*, for their willingness to be active in extending their role beyond their given job descriptions and given the expanded field of expertise from which they have been recruited through dedicated appointments that span both professional and academic domains. (p. 7)

While there may be disagreement over whether all functions performed within the *third space* fall within the scope of research management, a third implication of the model emerges, which stresses the importance of providing a working definition that operationalises the role of RMAs. The working definitions for this study suggested in Chapter Three do not pose any restrictions on the type of professionals engaged in the *third space*. However, the extent to which the role of an RMA takes some or all

of the forms identified by Whitchurch depends significantly on the division of labour and availability of resources within universities.

The fourth implication is that the *third space* creates possibilities of lateral career mobility for academic and professional staff. This implication gains greater relevance with a small island state context in which, as stated earlier, careers may be entrenched, with limited opportunities for job mobility. However, the *third space* fosters opportunities for lateral movement, possibly within the same university, in which the academic or professional staff may be already engaged.

Finally, the *third space* concept also has potential implications for institutions. According to Whitchurch (2008b), organisational positions of staff have become more complex and can no longer be classified as *central* (referring to administrators) or *peripheral* (referring to academics) as suggested by Clark (1998). Rather, the *third space* has led to what Clark (1998) considers as the re-conceptualisation of the two terms *steering core* and *academic heartland* (referring to administrators and academics respectively). The fact that within the *third space* academic roles and administrative/managerial roles become more inter-twined may help in overcoming the systemic problem in reconciling the diverse agendas of both academic and administrators/managers within universities (Clark, 1995)

Irrespective of the origins of the university RMAs, whether from the steering core or the academic heartland, their role remains one of servitude and support on the one

hand and leadership on the other. The combination of both aspects of the role and the ways in which they mould the profile of RMAs into distinct professionals is well-captured by the servant-leadership concept, which is discussed next.

4.3.2 The servant-leadership role of university research management

As explained earlier, the understanding of the relationship between RMAs and researchers in research management is often attributed to the basic principles of servant-leadership. When this concept was originated by Greenleaf (1977), it had no connection with the research management profession. It was only later that the theory of servant-leadership was assimilated into the profession by authors like Krauser (2003), Vargas and Hanlon (2007), Waite (2011) and Gabriele and Caines (2014). Vargas and Hanlon (2007) argue that servant-leadership from a research management perspective has two primary tenets: first that research management is a *profession of service* and second that it operates within the *culture of research*.

With respect to *a profession of service*, the servant-leadership concept proposes that a servant-leader's "first priority is service, and the development of the ability to lead follows as we first earn the trust of those we hope to lead" (Vargas and Hanlon 2007, p. 47). In this regard, Parolini (2004) suggests that:

Servant-leaders are defined by their ability to bring integrity, humility, and servanthood into caring for, empowering, and developing of others in carrying out the tasks and processes of visioning, goal-setting, leading, modelling, team building, and shared decision-making. (p. 9)

These qualities of servant-leaders put RMAs in both a *servicing* role and in a *leadership* role, as they must serve the needs of the researchers on one hand, but they must also provide researchers with the necessary guidance without impeding the advancement of research (Krauser, 2003).

The second tenet is that the profession operates within the *culture of research*. Primarily this implies that RMAs are required to understand the needs of the researchers if they are to serve them and to lead them well. Krauser (2003) argues that many times, rules and regulations are seemingly created without considering the perspective of the people who must follow them. Therefore, the success of research management and the concept of servant-leadership depend on the ability of RMAs to address researchers' needs, and at the same time lead them through the research process.

In view of the fact that these two tenets underline the role of RMAs in addressing the needs of researchers, the concept of servant-leadership in research management has become closely associated with content motivational theories purported in the management literature. Krauser (2003) uses Maslow's theory of human motivation to explain how RMAs' understanding of researcher's needs drives them to exercise their servant-leadership role. Maslow's theory is based on the principle that it is the most powerful unsatisfied need that motivates an individual at different points in time, such that once a need is satisfied an individual seeks to satisfy a higher level need. Similarly, Alderfer's *ERG theory*, contemplates that physical well-being (*Existence Needs*), satisfactory relations with others (*Relatedness Needs*) and the

development of competence and realisation of potential (*Growth Needs*), are three categories of needs that RMAs may keep in mind when exercising their servant-leadership role. This becomes particularly relevant when applying McClelland's *acquired needs theory*, which purports that some needs are acquired as a result of life experiences. Therefore, due consideration needs to be given to RMAs' life experiences emanating from university interactions and relationships.

The relevance of content motivational theories to research management can be better understood with reference to real case examples concerning research and researchers. For example, applying Maslow's hierarchy of needs, a researcher may, at a point in time, be struggling with a *basic need*, such as that of frantically trying to submit a high quality proposal on time. In other instances, RMAs could potentially address: *security needs* of a researcher, by ensuring that rules and regulations are followed; *affiliation needs*, by making the researchers feel part of a team; *esteem needs*, by supporting researchers to increase the chances of success thus helping them to gain the esteem of fellow colleagues; and *self-actualisation needs*, by converting the esteem of fellow colleagues into institutional recognition.

While being relevant to the context of university research management, the content theories of motivation need to be interpreted with caution. For example, Maslow's theory assumes that the higher level needs cannot be satisfied before the lower level needs are satisfied. Within a small island state university context this means that, researchers may not be able to achieve higher level affiliation, esteem and self-actualisation needs, since the limited resources may impede them from satisfying

even the most basic needs. However, this is not necessarily the case, as is proven by the analysis of the Global Innovation Index in section 2.6.3.2 (Chapter Two), which shows that despite limited resources, small island states are capable of producing a higher proportion of output for the limited input resources at their disposal. Therefore, the researchers' lower level basic needs in Maslow's theory may not necessarily be satisfied (completely) in small island state universities before higher level needs may be addressed.

This section has laid the foundations for understanding researchers' needs and the role assigned to RMAs in this respect. The next section discusses briefly the power forces that are normally in place within a university environment and that have the potential to influence most or all internal relationships and behaviours.

4.3.3 The power forces within universities

Understanding relationships within universities requires first and foremost a distinction between three principal power forces present in most universities: the accountable body, the management executive and the academic professionals. Carnegie and Tuck (2010) propose an integrated 'whole of university' approach to university governance (the ABC model), in which Academic governance, Business governance and Corporate governance are integrated into a framework for effective university-wide governance (see Figure 4.5).

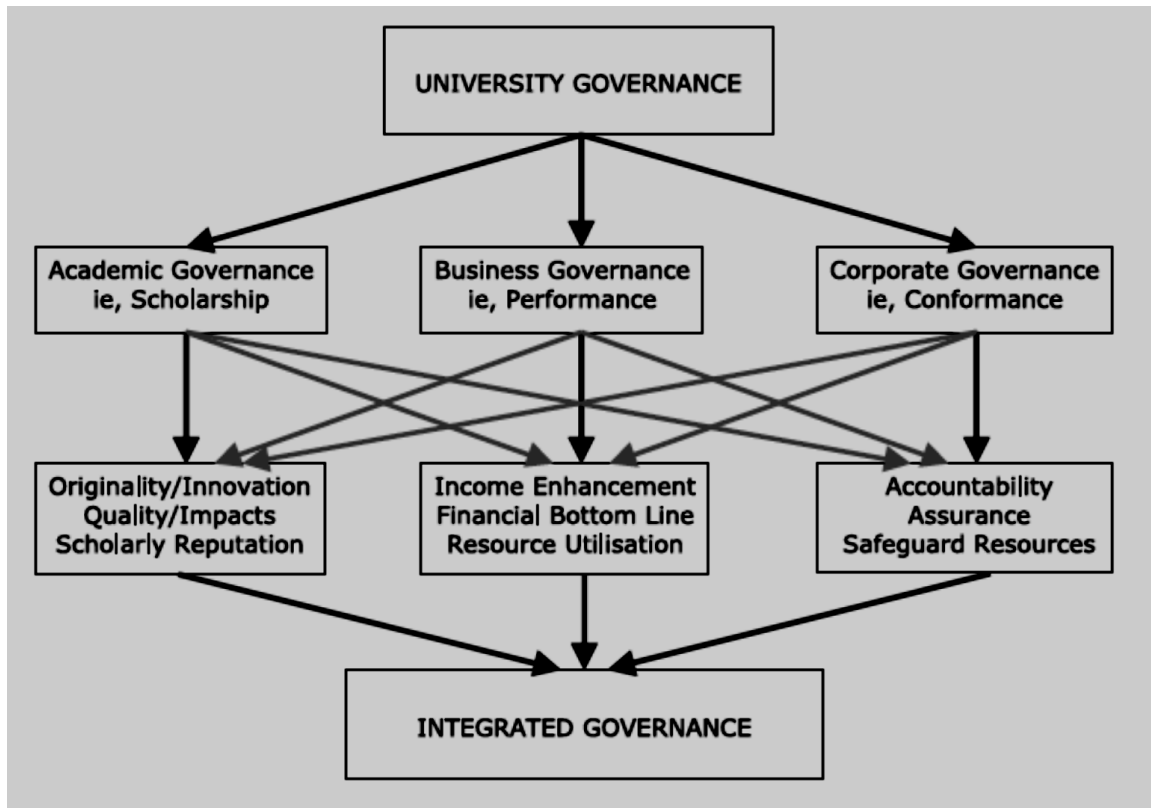


Figure 4.5: University integrated governance model

Source: Carnegie and Tuck (2010, p. 438)

According to this model, *academic governance* is entrusted to an academic board or senate and is concerned with the scholarship aspect of universities. This body influences decisions by intellectual/educational objectives, while policy and strategic decisions are driven by an academic oligarchy and its subordinate leader (the vice chancellor) (Bargh *et al.*, 1996). *Business governance* is exercised by a managerial body that is responsible for the implementation of a set of objectives pursued by a university on the basis of established rules. Business governance is concerned with the performance of a university in terms of efficiency, effectiveness and the quality of service provided for internal and external stakeholders (Fried, 2006). Managers control the destiny of the university within which they are appointed, while being

responsible to the intentions of government on behalf of society (Bargh *et al.*, 1996). Finally, *corporate governance* falls within the responsibility of the university accountable body, usually the Council or Board of Governors. In Carnegie and Tuck's (2010) model, a university's corporate governance is primarily concerned with conformance with accountability and assurance obligations. Ball (1994) argues that the accountable body steers the university at a distance (the concept of *distance steering*), as it oversees the university's objectives and ensures that its policies are appropriately aligned and are adequately managed to fulfil its mission.

This ABC model proposed by Carnegie and Tuck (2010) is useful not only because it identifies each element of university governance, but also because it underlines the fact that effective management of universities requires these power forces to be integrated and balanced with each other. An imbalance in favour of any one of the power forces may be the source of recurring tensions and sub-optimal outcomes for both universities and societies as a whole (Kennedy, 2003; Fried, 2006). For example, top-down management (*silo approach*) may not be desirable in a university since it compromises academic freedom and autonomy (Kennedy, 2003). However, an imbalance in favour of any one of the other power forces may also be problematic. For example, excessive emphasis on protecting academic freedom and autonomy with limited consideration to transparency, accountability and safeguarding of university resources may expose universities to severe scrutiny and excessive compliance procedures. Similarly, strict compliance requirements and excessive regulation of the academic endeavour is likely to kill initiative and discourage academics and researchers from embarking on new ventures.

It can be argued that the ABC model is linked to the concept of *third space* (discussed in section 4.3.1), since RMAs need to address the needs of mainstream academics under the direction of the academic governance body on the one hand, and to address the management and administrative practices as directed by the business and corporate governance bodies on the other. The next section examines selected perspectives of organisational theory that provide a framework for most relationships within a university environment.

4.3.4 Moulding university relationships: collegium vs. bureaucracy

It is acknowledged in the literature that university academics, support staff and administrators work in extremely ambiguous, complex and politically charged settings (Manning, 2012) such that it may be difficult at times to find standard patterns for understanding management practices in a university context. Perhaps the first step in understanding the world of universities is by exploring different organisational models within a university. There is a consensus that *collegium* and *bureaucracy* are the models that form the basis of all internal relationships within universities. These shall be explored and critically evaluated in the following sections.

4.3.4.1 Collegium perspective

The *collegium* perspective views universities as communities of scholars who acquire extensive and highly specialised knowledge after lengthy periods of education and

training (Bargh *et al.*, 1996). Although collegial behaviour may exist among administrators in a university, this model has traditionally been associated with academic communities, and traces its origins to medieval universities (e.g. Bologna, Oxford, Cambridge and Paris). A principal characteristic of the *collegium* is the restricted and often temporary hierarchical structure, whereby members are relatively autonomous and their power is variable and independent from the position (Manning, 2012). The notion of Rector or Dean as ‘*primus inter pares*’ still connotes authority and chain of command in a *collegium*. However, the incumbents of such positions of relative power are temporary and typically subjected to a welcome rotation (rather than careerist administrators).

The principles of the *collegium* may have several implications on university research management. First, RMAs who are not familiar with this concept may find it particularly disconcerting, especially given that in a collegial structure, power and authority are diffused among members and it may be difficult to determine who is in charge. Second, while a collegial set-up tends to be intrinsically individualistic, the academic authority is derived from the quality of academic work as assessed by peers in line with disciplinary criteria (Clark, 1983b). Therefore, researchers coming from this context would probably be highly resistant to any research evaluation exercises that a university might adopt which are not based on a transparent peer review system. Third, the *collegium* perspective is based on participative decision-making that is usually exercised through consultation among equals possessing the necessary distinguished expertise as recognised and respected by the community members. Therefore, any top down imposition of decisions by the top echelons of the university

would most likely be resisted by collegial researchers and academics expecting consultation and shared decision-making.

The *collegium* perspective is based on three fundamental pillars that are intrinsically built into the academic and research communities. First, *academic freedom* refers to the ability of an academic or researcher to be completely free in expressing ideas, even if these may initially be seen as ideologically or conceptually deviant. Academic freedom is often accompanied by *tenure* in a collegial model, whereby the promise of lifetime employment guarantees that academic freedom is permitted so that one's personal beliefs will not be the cause for dismissal. In addition, a *collegium* perspective allows faculties to determine policies, review programs and provide input on institutional matters through a variety of possible structural configurations, encouraging *self-governance* within an institute, faculty, centre or research team.

Although the *collegium* perspective may be hailed for its participative decision-making, the presence of multi-disciplinary communities and the creation of academic excellence, it is not free from criticism. This model is criticised as being 'conceptually naïve' and 'romantic' (Bargh *et al.*, 1996). It underplays the potential for competing interests among peers, the disengagement of faculty in institutional affairs and the possibility of individual members seeking to pursue personal agendas (national and international) at the expense of local, institutional objectives (Broadbent, 2010; Dunleavy, 2011; Manning, 2012). Moreover, the *collegium* model may be operationally dysfunctional because an over-reliance on committees and extensive discussions may lead to delays in decision-making (Lee and Piper, 1988). In the next

section, an alternative perspective is presented, that of bureaucracy, whose principles are often considered opposite to those of the *collegium*.

4.3.4.2 Bureaucracy perspective

The bureaucracy perspective, as professed by Weber (1946) and Selznick (1948), views organisations as rationally ordered instruments for the achievement of stated goals, where order is generated through fixed and official jurisdictional areas and rules. While in the *collegium*, academics seek freedom, tenure and self-governance, the bureaucratic perspective assigns value to rationalisation, regulation and hierarchy in universities. From this perspective, managerial intervention is necessary in the research process in order to address tensions, restore order and achieve control of the irrational processes that characterise the pursuit of the academic endeavour.

Bureaucracies adopt a strictly hierarchical structure, with authority mostly concentrated at the top of the hierarchy. Vertical communication is highly formal whereas horizontal communication tends to be informal. Standard operating procedures govern day-to-day operations and decision-making is rational, top-down and passed on from a central locus of power to lower levels of the hierarchy. The principles of bureaucracy contrast sharply with those of the *collegium* model presented earlier. Therefore, an RMA working in a *third space* between academics and administrators/managers, as suggested by Whitchurch (2008b), may face a colossal task of trying to amalgamate the principles of the two perspectives through the research management process.

While bureaucratic structures may be commended for order and rationality, the provision of measurable units of accountability and the elimination of effort and duplication, they are not free from criticism, especially by academic communities. Proponents in favour of collegialism argue that certain intrinsic qualities of the academic enterprise are incompatible with managerial values and systems (Manning, 2012). Clark (1983a) argues that academics are pluralistic by nature, who develop departmental procedures logically and naturally on the basis of varied structures of knowledge. Thus, any attempts by central management to impose uniformity and coherence among all elements in a university will be detrimental to the academic community. Bureaucracies can quickly lead to red tape which shackles flexible response and adaptability. It has been acknowledged earlier that universities and the research process are facing rapid changes, thus the rigid and inflexible principles of bureaucracies may be completely out of tune with the context in which they are or they may be implemented.

A comparison of *collegialism* and bureaucracies gives the impression that the two perspectives are at the far ends of a compatibility continuum within universities. However, the extent to which both perspectives can co-exist within a university is discussed in the next section.

4.3.4.3 Collegium vs. bureaucracy: Can they co-exist?

Although the analysis of the *collegium* and the bureaucracy perspectives demonstrates that the two are fundamentally opposed to each other, universities offer

the appropriate context to test the extent of their potential for co-existence. Schuetzenmeister (2010) claims that co-existence between the two perspectives is inevitable within a university environment. On the one hand, universities need to employ academics and researchers, hence collegiality is expected to remain a powerful perspective. On the other hand, the heavy demands from stakeholders for accountability, the need for rationality and the very own nature of management principles are also likely to maintain the concept of bureaucracies in vigour within universities.

The co-existence between the collegial and the bureaucratic perspectives in a university environment has traditionally stirred contrasting views among scholars. In his pioneering work on entrepreneurial universities, Clark (1998) argues that in order for entrepreneurial universities to be successful, they have to give up the traditional values of the *academic heartland* to join in the new managerialism. This view is rebutted by Kennedy (2003), who maintains that:

Unfettered managerialism is not the answer for universities of the future. Certainly, modern universities need to be managed, but that management needs to involve the ‘academic heartland’ as much as it needs to be guided by broader social purposes. (p. 67)

The involvement of the academic heartland in managerialism provides an explanation why universities continue to operate and carry out research despite the conditions bemoaned within the literature (Nickson, 2014). The co-existence of management and the academic heartland is legitimised by Roberts (2007, p. 362) who argues that a “clear space for research, free from bureaucratic, political or funding pressures has always been a dream, never a reality, and so the university of the past should not be romanticised”. Similarly, Hemlin (2006) contends that if management is used wisely

as a tool in research, it could support, enhance and stimulate research and creativity. Thus, co-existence between managerialism and collegialism becomes not only possible, but instrumental.

While these studies focus on minimising the predominance of collegialism within universities, other studies focus on seeking explanations of why and how co-existence with managerialism is possible. Kolsaker (2008) argues that co-existence is possible as academics are making sense of and are adapting to the changing university environment, without relinquishing their professional identity. In another study, Bennich-Björkman (2007) maintains that co-existence is possible as long as academics are able to exercise their academic freedom. Alternatively, by combining the academic with the managerial/administrative backgrounds into one role, the best form of co-existence between the two perspectives is possible. Hence, research management is best placed to promote and enhance co-existence since it brings together the principles of both ends of the spectrum, within the *third space* activities. Alternatively, such co-existence may be reflected in a third perspective to university relationships, the political perspective, which is discussed in the next section.

4.3.5 A political perspective to university relationships

While the *collegium* and bureaucracy perspectives are probably the first point of reference when discussing university environments, it would be imprudent to assume that they are the only ones that characterise relationships within universities. Baldrige (1978, p. 3) describes universities “more like a political jungle, alive and

screaming, than a rigid, quiet bureaucracy”. He observes that a *political* perspective (or *organisational politics* as it is often referred) provides a more realistic representation of the university environment, as it highlights potential clashes between various interest groups that compete for power and control over decision-making. It also implies that there can be a disparity between individuals or groups who may not have access to the same information.

Organisational politics are defined as “the organisational defensive routines that alter and filter legitimate information” (Seo, 2003, p. 11). Political behaviour relies mostly on *informal* means of information, which provide an understanding of the conflicts and co-operations and their impact on the employees’ performance (Vigoda-Gadot and Drory, 2006). It is said to be manifested in three elements.

First, the effect of organisational politics and the extent of engagement in them are highly tied to individual *personalities and perceptions*. Whenever employees perceive that they are being manipulated (particularly because of the unequal access to information) or that their interests are being jeopardised, they may have the tendency to engage in self-serving behaviour to safeguard their needs (Beugré and Liverpool, 2006).

Second, organisational politics are *context-related* (i.e. internal organisational dynamics). This means that organisational structures, cultural values and availability of resources mould the route that organisational politics can take (James, 2006). For

example, competitive behaviour tends to increase in organisations where decision-making processes are unclear or not transparent (Vigoda-Gadot, 2007). According to Gotsis and Kortezi (2010), individuals are more likely to engage in political behaviour when there is uncertainty in decision-making and performance measures. Institutions in small island states may carry this tendency of not formalising procedures, due to their size (Sultana, 2006) thus increasing the potential for political behaviour.

Third, organisational politics impinge on, and are influenced by, *relationships*. With reference to universities, Del Favero and Bray (2010) argue that professionalisation makes administrators more engaged in university governance, thus making academic staff less authoritative. This arises within a context (universities) where the academic culture has traditionally prevailed over the administrative culture (Markowitz, 2012) and where university administrators are often regarded by academics as ‘paper-pushers’ and ‘bureaucratic parasites’ (Coaldrake and Stedman, 1999). Therefore, in a university context with shared administration, conflict becomes practically an accepted phenomenon (Del Favero and Bray, 2005) and rather unavoidable. This exacerbates political behaviour due to the structural tensions that ensue.

As personalities, contextual factors and relationships influence and determine organisational politics, the need became more pronounced for universities to have leaders with awareness and expertise in the management of workplace politics. This is in order to address what Chircop (2008) calls ‘workplace toxins’. University RMAs acting in *third space* become an important means for negotiation, mediation and

conflict resolution. Hendriks and Sousa (2013) suggest that university research management entails more than establishing rules and ensuring compliance but also managing the tensions that may arise in the process.

Despite its relevance within a university context, the political perspective is also subject to criticism. First, this perspective can disempower those with less access to power while diminishing staff morale and healthy work environments. Second, the underlying concepts of this perspective are based on informality, divisiveness, competition and conflict, which are generally considered negative aspects of university life. Third, it promotes co-existence between academics and managers/administrators through management of conflict and compromises. It overlooks the potential for engaging in *third space* as a means for individuals and groups from the management/administrative realm and from the academic realm to interact on common grounds and to develop a better understanding of each other's needs through research.

Nonetheless, the relevance of the political perspective in conceptualising university relationships is significant, since political behaviour is intrinsically part of a natural aspect of human nature. This perspective is particularly useful in those contexts with a plurality of interest groups, such as a university. Moreover, the political perspective does not undermine the importance of the other two perspectives, as it recognises that both *collegium* and bureaucracies may contribute towards fostering the same political behaviour. Understanding university relationships requires a holistic view of these perspectives of organisational theories.

Focus shall now turn to the third pillar of the conceptual framework, that of organisational structures within universities. Structures are deemed to be influenced by both the context and relationships within an organisation, hence the classification as the third pillar of the conceptual framework.

4.4 Pillar 3: Structural aspects of university research management

The analysis of university research management within small island state universities is incomplete if the *structural aspects* are not addressed. Structures can be analysed through three inter-related elements: strategies, models and set-ups within an organisation. The inter-relationship is illustrated in Figure 4.6.

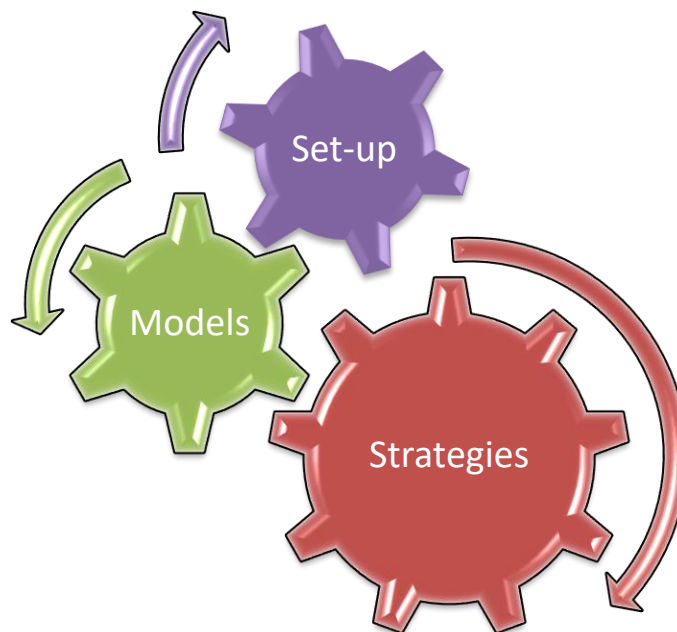


Figure 4.6: Inter-dependent elements of organisational structures in research management

The three elements are represented by cog wheels since they are inter-dependent on each other. The largest cog wheel, representing research management strategies, is what drives the other two cog wheels, one representing the models of research management and the other representing the operational set-up of the research management function within a university. Each of these elements is discussed in the ensuing sections below. However, the discussion first focuses, on the balance that research management needs to reach between the various objectives and stakeholders within a university context. Aubry *et al.*, (2009) contend that research management structures are embedded in their host organisation and that the two co-evolve over time. Therefore, understanding research management structures requires first an understanding of the organisational setting and the wider managerial framework. Sharrock's (2012) model of university management sheds light on the challenges that are faced by RMAs within universities from a management perspective.

4.4.1 University research management as a balancing act

Sharrock's model of university management is presented in three illustrations. It provides an underlying framework for university RMAs to manage the complex interconnectedness between the different internal and external elements impacting on university research.

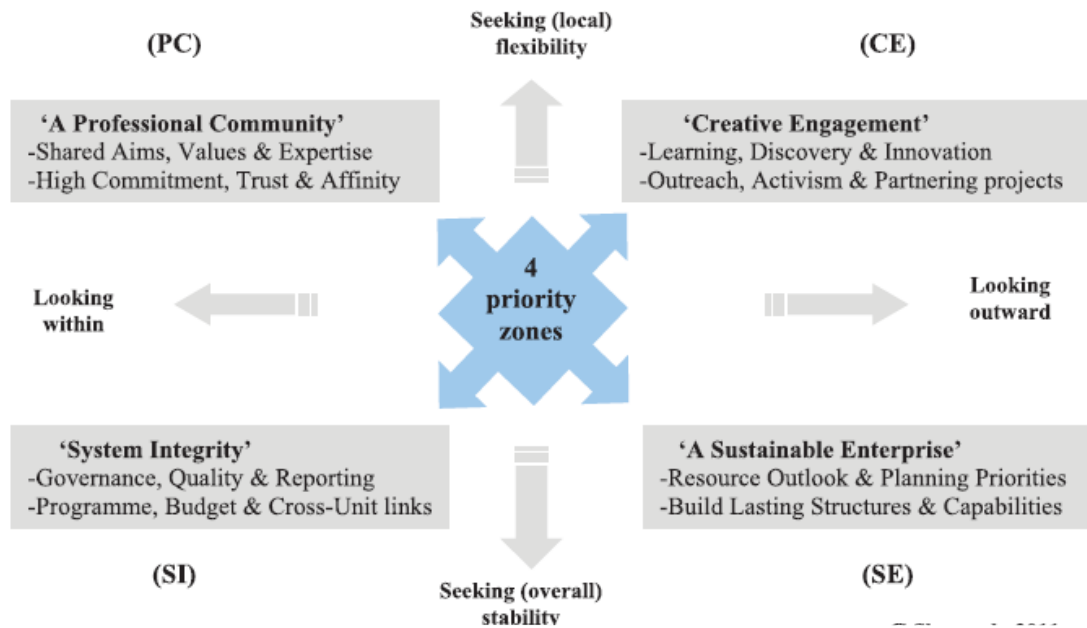


Figure 4.7: Four typical agendas for university management

Source: Sharrock (2012, p. 331)

In the first illustration, Sharrock (2012) splits universities into four priority zones. The first is the *Professional Community (PC)*, which refers to the academics within a university who deliver the academic programmes and related research as a community with shared aims, values and expertise. Second is the *Creative Engagement (CE)*, which refers to the diverse array of projects and activities in teaching, research and service to society that universities seek to pursue through learning, discovery and innovation. PC and CE are plotted on the top part of the model, indicating a *local* dimension to the activities. This dimension contrasts with the lower part of the model in which the *overall* dimension of the university is captured through *System Integrity (SI)* and *Sustainable Enterprise (SE)*. Whereas the former refers to the structures of authority, technologies, policies and procedures that enable universities to manage their programmes and support functions effectively, the latter refers to strategies and plans intended to develop and maintain

the capabilities needed to sustain the university's programmes, people and systems. Alongside the vertical scale, which distinguishes between local flexibility and overall stability, the horizontal scale ranges from an inward-looking perspective (PC and SI) to an outward-looking perspective (CE and SE).

Although this illustration may give the impression that the different priority zones are harmoniously distinct from each other in terms of local or overall level and inward or outward perspective, in actual fact it is rationalising the “multi-polar disorder” inherent in the pluralist make-up of universities” (Sharrock, 2012, p. 332). Thus the consensus on the university's general direction contrasts with the priority zones which tend to have a different focus and outlook, such that tensions between the priority zones is inevitable. Managing them depends considerably on the styles adopted by the management. In Figure 4.8, Sharrock superimposes the four priority zones over four agendas for university management action.

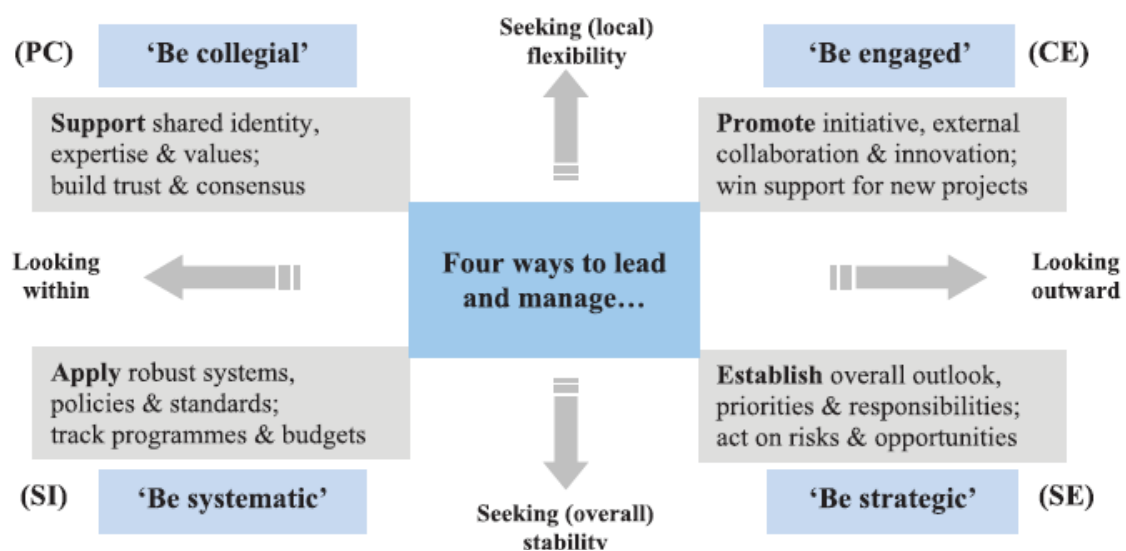


Figure 4.8: Four archetypes of good management for universities

Source: Sharrock (2012, p. 331)

This indicates that, possibly the greatest challenge for RMAs relates to managing groups located in opposite corners of Figure 4.7 and Figure 4.8. This is because a balance needs to be reached between apparently opposite objectives. Accordingly, there are four ways in which RMAs lead and manage research at a university. First, RMAs need to be *collegial* in support of the professional community of academics and researchers. This requires them to be *systematic* in order to develop an understanding of the principles of equality, peer review and shared decision-making embraced by the academic community. On the outward-looking dimension, RMAs need to be *engaged* in promoting university research initiatives, while assisting researchers in obtaining research funding and participating in collaborative projects. At the same time, RMAs also need to be *strategic* in their approach because they need to ensure that the overall outlook, responsibilities and priorities of the university in research are achieved.

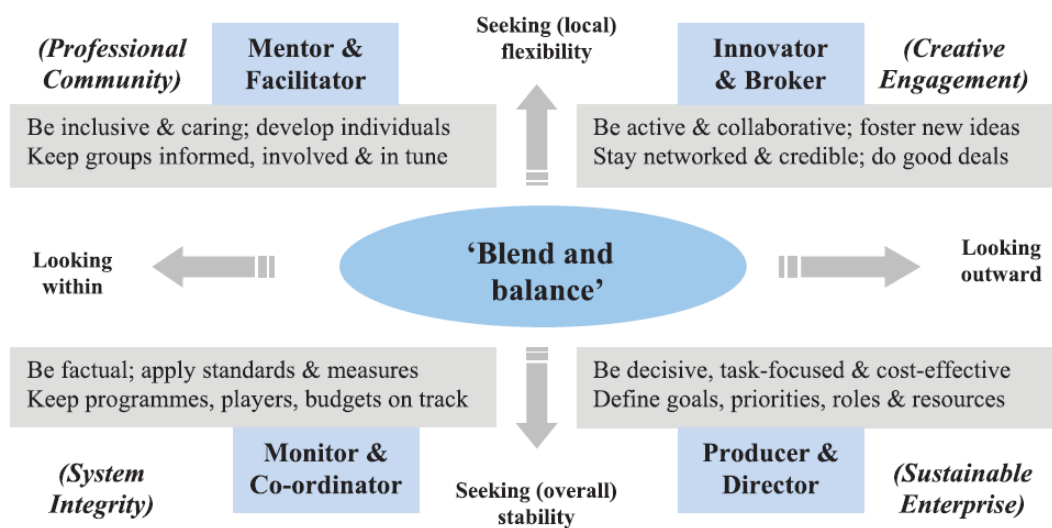


Figure 4.9: Eight management roles adapted to university management

Source: Sharrock (2012, p. 333)

Perhaps, the biggest contribution of Sharrock's model to research management derives from the third illustration of the model (Figure 4.9). In the third illustration, Sharrock adapts Quinn *et al.*'s (2007) eight management roles to his model and suggests that the manager needs to be first and foremost a *mentor and facilitator* to the professional community. This complements the third principle of research management as purported by Woodrow (1978) (presented in Chapter Three). In addition, the top part of the model suggests that managers need to be *innovators and brokers* to foster the creative engagement of the university through the intellectual capabilities of academics and researchers. This is attuned to another two principles of research management suggested in Chapter Three, linked to the RMAs' role in reducing friction while keeping the process moving (Eurich, 1967) and in serving as mediators-expeditors (Beasley, 1970). At the overall university level, the model indicates that managers need first to act as *monitors and co-ordinators* to ensure system integrity, and second as *producers and directors* in their quest to secure the university's sustainability. Probably these qualities are best captured in the research management realm through the theory of servant-leadership, since RMAs must act as both servants and leaders to the academic community.

Despite its contribution to the understanding of research management in complex university settings, the biggest criticism that can be attributed to this model is that it gives the impression that the university system works in harmony with all priority zones having clear demarcation that is reflected in distinct roles. However, university RMAs face a constant balancing act, "to moderate tensions and mitigate the risks that beset their institutions as different groups and competing agendas drag them in diverse, and often opposing, directions" (Sharrock, 2012, p. 332). If RMAs focus on

creating ideal conditions for researchers and research groups in each of the priority zones individually, they will inevitably damage the legitimate aims and interests of individuals or groups working in another zone. Therefore, RMAs “inhabit in an inherently contradictory space [and] will always be open to criticism and at risk of deadlocks whenever differing aims, values and interests of different constituencies intersect” (Sharrock, 2012, p. 333).

The challenge of achieving a state of perfect harmony between the priority zones has potential implications for university research management in small island states. Since this model was not conceptualised with small island states in mind, it shows that the challenges in managing universities and research in particular are not exclusive to small island states. Therefore, the latter can learn some practical lessons in managing universities through this model. In addition, this model exposes the complex multi-functionalism required from university RMAs. The various priority zones presented in this model imply that university research management needs to be adequately resourced. This is not always possible in small island states with scarce resources and limited possibility to benefit from economies of scale (Romer, 1986; Lucas, 1988). Finally, because of the tendency for political behaviour within the restricted context of small island state universities, achieving harmony and managing research within such contexts may not depend on the RMAs’ ability to find the right balance among the different priority zones but on the power that one priority zone may have over the other.

After exploring the relationship between university management and the roles of RMAs through Sharrock's three tier illustration, the next section will focus on research management strategies, models and structures as purported in the literature.

4.4.2 Set-up and structure of the research management function

As managerialism has permeated the university environment to take on various forms in response to the dynamic nature of universities, the research management function has also evolved continuously to address the dynamic needs of researchers, universities and stakeholders (Derrick and Nickson, 2014). This behaviour started to attribute a more strategic role to RMAs, and they have come to be increasingly regarded as key players in the research process, despite the fact that they do not carry out the research themselves (Lintz, 2008). Universities have therefore responded by setting up research management structures to address the demands of researchers more adequately, while planning research management strategies more efficiently (Hockey and Allen-Collinson, 2009).

A complexity that has been acknowledged in the literature with respect to the research management structures is that there are two levels of analysis of the role of research management: *Direct* and *Indirect* (Derrick and Nickson, 2014). It has already been argued (in Chapter Three) that this distinction adds to the complexity of understanding university research management, because there is no clear demarcation as to where the services provided by universities commence and stop supporting the research process. For example, an RMO can be considered as a direct research management function, set up specifically to support academics/researchers in

applying for research grants and in managing them. But, the functions of a registrar's office, IT support or faculty secretary can be considered to contribute indirectly to the research support process. The question therefore arises as to whether these *indirect* functions fall within the scope of university research management or whether they are peripheral functions which influence, but do not determine, the research management process.

The complexity of direct and indirect functions of university research management has been debated in the literature. For some time, a *linear* innovation process was deemed to exist between universities and industry or society. According to Hewitt-Dundas (2012), this process assumes that research and industry or society are two actors whose relationship in the research process is influenced primarily by their motivations, characteristics and values which can be communicated to each other. However, this linear relationship simplifies the more complex multi-dimensional process involving multiple actors in research (*non-linear*). As soon as research management studies started appreciating this fact, certain university functions started to fulfil both *direct* and *indirect research management* purposes. The knowledge transfer function is one such example. Derrick and Nickson (2014) argue that very few research studies regarded this intermediary function as *directly* feeding into research management (see Mom *et al.*, 2012; Volberda *et al.*, 2012), but rather as a set of *indirect*, macro-level variables including 'knowledge management', 'research culture' and 'organisational climate' (see Berbegal-Mirabent *et al.*, 2012; Ankrah *et al.*, 2013). This macro-level view tends to overlook the valuable role that research

management plays in facilitating research outcomes in universities through knowledge transfer practices.

The problem of delineating which university services can be considered as *direct* or *indirect* to the research management function is accentuated by the fact that the set-up of the research management function varies between universities. The RMO can take the form of a centralised unit or departmental research management support or a combination of both (discussed further in section 4.4.3.2). The need for a central function arises because research management *borrow*s expertise from a number of services, including legal, financial, procurement, human resources and knowledge transfer services. Therefore, the central RMO is likely to include representatives from these separate university services (which are more *indirect*), in addition to RMAs that are specifically employed (*directly*) to manage, administer and implement a research endeavour. In this regard, it is up to the university to decide whether *indirect* RMAs are physically located in a central RMO together with the *direct* RMAs or whether they provide their support to the research process from segregated offices. The location of both types of RMAs in the same RMO is possibly advantageous to researchers, since the RMO can serve as a one-stop shop to the university research activity.

A second major distinction in the research management function is whether it caters for both the pre-award phases (i.e. before a research proposal is accepted) and the post-award phases of a research project (i.e. during implementation and completion). Universities determine the extent to which they are willing and able to provide

research management services for both phases. If a university opts to provide post-award support only, it runs the risk that the research projects undertaken may not be selected on a strategic basis and they may jeopardise their alignment with the university mission and vision. On the other hand, if most of the support is provided at the pre-award phase, researchers may be discouraged from engaging in such projects because their time might be taken up by administrative demands instead of research activity.

The different dimensions of research management discussed in this section are probably better understood with reference to selected research management models identified in the literature. These are explored in the next section.

4.4.3 Research management models

A distinction between three types of models is made for the purposes of this conceptual framework: institutional management models, decision-making models, and models based on competitively-won research funding. Each model is critically appraised below.

4.4.3.1 Institutional management models of research management

Hansen and Moreland (2004), identify four institutional management models that are relevant to research management. The first is the *Stanford University Model*, which

suggests that a *portfolio* approach is adopted by universities. According to this model, RMAs focus on addressing the needs of individual researchers or a cluster of researchers, each one distinct from the other. While this model highlights the need for RMAs to specialise by supporting a specific group of researchers or individuals, this may not be possible in universities where resources are rather limited. It may lead to unequal distribution of work and expertise generation among RMAs, since specialised RMAs in one area may not be able to replace or support RMAs who are specialised in another area.

The second model, suggested by the *Dana-Farber Cancer Institute*, is based on the principle that the departmental RMA is the *facilitator* of research while the central RMA is the *mediator* in the research process. On the one hand, this model aims to create a 'seamless' grants process for researchers by decentralising the management of grants to departmental RMAs, while on the other hand central RMAs provide direction to university research and departmental RMAs. This model requires constant communication between the central and departmental RMAs, otherwise universities risk having a fragmented research management function or separate sub-systems, each moving in their own direction.

A third model of research management is the *Washington University Model*, which conceptualises research management as a *one-stop shop* in a centralised institutional structure. A single office is responsible for administering the grants process and each staff member has clearly defined responsibilities. This approach may be beneficial since researchers have one clear reference point to whom they resort. However, such

central functions may become overly-bureaucratic in terms of compliance requirements and diverging demands, such that they may become more of a *show stopper* than a one-stop shop.

Finally, the *Centre for Technology in Government at Albany Model* focuses on managing the direction of research rather than establishing processes for facilitating research. This model aims to inspire research organisations to identify emerging issues, develop human capital and take investment risks. While this approach assigns a more strategic dimension to managing university research, it may not constitute a sufficiently comprehensive strategy within a university environment. First, academics who seek to exploit academic freedom might not welcome approaches that direct or dictate their research agendas. Second, university academics/researchers are probably more receptive to processes that facilitate research, especially the administrative aspects, rather than processes that steer the research agenda.

The review of these four models sheds light on the need for RMAs to be dynamic and sensitive to the surrounding environment (Tauginienė, 2009). RMAs cannot assume that a model that works successfully in one university will work successfully in a different university and/or country. Therefore, RMAs in small island state universities need to be very cautious in selecting the appropriate research management model as they need to take into account the internal processes and the external factors impinging on the research activity. The next batch of models is focused on internal decision-making models which can shape university research management.

4.4.3.2 Decision-making models of research management

While the institutional management models of research management focus on different institutional approaches for addressing the needs of university researchers, the decision-making models focus on the way in which the research agenda is addressed within universities. Hazelkorn (2005) identifies three decision-making models relevant to university research management.

First is the *Centralised or top-down model*, whereby direction, strategies and priorities are determined primarily from a central function which are then communicated to individual researchers, research teams and departments to serve as guidelines for implementing the research agenda. It can be argued that this model sees its basis in the bureaucratic perspective of university organisation as the central function seeks to rationalise processes and set the direction. This model may be advantageous for small island state universities with resource constraints. By setting priorities and a clear direction, research management would be directing the limited resources towards those areas of priority that best fit the country's needs. However, it is likely to face resistance from academics who may feel that their academic freedom is jeopardised, particularly if they do not receive the required support from the RMO on the basis that their area is not a priority.

In contrast, a *Decentralised or bottom-up model* assumes that it is individual researchers, research teams or departments that set the research priorities. These are communicated upwards and pass through a distilling process to create an institutional

set of priorities that are accepted by the academic community, since it acknowledges the varying needs of academic units and research groups within a university. Within the context of small island states such a decentralised approach may prove both healthy and risky. By not adopting a top-down approach, universities in small island states may fail to perform on key aspects of national importance. However, by limiting the extent of central intervention in the operations of the academic units and research groups, bottom-up research management strategies may actually foster new developments, which otherwise would not have been possible had the direction been given from the top.

While the centralised and the decentralised research management approaches to decision-making are both possible in universities, a more reasonable model is probably that of a *combination of top-down and bottom-up processes*. In this model, priorities are set through the involvement of different levels or committees of university governance. Co-ordination is maintained at departmental or institute level, while a central RMO monitors the implementation of decisions and oversees communication. A typical set-up of this approach would involve a central committee, composed of representatives of each faculty (or institute), which performs strategic outlook exercises to determine university priorities. Members of the faculty or institute are given the possibility to contribute to the exercises via departmental or faculty discussions. This approach is probably better suited to universities in small island states and may reflect more the political perspective of university organisation (as discussed in section 4.3.5). It recognises the fact that various parties have diverging interests in the university, such that research cannot be managed simply

through a top-down approach or by letting the various academic units and research groups set the agenda independently. A combination of bottom-up initiative and top-down direction is called for with the aim to foster an appropriate balance.

These three decision-making models represent a rather formal element in research management. Hazelkorn (2005) concluded that there are other more informal (political) factors that determine priorities which may over-rule or undermine university preferences. These include peer pressure, historical allegiances and perceptions of university members. RMAs need to be aware of the existence of these factors, as they may exert very powerful driving forces within the university environment. The last set of research management models, based on competitively-won research funding, is discussed in the next section.

4.4.3.3 Models based on competitively-won research funding

Most of today's large scale university research is likely to be carried out through specifically defined projects, often won competitively, which are funded either through internal allocations or external funding mechanisms and collaborations (Veltri *et al.*, 2009). Evaluative criteria, monitoring and reporting (Hazelkorn, 2003; Toom, 2018), combined with greater attention to managerialism (StClair and Belzer, 2007) and performance appraisal (Kirkland, 2005) have therefore become of critical importance.

Performance-based Research Funding Systems (PRFSs) (also referred to in this thesis as *metrics*) are an important concept introduced within the university research environment in recent decades. PRFSs are defined as “complex, dynamic systems, balancing peer review and metrics, accommodating differences between fields, and involving lengthy consultation with the academic community and transparency in data and results” (Hicks, 2011, p. 1). Although PRFSs in larger countries are used to evaluate research output and to distribute research funds among universities, within the context of small island states, these systems are likely to prove relevant in the allocation of funds to individual faculties, departments and research teams.

The rationale behind PRFSs is that they provide a competitive edge by rewarding the better ‘performing’ institutions or research groups, while stimulating the lesser performing ones to perform better (Herbst, 2007). The concept was originally introduced in the UK in 1986 through the Research Assessment Exercise (RAE), with more countries following suit. The concept was refined over time, particularly in the UK, with a shift from the RAE to the Research Excellence Framework (REF). Recently, in the UK the ‘metric tide’ was even given a new dimension with the possibility of introducing a Teaching Excellence Framework (TEF) aimed at incentivising and measuring high quality teaching, that would hopefully spill over into high quality research (Wilsdon *et al.*, 2015).

PRFSs are based on the premise that universities are more autonomous. Therefore, traditional ‘command-and-control’ systems are replaced by market-like incentives that have a more strategic management perspective (Kettl, 2005). This represents a

clear shift from policy implementation to policy formulation, whereby government becomes the ‘purchaser’ of educational services like any other contracting body. This calls, for more accountability from the parties involved, particularly RMAs, and contrasts significantly with the traditional methods of allocating funding based on the number of faculty members.

However, despite their benefits, PRFSs are not exempt from criticism. They are often challenged, since differences in the output measures do not always provide a clear reflection of the true research output. Moreover, they may not be applicable across all areas of research (Hicks, 2005), thus making comparison difficult and the allocation of funding complex and prone to criticism (Hicks and Wang, 2009). In addition, PRFSs require a high level of transparency and they may represent a tension between complexity and practicality. They are often based on a peer review method, hence they may be rather expensive and time consuming (Hicks, 2011), while causing undue stress, anxiety and pressure to perform (Sutton and Brown, 2014).

In addition, once performance-measures are established, there is the risk of them being ‘gamed’ for the benefit of some individuals (Corsi *et al.*, 2010). This refers to the risk that individuals identify potential loopholes in the PRFSs which provide a positive evaluation of research, simply for the sake of the appraisal mechanism and not for the true benefit of the research that is being evaluated. Moreover, PRFSs may appeal to ‘intellectual elites’ who enter into a competition for personal prestige, thus undermining the wider objectives behind PRFSs (Lee, 2007; Rafols *et al.*, 2012). This

requires a continuous revision of performance measures, which may add to their complexity and cost (Carr, 2011).

Empirical evidence on the benefits or otherwise of PRFSs on small island state universities does not feature so far in the literature. However, it can be argued, that small island state universities may stand to both gain and lose from introducing PRFSs. On the one hand, the underlying element of competition may instil a sense of achievement and stronger work ethic in securing a share of the funding. On the other hand, PRFSs may act as deterrents to researchers if they are not transparently run or if they are easily manipulated in favour of elite groups. One can argue that PRFSs in small island states need to form part of a well-designed research management strategy, which is tailored to the specific needs and characteristics of the small island states. The next section explores the principal research management strategies purported in the literature which can serve as benchmarks for universities in small island states.

4.4.4 University research management strategies

Despite the proliferation of research management activities within universities and their importance in supporting research, there is limited empirical evidence in the literature on effective strategies in university research management. In their systematic review on the role of research management in universities, Derrick and Nickson (2014) admitted that:

Although the original aim of this report was to investigate the existing knowledge base regarding the strategies and structures of research management, the major finding of this study was the lack of evidence regarding successful research management. (p. 33)

This conclusion may appear contradictory in view of the number of literature contributions which identify common characteristics of successful practice in research management (see Waite, 2011; Clausen, *et al.*, 2012; Chirikov, 2013; König *et al.*, 2013; Whitchurch and Gordon, 2013). However, Derrick and Nickson (2014) argue that studies on successful strategies in research management actually present suggestions and potential avenues which have not been empirically tested for their effectiveness. In view of this limitation, the research management strategies reviewed in this section are a collation of conclusions from various studies which are being selected for their deemed relevance to this study. These suggestions organised into two levels: a macro level, that is generic to universities in their approach to manage institutional research and one that is specific, pertaining to RMAs at the micro level.

At the macro level, three suggested strategies can be identified in the literature, which are relevant to this study. The first relates to the *flexibility of university policies* that enable researchers' autonomy and ease of engagement in research activities (Gjerding *et al.*, 2006). Overly-bureaucratic administrations and inflexible RMAs have been identified as primary factors that impact negatively on academic outputs (Bruneel *et al.*, 2010; Edgar and Geare, 2013). For universities in small island states this implies that RMAs have to strike a balance between advancing research and abiding by strict administrative procedures.

The second research management strategy is that recommended by Boardman (2009) who argues that a *good organisational structure* is essential for university research management. This is echoed by Decter *et al.* (2007) who suggest that central RMOs maintain a high degree of autonomy. This suggestion may represent a major challenge for RMOs in small island state universities because, as discussed before, close personal connections in small island states are very common and easier to develop. These may jeopardise the RMOs' ability to support the research process impartially to reach out to more researchers and for the wider common good.

A third strategy at the macro level relates to the *use of incentives and rewards* in the research process. Although financial incentives are the biggest motivators for desirable research behaviour (Derrick and Nickson, 2014), other studies (see Sá, 2008; Van der Weijden *et al.*, 2008; Martins and Meyer, 2012) suggest that non-financial incentives may also act as motivators. These include publishing papers in reputable journals, rewarding individual merit and receiving special commendations. Cole (2010) maintains that rather than the introduction of more complex and elaborate policies and procedures, "researchers need more financial support and less paperwork" (p. 16). Within the context of small island state universities, this implies that RMAs need to strike a balance between formalising the research process through policies and accessing more funding for university research.

Another three strategies can be identified at the micro level. First, researchers have shown a preference for RMAs that are *available and informal* in their approach (Hockey and Allen-Collinson, 2009). From a practical perspective, this means that

universities require RMAs that are technically competent and able to strike a balance between caring for the needs of the researchers and ensuring that targets are met (Sapienza, 2005).

A second strategy is the *promotion of shared values* between RMAs and academics/researchers (Drummond, 2003). One way of doing this is through the recruitment of certified RMAs (Roberts and House, 2006). This would elevate the professional image of RMAs and place them in a better position to serve and lead their academic colleagues. In addition, Chun (2010) suggests that RMAs engage in a programme of continuous professional development, as this would be attuned to the very core values of academics and researchers, in their continuous quest for knowledge and learning.

Finally, the literature suggests that university RMAs should *build contingency plans and maintain a high degree of flexibility* (Porter, 2005; Rutherford and Langley, 2007; Mom *et al.*, 2012). This would represent a move away from a regulatory model of managing research to a service-based model (Whitchurch, 2004) based on a good working relationship and a sense of community with researchers (Sivrais and Disney, 2006).

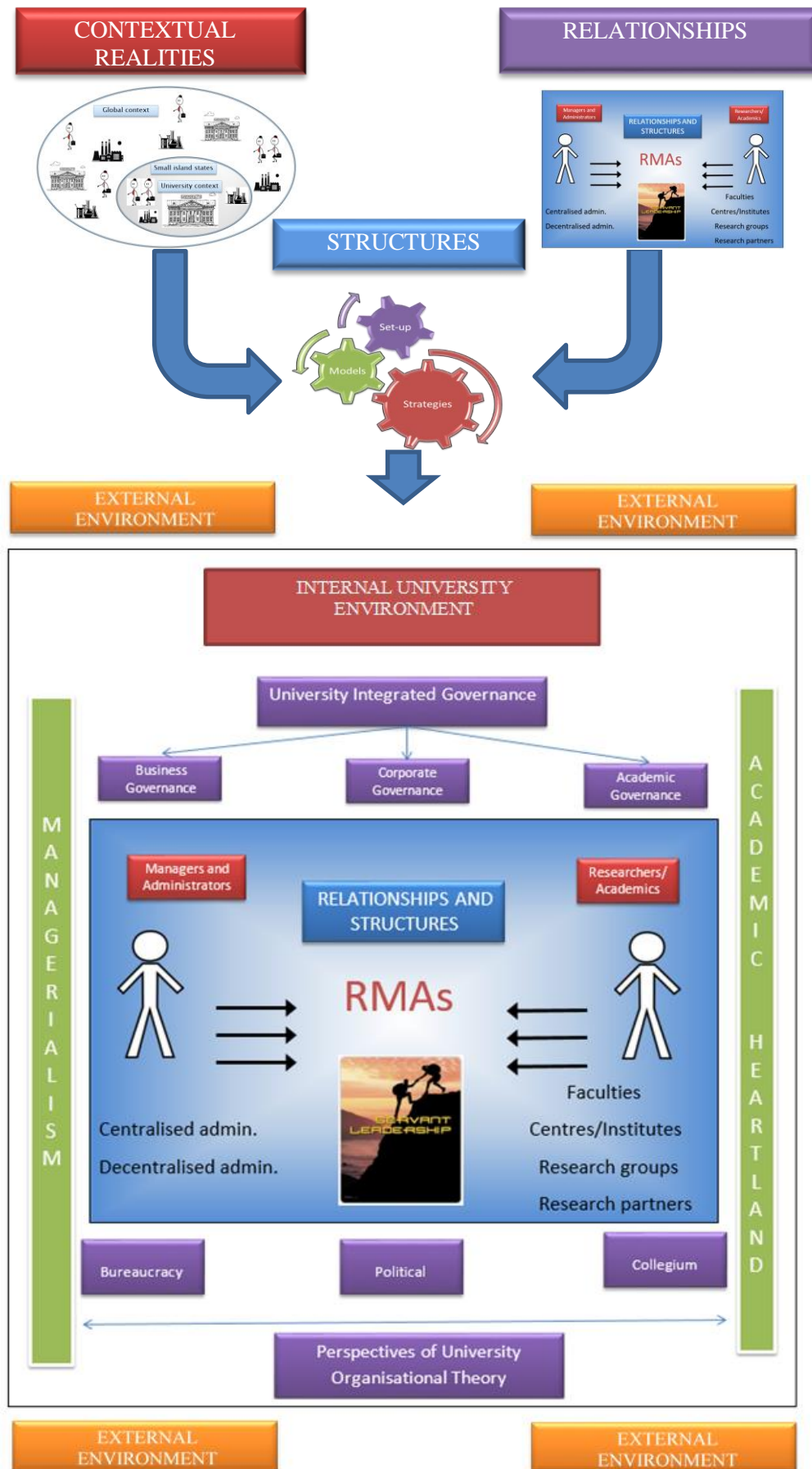
The section on research management strategies completes the third pillar of the conceptual framework pertaining to the structural aspects of university research

management. In the next section, all three pillars are integrated into one conceptual framework.

4.5 Integration of the three pillars into one conceptual framework

In this section, Figure 4.10 illustrates the integration of the three individual pillars and their components into one conceptual framework. The first pillar (discussed in section 4.2) represents the contextual realities, which span across three levels, namely the university level, the national level and the global level. The second pillar (discussed in section 4.3) represents the relationships in university research management, particularly those occurring within the *third space* between RMAs and administrators/managers at one end and RMAs and academics/researchers at the other. The third pillar (discussed in section 4.4) represents the structural aspects of university research management and comprises strategies, models and set-ups in university research management. These three pillars are inter-related and need to be considered together in the analysis of data collected on small island states within this study. The next section presents some propositions for research management thinking derived from the conceptual framework.

Figure 4.10: Integration of the three strands into the conceptual framework



4.6 Propositions for research management thinking

After presenting the three pillars of the conceptual framework, this section suggests a number of propositions for research management thinking which are of relevance to the small island state university context. First, it is crucial to underline the fact that the ways in which business ideologies permeate the university environment may potentially be conditioned by the idiosyncratic nature of small island states. Second, working within a *third space* in a small island state university warrants specific attention, in view of certain considerations like multi-functionalism, closely-knit relationships, limited human and financial resources, and narrowed opportunities to conduct organisational research. Third, the different perspectives of organisational models within universities are expected to be shaped by the specific context and they influence the co-existence between researchers and RMAs in terms of academic freedom, university governance and decision-making. Fourth, the specific context of small island states is likely to influence the roles of RMAs, the way in which they undertake their tasks and the qualities they need to possess. Finally, research management models and strategies may be specifically moulded to address the needs and characteristics of small island state universities depending on the university environment.

These propositions together with the analysis from the previous chapters imply that the intricacies in understanding university research management have several origins. Some emanate from within the profession itself, others originate from the context (institutional and wider context), while others are attributed to the nature of the relationships involved. These aspects form the basis of the overall investigation of

this study, which seeks to uncover the *factors* that shape research management in national, publicly-funded, flagship universities in three European small island states. This investigation is achieved by studying three inter-related aspects that emanate from the conceptual framework, namely: the *organisation* of the research management function in national, publicly-funded, flagship universities in three European small island states (RQ 1); the *challenges* faced by these universities in managing their research (RQ 2); and the *strategies* adopted by the participant universities in managing the identified challenges (RQ 3). The articulation of the research questions together with the background literature review and the results of this study promote a basis for further discussion on university research management within small contexts. Hence this framework shall be re-assessed towards the end of this thesis on the basis of the results to determine how it is moulded to reflect university research management in small island states.

4.7 Summary

This chapter concludes the literature review of this thesis. In the absence of specific literature on university research management in small island states, a conceptual framework has been specifically collated for this study. The chapter was split in four main parts, one for each pillar of the conceptual framework and one for suggesting a number of propositions on research management thinking, based on the conceptual framework for this study. The first pillar concerns the contextual realities faced by universities and RMAs in small island states. First, the discussion focused on the idiosyncratic nature of universities and why managing university research is a complex endeavour. Subsequently, a review of the literature on small PUIs was

presented since such contributions are the closest that one can get to that of universities in the small island states context. Finally the focus shifted to RMAs and their adaptation to the contextual realities. This included a discussion on P-E/P-O fit theory and about adaptability theory.

The second pillar concerns the relationships in university research management. The *third space* concept and the theory of servant-leadership were evaluated. Subsequently the balance of power in university governance was discussed, followed by a discussion about three perspectives of organisational theory, namely the *collegium*, bureaucracy and political perspectives. The third pillar focused on three main structural aspects of university research management, related to university research management models, set-ups and strategies. The next chapter presents the philosophical arguments and rationale of the methodological approach of this study.

CHAPTER 5

RESEARCH METHODOLOGY

CHAPTER 5 – RESEARCH METHODOLOGY

5.1 Introduction

This chapter explores the research paradigm within which this study is located. The rationale behind the choice of research strategies of inquiry and the thought process undertaken in establishing the research questions are discussed. Subsequently, the methods used for data collection and the process for data analysis are presented and critically appraised. Specific reflexivity is contemplated on the risks of personal bias due to the researcher's own involvement in the day-to-day research management at the University of Malta and the steps undertaken to enhance trustworthiness (validity and reliability) of the study. Ethical issues have also been taken into consideration. Finally, a discussion on the limitations of this study is presented. The research paradigm is discussed first, in the next section.

5.2 The research paradigm

Research paradigms are basic belief systems based on ontological, epistemological and methodological assumptions (Guba and Lincoln, 1998). The paradigm represents a worldview that defines the nature of the 'world' (ontology), the knower's place in it (epistemology), and the range of possible relationships to that world and its parts established by a particular data gathering and analysis procedure (methodology). *Ontology* asks about the form and nature of reality: How things really are and how they really work. *Epistemology* deals with the nature of the relationship between the knower or would-be knower (in this case the researcher as well as the readers of this

work) and what can be known. However, what arises out of this relationship depends wholly on the type of ontological definition. *Methodology* deals with the procedure of finding out whether whatever is believed can be known. This final assertion depends on the answers already given to ontology and epistemology, hence not any methodology is appropriate.

Three powerful paradigms (or philosophical stances) are often attributed to social science research. The *Positivist* paradigm looks for the one single reality that conforms to rational, known patterns with predictability. On the other hand, the *Interpretivist* paradigm (also referred to as post-positivist or social constructionist) acknowledges ‘multiple realities’ (Zinkel, 1979), as knowledge is apprehended by different individuals and does not result in one reality which is shared by collective understanding. Rather, individuals situated in the same scenario would likely construct reality differently from each other, as they interpret and talk about their own realities, each of which is considered to be important and valid. The *Post-modernist* paradigm takes the second paradigm even further and acknowledges that realities are composed of complex relationships with multiple and mutual causalities.

This research is located within the interpretivist paradigm, as it acknowledges the multiple reality of each university included in this study, and for which each context is unique. The study focuses on each individual university and aims to understand the subjective world that human experience creates in the complex world of universities as organisations. Through an in-depth analysis of each reality, the role of the researcher is to find out and discuss the different realities, subject to his own informed

interpretation of the context and prevailing circumstances. Epistemologically this is a process of *social constructivism* in which the researcher's own reality shall be constructed by eliciting similarities and differences between the three universities within their own unique contexts. The reader of this study shall also have the opportunity to interpret the reality and agree or otherwise with the researcher's point of view, although this interpretation is subject to filtering and personal bias, possibly even unconsciously.

In this study the researcher searches for the subjective nature of reality through the many 'truths' which, according to Lather (2006), are shared in communicative transactions in a dialogic discourse as the researcher seeks to understand the 'rules of the game'. This interpretivist approach is different to critical theory as it moves away from criticising the realities or their origin, and rather assumes that somewhere there is the existence of multiple truths. Bryman (2015) and Cohen *et al.* (2011) state that interpretivism is about understanding rather than explaining human behaviour. Emphasis is given to the interaction between the researcher and the interviewees.

Hence, it can be argued that this research is of a qualitative nature, whereby the emphasis is on "the qualities of entities and on processes and meanings that are not experimentally examined or measured ... in terms of quantity, amount, intensity or frequency" (Denzin and Lincoln 2011, p. 8). This research focuses on the socially-constructed nature of reality built through information, experience and relationships within universities in the selected small island states. It studies the intimate relationship between the researcher and the objects of analysis within situational

constraints that shape the inquiry. Hence, the adoption of a qualitative approach, which emphasises the ‘value-laden’ nature of inquiry and seeks answers that “stress *how* social experience is created and given meaning” (Denzin and Lincoln 2011, p. 8). Studying small contexts from an interpretivist perspective is not new to the literature. In their study on small states, Crossley *et al.* (2011) contend that through qualitative research and case studies in particular, priority would be given to research that is grounded in the own distinctive contexts and cultures.

The strength of qualitative approach is its ability to provide detailed descriptions of the ‘human’ side of a research issue (Cohen *et al.*, 2011). This is possible through the researcher’s ‘immersion’ in the field of study. It is argued that the inseparability of the researcher from the research is an essential feature that distinguishes social science research from natural science research (Clough and Nutbrown, 2007). Hence, a qualitative approach for this study investigates the research problem from the perspectives of the local players involved in university research management. The intention is to obtain in-depth and context-specific information about the values, opinions, behaviour and social settings that influence and determine research management in the selected small states, while allowing the flexibility to adapt approaches during the research process.

Qualitative approaches have not been spared from scrutiny and criticism. When compared to quantitative strategies, the strongest criticism to qualitative research is the inability to generalise results to a wider population without actually conducting tests on that population (Polit and Hungler, 1991; Myers, 2000; Woods, 2006) .

Consequently, qualitative studies are often described as ‘high-risk low-yield enterprise’, as they can be significantly time and effort consuming, especially when negotiating access, assembling a sample, developing a rapport and finding out what is ‘going on’ or what people are thinking (Woods, 2006). Moreover, the results may be impressionistic, subjective, biased, idiosyncratic and lacking in precision (Atkinson, 1990). However, (King *et al.*, 2003) argue that a qualitative study seeks to gather a diversity of perceptions and experiences rather than statistical representativeness.

In addition to the concerns about generalisability, qualitative strategies are criticised for their impossibility to be replicated, and hence re-tested to obtain precision and confirmation of the results obtained (Myers, 2000). A researcher studying the ‘same’ setting and context might not have access to the same interviewees, circumstances and conditions. If other interviewees are used, results may differ. Even if the interviewees remain the same, their perceptions and their interaction with the researcher over a period of time may change. Results may, moreover, depend on how open interviewees are in their responses to questions posed by another researcher with a different personality and approach. While being studied, interviewees may feel comfortable discussing and disclosing information to one researcher while remaining distant with another.

Issues related to lack of generalisability and replicability are mitigated in this study because the ultimate objective is that of providing a comparative analysis between the selected case studies at a particular point in time. This research is intended

primarily to stimulate further studies on research management in small island states and similar contexts, rather than to obtain results that are generalisable and equally applicable to all contexts. Stake (2005) argues that the objective of a case study is not to identify typical results and to generalise findings but to maximise learning about a specific case or cases under investigation. Moreover, the results of individual case studies may contribute to an archive of studies on a particular issue which may later be re-interpreted and further research can be conducted in a more elaborate and generalisable quantitative study (Ball, 1987; Hargreaves, 1988).

Scott and Morrison (2006) state that in interpretivism the researcher is concerned with re-describing or re-constructing accounts of reality into scientific explanations of social phenomena. This process requires the researcher to be reflexive and be aware of the way his/her own assumptions and positions have underpinned the understanding and interpretation of the topic (Karousou, 2010). Applied to this study, this means that the researcher's own personal experiences and involvement in university research management were not external to this research but worked together to round up the arguments of the study. According to Ball *et al.*, (2000) this is an arduous task as the researcher has to enter other people's lives and represent their stories, while maintaining abstract interpretation, conceptualisation and the retention of authentic meanings. The strategy of inquiry adopted to achieve the objectives of this research is discussed in the next section.

5.3 A case-study strategy of inquiry

A strategy of inquiry represents the means by which researchers are connected to the participants through the approaches and methods applied in the specific study (Denzin and Lincoln, 2011). Creswell (2008) identifies five strategies of inquiry that are normally associated with an interpretivist approach:

- (1) **Ethnography**: focuses on the sociology of meaning through in-depth description and interpretation of shared patterns of beliefs, expectations, and behaviours within a cultural or social group.
- (2) **Grounded theory**: is the systematic collection and analysis of data with the aim of generating theory to help understand human experience and phenomena. It develops theory inductively through an emergent iterative process of data collection and analysis by a participant-observer.
- (3) **Case studies**: involve an in-depth examination of a single instance or event – called a case – in order to gain a sharpened understanding of it. The case can be an individual person, an event, a group, or an institution.
- (4) **Phenomenological research**: examines how individuals make sense of the world around them and how the ‘philosopher’ brackets out pre-conceptions concerning his/her grasp of that world.
- (5) **Narrative research**: focuses on language as the medium for interaction and enables readers to ‘think with’ and ‘feel with’ a story, rather than explicitly analysing its meaning.

Although a study can have elements of more than one approach, the strategy of inquiry adopted determines the path which is likely to be followed in the research process. The strategy adopted in this research is that of case studies with the aim to

generate intensive and in-depth insights on the research management practices within specific university contexts in three selected small island states. Case studies fit the purpose of this investigation since they do not focus on numbers but on the empirical data that emerges from each selected case, in which multiple perspectives are solicited and ambiguity in observation tolerated (Hayes, 2006). Applied from an interpretivist paradigm approach, the case study strategy enables the researcher to acknowledge the existence of ‘multiple realities’ and also to ascribe and acknowledge individuality in each case studied as distinct and unique from each other.

This study does not adopt the grounded theory strategy of inquiry since grounded theory is more appropriate when little is known about a topic area and the researcher aims to develop theories that help explain an under-theorised area of human experience. Although the area of university research management in small island states is under-researched, this study examines already existing theories and literature on research management, universities, small island states and small contexts in order to explore how they are relevant (or otherwise) to the three participating universities.

Hayes (2006) argues that, to a certain extent, case studies are ethnographic in nature because they deal with real people doing real things in real settings. However, ethnographies focus more on the socio-cultural phenomena of specific communities, which is not exactly the case of this research since universities operate in an institutional context rather than a community. In addition, this study does not adopt a phenomenological strategy of inquiry, since the focus is not on the individuals but

rather on their collective experiences in research management in the institutionalised contexts of national, publicly-funded, flagship universities.

5.3.1 Why case studies?

The concept of ‘case’ remains subject to debate and the term ‘study’ is ambiguous (Stake, 1998). In fact different authors define case studies in different ways (Merriam, 1988; Stake, 1998; Yin, 2009). Stake (1998) maintains that a case study is both the process of learning about the case and the product of our learning. He argues that the more the object of study is a specific, unique, bounded system, the greater is the usefulness of the epistemological rationale behind the choice.

The researcher’s immersion into the daily experience of the participants within their own settings is perhaps the biggest strength of adopting a case study strategy of inquiry in this study. This ‘privilege’ allows for direct communication of the researcher with the persons directly responsible for research management within each university, thus allowing the possibility to concentrate attention on the way they confront specific situations and problems. Therefore, the case study strategy is problem-centred, small scale, but with significant potential for the researcher to develop and elaborate on a “contemporary phenomenon within some real-life context” (Yin, 1994, p. 1). In his study on small states, Bray (1991) suggests that the body of literature on small states will be enhanced if more case studies of individual systems are conducted as well as comparative analysis across small states. This study

follows on this suggestion and takes it further to investigate islands in a similar manner, using case studies to search for contextual detail.

The importance of contextualisation is upheld by Flyvbjerg (2011) who argues that:

There does not and probably cannot exist predictive theory in social science. Social science has not succeeded in producing general, context-independent theory and has thus in the final instance nothing else to offer than concrete, context-dependent knowledge (p. 303).

This idea of context-dependent knowledge is one of the main points of debate between quantitative and qualitative researchers, as the former “want their findings to be generalisable to the relevant population, [whereas] the qualitative researcher seeks an understanding of behaviour, values, beliefs and so on, in terms of the context in which the research is conducted” (Bryman, 2004, p. 287). This contextualisation of data in qualitative research has been subject to criticism due to the large amount of detail that it may generate. Lofland and Lofland (1995) warn against what they term ‘descriptive excess’ whereby the amount of detail can overwhelm the analysis of data. However, descriptive detail in qualitative research is provided to emphasise the importance of contextual understanding of social behaviour. This, according to Bryman (2004), means that:

We cannot understand the behaviour of members of a social group other than in terms of the specific environment in which they operate. In this way, behaviour that may appear odd or irrational can make perfect sense when we understand the particular context within which that behaviour takes place (p. 281).

In addition, Hitchcock and Hughes (1995) suggest that case studies are in fact useful when the researcher has little control over the unfolding of the events. The

researcher's role in case study research is to examine the blending of the events and their analysis while understanding the participants' perception of the events (*ibid*). Hayes (2006) argues that by engaging in the daily routine experience of the participants, researchers can 'freeze the frame' as they develop some well-informed reflections on relevant single issues, events and circumstances. Yet, despite this deep interaction with the participants and their settings, the case study strategy allows researchers to step back for evaluation and analysis as the data is collected, thus adding to the conceptual validity of the strategy (Flyvbjerg, 2011).

Initially, the case study strategy of inquiry has been widely used by anthropologists, psychoanalysts and clinical studies in medicine (Stake, 1995; Simons, 2009; Yin, 2009). More recently it has become more widely accepted by academics in management and business as well. This research technique is distinct due to its flexibility, detail, outcomes and the ability to fit into different research paradigms (Stake, 2005b). Predominantly, case studies are seen by the experts either as an *object* of the research [intrinsic] (Stake, 1995) or as a *strategy* of the research [instrumental] (Merriam, 1988; Yin, 2009). In *intrinsic* case study, researchers are keen to understand the particular case and the dynamics within it (Eisenhardt, 1989). In *instrumental* case study, the interest is spread beyond the study object and the latter plays a supportive, but important role in the overall understanding of the phenomenon (Stake 2005b). This second form of case study probably reflects best the nature of the case studies adopted in this research.

Although the case study strategy of inquiry has been used in both quantitative and qualitative research, its origins are mostly attributed to the interpretivist philosophical stance, as the researcher has the central role in collecting, interpreting and analysing data. A number of academics are of the view that a case study is a ‘soft’ research approach which often precedes a ‘major’ quantitative study (Robson, 2011). However, the legitimacy of case study research has increased over time and now there is also a diversity of views of what can be considered a case.

While not excluding the possibility that the phenomenon of university research management in small island states can be further studied through a quantitative approach, the qualitative approach is considered by the author as best suited to address the exploratory nature of this study. With literature directly on the said phenomenon being practically non-existent, this study aims to explore the field by focusing on three European small island states, that can be compared due to certain typical characteristics but which are also distinct from each other due to different geographical, political, cultural and socio-economic factors. A similar approach was adopted by Whitchurch (2008) who deemed a qualitative strategy to be more appropriate for her exploratory research in the identities of RMAs among different universities in the UK.

Hence the case study strategy in this research allows the researcher to interpret and make connections as well as to establish underlying relationships between different facets of the case. Each university studied is a bounded entity which may be further constricted by the researcher’s interpretation and the methods selected for bringing

this knowledge to the surface. In the next section the rationale behind the case selection is explained.

5.3.2 Case selection

The researcher's decision to explore the field through the study of more than one small island state is influenced by a debate which is extensively covered in the literature, that between single case study designs and multiple case study designs (Remenyi and Williams, 1998; Stake, 2000; Marschan-Piekkari and Welch, 2004; Lauser, 2008; Flyvbjerg, 2011; Yin, 2011). While Bromley (1986) suggests that an "individual case study or situation analysis is the bed-rock of scientific investigation" (p. 9), Miles and Huberman (1994) and Yin (2011) argue that the use of multiple case study research designs provides more compelling evidence and credible outcomes. The latter argument is probably more relevant when studying small island states and legitimises the instrumental nature of case study research adopted in this study as opposed to the intrinsic nature.

As discussed in Chapter Two, small [island] states are often characterised by certain factors which are beyond their control and which condition their functioning even though they may not be desirable or intentional. Hence, the multiple case study approach is favoured in this research in order to smoothen out the effect of the 'crippling' factors that often condition small [island] states. Moreover, through multiple case studies, the researcher addresses the issue of bias, which is inevitable in a study where he is an insider to one of the institutions that are being studied

(Owen, 2014). This is done by studying a number of small island states (three) not just one, thus exploring the field by making a comparison between them. The limited number of small island states in Europe determined the choice of ‘cases’ in this study.

Moreover, this study is also a factor of: (1) the willingness of a university to participate in the study; (2) the availability of the researcher’s financial resources; and (3) the time required to conduct case studies in foreign countries (including subsequent follow-ups). Initially, comparison with the National University of Singapore (NUS) was considered. However, following a series of communication with the university administration, NUS was not willing to participate in this study. In addition to the lack of willingness for NUS to participate in the study, the significant financial resources to conduct a study in Singapore represented an additional constraint, which would have conditioned significantly this study. This constraint, in addition to time and distance restrictions, necessitated a choice of case studies that included universities situated in countries (Cyprus and Iceland) which are closer to home (Malta). Such countries do not have an added difficulty of communication due to significant time-zone differences. Moreover, the three chosen countries are more comparable in terms of population size and geographical location.

Subsequently, the focus turned to Europe, initially to small states with a population of less than one million five hundred thousand inhabitants and that have a national, publicly-funded, flagship university with an active portfolio of research projects. The number of countries fitting these criteria was seven. However, they exhibit a wide variety of characteristics that could distort comparison if they are all included in the

same sample. For example, although Luxembourg satisfies most of the characteristics of small states, its location in central Europe, surrounded by large metropolitan countries that provide an inflow and outflow of people in and out of the country on a daily basis, make it a highly distinct case compared to Cyprus, Iceland and Malta, which are small islands at the periphery of Europe. Following several discussions with distinguished scholars in the study of small [island] states, (namely Professor Godfrey Baldacchino, Professor Ronald Sultana and Professor Lino Briguglio), it was decided to focus this exploratory study on university research management in European small island states. This narrowing in scope limited the possible number of case studies to three, thus enabling the study to be conducted to a certain level of detail. It also included an element of ‘convenience’ in the case selection, emphasising the need to explore what was possible and accessible (Yin, 2009). However, the three countries (Cyprus, Iceland and Malta) that fell within the scope of this selection offered enough typical as well as unique individual features that made a study of this sort viable and intriguing. In the next section the selection of universities as the unit of analysis of this study is discussed.

5.3.3 Selecting the unit of analysis

Besides the selection of small island states, it is also relevant to reflect on why this study is focused on universities and not on other research-oriented institutions. The latter could include colleges, polytechnics or research organisations. First of all it is necessary to clarify that the meanings attributed to universities and colleges are not necessarily the same in every country. In the US, there is little difference, academically, between colleges and universities. The terms are synonymous and are

often used inter-changeably, whereas in other countries, the term college usually refers to secondary schools or post-secondary education institutions, but not to tertiary level or higher education institutions. In non-US terminology, colleges often depend on a fully-fledged university to confer degrees and are normally smaller than universities, in size and scope. For the purposes of this study, the term fully-fledged universities refers to universities which offer a wide range of courses and research opportunities within a comprehensive list of disciplines. These are typical of national, publicly-funded, flagship universities found in small island states as the principal universities. In addition, for the purposes of this study, the term universities refers to institutions that offer a tertiary level of education, which include an active and wide research portfolio as distinct from colleges and similar institutions.

In addition, this study acknowledges that the scope and objectives of a university may differ depending on whether the university is publicly or privately funded. The primary objectives of a privately-funded university are more generally guided by the principles of profitability, financial sustainability and going concern, much like a business. On the contrary, service to society takes precedence over profit-making in public universities, meaning that their missions may cover a wider range of services that do not necessarily lead to profit. Table 5.1 provides a list of the publicly-funded institutions that have a university status in the selected small island states.

| Country | Name of University | Established | Faculty/ Sub-Units # |
|---------|---|-------------|----------------------------|
| | | | |
| Iceland | University of Iceland | 1911 | 25 |
| | Unierstiy of Akureyri | 1987 | 4 |
| | Holar University College | 2003 | 3 |
| | Agricultural University of Iceland | 2005 | 3 |
| | | | |
| Cyprus | University of Cyprus | 1989 | 8 |
| | Cyprus University of Technology | 2004 | 6 |
| | Open University of Cyprus (distance learning) | 2001 | distance L |
| | | | |
| Malta | University of Malta | 1592 | 14 |

Table 5.1: Publicly-funded universities in the three selected small island states

Source: www.topuniversities.com

It is necessary to clarify that although an institution may have the status of a university, its underlying objectives may differ from those of a fully-fledged university, as defined above. Reference is hereby made to both Cyprus and Iceland where, apart from a national, publicly-funded, flagship university, there are a number of smaller, more specialised publicly-funded universities, including one which provides its services exclusively through distance learning (in Cyprus).

The primary missions of a specialised university (such as the University of Technology in Cyprus and the Agricultural University of Iceland), revolve around offering education and high level research in the underlying disciplines of specialisation. On the other hand, the missions of the UCY, the UoI, and the UoM are directed towards three mutually reinforcing thrusts: education, research and service

to society that add to social, economic and national development in a wide range of subjects, incorporating social sciences, humanities and natural sciences.

This study acknowledges the fact that the combination of missions usually addressed by a fully-fledged national university implies that trade-offs are constantly required in order to accommodate the different demands and expectations of stakeholders. This is a major influential factor that needs to be kept in mind when investigating university research management in this study. After presenting the rationale behind the selection of case studies and the selection of the unit of analysis, the discussion now focuses on a critique of case study as a strategy of inquiry and the measures adopted to address this criticism.

5.3.4 Critique of case study as a strategy of inquiry

Despite its benefits, the use of a case study strategy of inquiry is open to criticism. A first critique is often posed by proponents of quantitative studies who support the generalisability of research findings (Goertz and Mahoney, 2009) and who criticise case study strategies for their lack of generalisability to wider populations. The issue of generalisability has already been discussed earlier in this chapter. Once again it is important to stress that from an epistemological position, a case study strategy of inquiry does not depend on the number of cases, but rather is contingent on the richness of theoretical justification (Montano and Szmigin, 2005). In the same vein, Stake (1995) questions the need to generalise case study research on the basis that cases are examined for their uniqueness and not generalisability.

The essential characteristic of case study research is its inextricable connection with the context and contemporary features, thus giving the opportunity to explore the dynamics which are present within the phenomenon. As many phenomena in the social world happen in particular conditions and at certain points in time, the main emphasis is shifted from generalisation to the provision of a deep or ‘experimental understanding’ (Woodside, 2010) as well as the knowledge about the processes.

A second point of contention in the use of case studies is the close connection between the researcher and the participants. Whereas it can be a major strength of case studies, it may also be considered a serious pitfall. According to Flyvbjerg (2011), case study research may be influenced by bias and may provide a distorted picture of reality. Applied to this study, this means that in conducting the case studies, the researcher had to be careful not to get too ‘fascinated’ by the characteristics of a particular university, interviewee or structure that could influence the collection of data and its comparability.

As argued before, some element of personal bias in this study is inevitable, since the researcher is an insider and is personally involved in the day to day research management of one of the participant universities. However, rather than considering bias as a pitfall in this study, it can be treated as an instrumental element that proliferates the researcher’s own reflexivity on the approach adopted (read further below). At this stage it is relevant to maintain that despite the unavoidable bias, certain insights into the phenomenon of university research management in small island states would have probably not been derived had the researcher not been so

immersed in the field, particularly since the area is relatively unexplored and not supported by the literature. During the study, the researcher moved up the ranks in research management at the UoM and also played a central part in the social construct of the reality of the area under research. Owen (2014) suggests that, in these circumstances, where the researcher has not only been affected by policies and structures within, but has also been highly involved with their creation and development, articulation of his/her awareness of the level of involvement is warranted. On the one hand, being an insider aided the direction and depth of the analysis in this study, because it provided familiarity and better understanding of concepts and situations encountered during the data collection and analysis process. But on the other hand, it exposed the researcher to criticism for his unavoidable bias. The measures summarised in the section 5.8 concerning validity and reliability reflect the researcher's awareness and action to mitigate personal bias in this study.

In addition to personal bias, there is the risk of potential institutional bias which may arise if one of the participating institutions has a direct interest in the outcomes of the study and may directly or indirectly influence the agenda of the study. In these circumstances, the researcher may end up having to find a compromise between what s/he would like to say and what the institution would like to see reported. However, a doctoral thesis is probably the most suitable medium for this exploratory study, since the researcher is allowed more autonomy and greater depth compared to any other forms of research (Murray, 2011; Phillips and Pugh, 2010) that could be commissioned by an institution. Therefore, the researcher has greater freedom to

focus on specific issues that might arise in the course of the study, without being overly-influenced by non-controllable agendas.

However, this freedom may lead to criticism since it can render the case studies essentially conservative (Walker, 1983). Case studies tend to give a pale reflection of many realities. The accounts given by such studies are almost always partial constructions of the reality, because of the difficulty to capture all the information and detail that can emanate from a case. Since social realities are always changing, by the time the data collected is published, some of it may already be out of date, hence the need for constant updating in order not to portray a false picture of the reality (Walker, 1983).

This situation has to be managed with care by the researcher since a case study in itself is already an 'intervention' into the daily life of the participants (Hayes, 2006). A case study may trigger concealed tensions between different participants and the researcher, particularly if hidden resentments and concerns are unearthed. Hayes (2006) explains that the kind of questions asked by the researcher may trigger change, since the respondent may end up thinking in ways which he/she may never have thought of. This may not always be welcomed by the institution where the respondent is an employee.

Nevertheless, the researcher's awareness of the inevitable bias arising from this strategy of inquiry and the particular case selection should enable the same researcher

to reflect on the data, strategies and methods to apply in countering the potential pitfalls. Although the validation strategies used are described in greater detail later on in this chapter, a brief summary is being given here.

First, different data collection methods were applied within each case study. By combining in-depth semi-structured interviews with document analysis, the risks associated with case studies were more likely to be mitigated, since one method confirmed or disputed insights generated from another method. Moreover, it enabled the exploration of the phenomenon from different perspectives, while adding to the richness and detail of the findings (Eisner, 1991). This is the concept of triangulation, whereby a combination of two or more methodologies are used in the study of the same phenomenon (Denzin, 1970). This concept was originally hypothesised by Webb *et al.* (1966) whereby more than one method is employed in order to add credibility and confidence to the findings. Bryman (2004) argues that although triangulation was originally very much associated with a quantitative research strategy, it is nowadays being operated within and across research strategies, including qualitative research.

Second, the views and opinions of an independent expert focus group were sought after data collection and analysis. This step was undertaken in order to obtain a more independent perspective of the findings and their interpretation. Moreover, a shift in the nature of the case study research from intrinsic (a focus on one case study, the UoM) to instrumental (a focus on the phenomenon) has widened the scope and perspective of the study. Therefore, the research incorporated factual findings from

the UCY and the UoI case studies, which the researcher had no control or direct influence over (in contrast to the UoM case study). This allowed a more objective analysis, further underpinned by the input of an independent focus group.

This and the previous sections explained the strategy of inquiry of this study and the rationale for selecting the case study strategy of inquiry. The unit of analysis, namely the national, publicly-funded, flagship universities of the three European small island states, has been identified and linked to the aims of this research. A critique of the case study strategy was discussed and remedies proposed in order to ensure more effective use of case studies. Such remedies were necessary in order to mitigate issues of bias and the inability to generalise results. The next section explains the process through which the research questions were formulated.

5.4 Formulation of the research questions

The formulation of research questions is at the core of every empirical inquiry and provides the basis for relevant data to be collected, resulting in a research contribution. The research questions enable the researcher to define the limits of the study, to identify intriguing issues that warrant an empirical investigation and to clarify the objectives of the study (Clough and Nutbrown, 2007). The formulation of research questions in this study was the result of an iterative process that involved multiple steps. Table 5.2 illustrates the process adopted in the formulation of the

| Component | What is understood from the literature | Objectives of the study | Research Question |
|--|---|---|--|
| The university research management function/ structures | <p>Institutions need to show a capability to design and operate new structures and processes for stimulating, building an managing research (Nguyen and Meek, 2015)</p> <p>The research management function can be set up in various ways (Hansen and Moreland, 2004) with varying levels of RMA involvement (Hazelkorn, 2005)</p> <p>Research management is a relatively young profession, reactionary, continuously evolving, multi-disciplinary and dependent on available resources (Thys-Clement, 2002; Poli and Toom, 2013)</p> | <ul style="list-style-type: none"> - Analyse the research management structures - Determine if a separate research management function exists - Evaluate what research is being managed - Identify who is involved in research mgt - Examine how the structures are set up | <p>RQ1: How is the research management function organised in national, publicly-funded, flagship universities in three European small island states?</p> |
| Challenges to manage university research | <p>Managing research in small island states universities poses some challenges in view of:</p> <ul style="list-style-type: none"> - the idiosyncratic nature of universities (Oosterlinck, 2004; Manning, 2013) - research management is a dynamic and continuously evolving profession (Whitchurch, 2004, 2008, 2013; Shelley, 2010; Trindade and Agostinho, 2014) - small island states have their own inherent characteristics that influence the way they operate (Baldacchino, 2004, 2005; King, 2009; Crossley, 2008) | <ul style="list-style-type: none"> - Explore challenges that impact RMAs - Explore challenges that impact institutions - Examine the type of challenges - Investigate the contextual factors contributing to the identified challenges | <p>RQ2: What are the key challenges faced by these universities in managing their research?</p> |
| Strategies to address the research management challenges | <p>Research management literature is characterised by the lack of evidence regarding successful research management strategies (Derrick and Nickson, 2014)</p> <p>Researchers may perceive the presence of management processes negatively. They seek more financial support and less paperwork (Cole, 2010)</p> <p>Researchers prefer RMAs that are available and informal (Hockey and Allen-Collinson, 2009)</p> <p>RMAs should engage in a programme of continuous professional development as this would be attuned to the very core values of academics and researchers (Chun, 2010)</p> <p>RMAs should build contingency plans and maintain a high degree of flexibility (Porter, 2005; Rutherford and Langlely, 2007; Mom <i>et al.</i>, 2012). This would represent a move away from a regulatory model of managing research to a service-based model (Whitchurch, 2004).</p> | <ul style="list-style-type: none"> - Explore macro level strategies adopted by universities in managing their research - Explore micro level strategies adopted by universities in managing their research - Evaluate the attitudes of university governance body and senior management - Identify the ways in which strategic decisions are reflected into the day-to-day management of research | <p>RQ3: What strategies do these universities have in place to address the research management challenges?</p> |

Table 5.2: Process of formulating the three research questions

research questions, which was largely based on the conceptual framework of this study.

First, the researcher conducted a thorough literature review on small island states, universities and research management (see Chapter Two, Chapter Three and Chapter Four), through which a gap in the literature was identified on this aspect. In order to address this gap an over-arching question was formulated with the aim of exploring the factors that shape research management practices in three European small island state universities. Subsequently, three components were identified which could contribute towards addressing the over-arching question, namely: (a) university research management structures; (b) the challenges faced by universities in managing research; and (c) strategies adopted by each university in addressing the identified challenges. Through this process, a number of objectives to be achieved by the study were identified, which ultimately enabled the formulation of three research questions, as listed in the fourth column in Table 5.2.

Throughout the process of question formulation the researcher followed what Clough and Nutbrown (2007) refer to as the *Russian doll principle*. This involved, “breaking down the question from the original statement to something which strips away the complication of layers and obscurities until the very essence – the heart – of the question can be expressed” (Clough and Nutbrown 2007, p. 37). This principle facilitated the formulation of the research questions as the researcher phrased and rephrased the questions so that each time the focus became more sharpened and defined.

Once the researcher became relatively satisfied that the questions were appropriately formulated and stripped of any unintentional conditioning, the *Goldilocks test* was applied as proposed by Clough and Nutbrown (2007). This was a process in which the researcher asked simple questions about the research questions formulated, including: ‘is this question too big?’, such that it cannot be tackled in this particular study; or ‘is it too small?’, such that there is not enough substance to the question to warrant investigation. Through this process, the researcher identified questions that were ‘just right’ for investigation in the particular settings and within the particular time-frames of the research.

After formulating the three research questions, the researcher then re-assessed the over-arching question to formalise the overall investigation in order to address the specific aims of this study. The next section shall now focus on the data collection procedures used in this study to address the research questions.

5.5 Data collection procedures

Semi-structured interviews were the principal tool for primary data collection in this study. They were also complemented by document analysis as a secondary data collection tool. Interviews entailed a one-to-one interaction with thirty-nine individuals, thus providing a large volume of verbal data. Document analysis involved analysing official documents containing written data pertaining to each university, covering not only research management but broader aspects. These included documents about university research in general, university strategies,

minutes of selected meetings, statistics and other ad-hoc documents. The aim was to enhance the data gathered from the interviews and enable comparison of the case studies.

The timing of the data collection process required careful planning as it entailed visits to two foreign universities (namely the UoI and the UCY). Two visits were specifically held at each university: at the UoI between 23rd and 30th November 2013 and between 10th and 18th October 2015; at the UCY between 5th and 12th October 2013 and 3rd and 9th May 2015. The purpose of the first visit was to obtain a general understanding of the setting and of the research management structures. This visit was particularly necessary in order to identify the persons to be interviewed and the extent of documents available for analysis. The purpose of the second visit was more formal and primarily for data collection purposes. A number of interviews were held and documents accessed successfully within the limited time-frames. Data collection at the UoM was more flexible. However, in order to ensure comparability and to limit distortion due to significant time lags, interviews at the UoM were held during the summer months of 2015, exactly in between the intensive data collection period at the UCY (April 2015) and the UoI (October 2015).

Moreover, in June 2017, after the data was collected and analysed, the researcher consulted with an independent expert focus group composed of four experts, namely, one professor from each of the three universities and the primary supervisor of this study. The focus group met in Malta and provided the researcher important insights and constructive criticism. This arrangement necessitated that the researcher covers

all the financial costs of travel and accommodation of the two foreign experts while in Malta, as well as the organisation and logistics on the day of the event.

The three professors were recruited specifically because they: (a) originate from one of the studied universities; (b) have contributed towards the study of small islands states, policy, management, and/or university literature; (c) are not involved in research management processes (directly or indirectly) within their own university; and (d) are completely independent from the study. Although a main pedagogic function of focus groups is their use as a tool for data collection (see Denzin and Lincoln, 2011), in this study it was used as a tool for enhancing the contextual validity of the data through the independent opinions of the focus group members and mitigating the risk of researcher bias.

The focus group was conducted over a whole working day at the UoM's Valletta campus on 2nd June 2017. Prior to this event, the researcher had provided the members with an outline of the study and a summary of the findings, namely the results tables presented in Chapter Six. This enabled the members to be well-briefed in advance on the study. During the event, a presentation was delivered by the researcher with the main emphasis being on the reflections on factors that shape research management in the universities covered by the study. The focus group discussion that ensued was based on these factors and therefore contributed towards clarifying certain aspects that were subsequently included in the main discussion of this thesis in Chapter Seven. The focus group discussion was audio recorded and subsequently transcribed by the researcher. This maximised the extent of interactive discussion without

missing out on any insights generated. In the next section the use of interviews as the primary data collection method is discussed.

5.5.1 The use of interviews as the principal data collection method

Interviews are described as “accounts given to the researcher about the issues in which he or she is interested. The topic of the research is not the interview itself but rather the issues discussed in the interview” (Perakyla and Ruusuvoori, 2011, p. 529). This definition of interviews places emphasis on the ‘radical’ questioning aspect of every research study. Clough and Nutbrown (2007) argue that a research study cannot be undertaken without some form of questioning, as a means for revealing not only gaps in knowledge but why and how answers may be morally and politically necessary.

The use of interviews as the principal data collection method in this study was intended to enable the researcher to access interviewees’ subjective experiences, attitudes and inner thoughts and feelings. King (2004) argues that qualitative interviews are very useful in studying organisational and group identities in large organisations where a complex pattern of organisational, work-group, professional and interpersonal loyalties exist. Interviews can unearth different complexities and facets of the organisation which would not be explored through quantitative approaches. This reality can be said to exist within the three universities studied. In the following sections the steps involved in the interviewing process, from the

selection of interviewees to building the interview guide, piloting the study and conducting the interviews, are presented.

5.5.1.1 Selection of interviewees and their recruitment

Interviewees' selection was largely informed by the literature as three levels of research management professionals could be identified within the three universities, namely operational, managerial and leadership (see more in Chapter Three). Four categories of potential interviewees were identified as fitting in these three levels: (a) the university rector and the pro-rector for research (leadership level), as the key persons responsible for the overall research strategy and management within each university (identified as KEY); (b) the Head of the RMO (leadership level – also identified as KEY); (c) senior RMAs (managerial level), who have either a managerial position within the central RMO or are directors/managers within faculty offices (identified as RMA1); and (d) other RMAs (operational level) who support researchers directly on a number of projects and who receive direction from the other levels (a) to (c) (identified as RMA2). Potential interviewees categorised in levels (b) to (d) are considered to fall within the scope of the operational definition of RMAs that was formulated in Chapter Three (see section 3.4). *Table 5.3* lists the number of persons (population) employed in each of the four categories at each university, up until 31st December 2016.

| | | Analysis ID | UCY (CY) | Uol (IS) | UoM (MT) | TOTAL |
|-------|--|-------------|-----------|-------------|-----------|-------------|
| LEVEL | Name | | # | # | # | # |
| L | University Rector | KEY | 1 | 1 | 1 | 3 |
| L | Pro-Rector for research (or equivalent) | KEY | 1 | 0 | 1 | 2 |
| | | | | | | |
| | Total number of staff employed in Research Management (FTEs) | | 21 | 19.5 | 29 | 69.5 |
| | at Centralised Research Management Office (FTEs) | | 12 | 7.5 | 25 | 44.5 |
| L | Head of Research Management Office | KEY | 1 | 1 | 0* | 2 |
| M | RMA1 | CRMA1 | 3 | 2 | 5 | 10 |
| O | RMA2 (with >3 years experience within the university) | CRMA2 | 7 | 1 | 3 | 11 |
| O | RMA2 (others not interviewed) | N/A | 1 | 3.5 | 17 | 21.5 |
| | at Decentralised Level (Schools/Faculties/Institutes/Centres) (FTEs) | | 8 | 8.5 | 0 | 16.5 |
| M | RMA1 | DRMA1 | 2 | 4 | 0 | 6 |
| O | RMA1 (not interviewed due to unavailability) | N/A | 0 | 1 | 0 | 1 |
| O | RMA2 (with >3 years experience within the university) | DRMA2 | 3 | 0 | 0 | 3 |
| O | RMA2 (others not interviewed) | N/A | 3 | 3.5 | 0 | 6.5 |
| | at other offices (FTEs) | | 1 | 3.5 | 4 | 8.5 |
| | | | | | | |
| O | (HR, Legal Office, Finance Office, International Office, Knowledge Transfer Office) - title unrelated to Research Management | O | 0 | 0 | 2 | 2 |
| O | (HR, Legal Office, Finance Office, International Office, Knowledge Transfer Office) - title unrelated to Research Management (not interviewed) | N/A | 1 | 3.5 | 2 | 6.5 |
| | | | | | | |
| | Total population (in FTEs) | | 23 | 20.5 | 31 | 74.5 |
| | Total eligible participants (KEY1,KEY2, RMA1 & RMA2 with >3yrs experience) | | 19 | 13.5 | 14 | 46.5 |
| | Total interviewed (incl. Rectors + Pro-rectors) | | 18 | 9 | 12 | 39 |
| | Total RMAs interviewed (excl. Rectors + Pro-rectors) | | 16 | 8 | 10 | 34 |

Figures until 31 December 2016

Figures are shown in Full Time Equivalents (FTE's)

* at the time of the study this position was filled by the researcher. In compensation, questions planned for KEY3 were asked to KEY2 for UoM only

Key

Research Management Level: L = Leadership Level; M = Managerial Level; O = Operational Level
ISO3166: CY = Cyprus; IS = Iceland; MT = Malta

Table 5.3: The population for this study

From the population in each university it was decided to interview all the persons holding KEY positions, all RMA1s and RMA2s with more than 3 years' experience at the time of the interview. The three year threshold is based on the categorisation used in the COST-funded action *BESTPRAC* (The voice of research administrators – building a network of administrative excellence), which classifies RMAs with less than three years' experience as *early stage* administrators. In view of the fact that these RMAs are relatively new to the field it was deemed appropriate to target more

senior and experienced RMAs in this study. This choice was made for practical reasons, in order to allow face-to-face meeting with the targeted interviewees and since the research questions warranted an element of experience in order to be answered. Allowance had to be made for staff who were not available during the interviewing periods, particularly at the UoI and the UCY since the interviews were held over the duration of an intensive week at each university. After all factors had been taken into consideration, the total number of interviewees was thirty-nine, composed of eighteen from the UCY, nine from the UoI and twelve from the UoM.

In the selection of interviewees, the researcher was faced with a dilemma as to whether to interview the rector and pro-rector of each respective university, since they cannot be considered to fall within the operational definition of RMAs as formulated in Chapter Three (refer to section 3.4). However, they were deemed very influential in terms of setting the direction of university research and its management. When faced with a similar situation as to whether to include or exclude the rector and pro-rector (or pro vice-chancellor) in her research on RMA identities, Whitchurch (2008) opted to exclude them since she limited her research to strictly research management professionals and excluded roles that involved significant academic content. However, since this study investigates the holistic research management function (as opposed to 'identities' in the case of Whitchurch's study), interviewing the rector and pro-rector for research was deemed a necessary step.

The interviews with the top university echelon did not provide enough detail about the day-to-day aspects that characterise university research management. Therefore,

semi-structured interviews were also conducted with RMA's directly involved in the job, in order to provide an understanding of the daily aspects of university research management. With this combination, the views, understandings and experiences of RMAs took centre stage, while those of the top university management were used to tease out and explicate the context, background and relationships that prevail within the participant universities.

This mix of interviewees follows King's (2004) advice, that in case studies, the analysis gains in validity if the researcher gathers a number of different viewpoints through the interviews. This necessitates a distinction between the levels and categories of interviewees in the sample selected. Nonetheless, the amount of time and resources available were critical factors in conducting this study. Hence some decisions had to be made (see below) about the number of interviewees. On the one hand the researcher sought to achieve enough saturation in the data collected, while on the other hand the research had to be practical and manageable.

For the purposes of data analysis, each interviewee was assigned a unique identifier which was composed of the Analysis ID (e.g. CRMA1), the respective country ISO3166 code (e.g. CY) and a unique sequential number for each Analysis ID (e.g. 1, 2, 3, etc.). The complete list of unique interviewee codes is presented in Table 5.4:

| Level | Role | Analysis ID | UCY (CY) | UoI (IS) | UoM (MT) |
|-------|---------------------------------------|-------------|--|--|--|
| L | University senior management | KEY | KEYCY1 KEYCY2 KEYCY3 | KEYIS1 KEYIS2 | KEYMT1 KEYMT2 |
| M | Centralised RMA (Managerial Level) | CRMA1 | CRMA1CY1 CRMA1CY2 CRMA1CY3 | CRMA1IS1 CRMA1IS2 | CRMA1MT1 CRMA1MT2 CRMA1MT3 CRMA1MT4 CRMA1MT5 |
| O | Centralised RMA (Operational Level) | CRMA2 | CRMA2CY1 CRMA2CY2 CRMA2CY3 CRMA2CY4 CRMA2CY5 CRMA2CY6 CRMA2CY7 | CRMA2IS1 | CRMA2MT1 CRMA2MT2 CRMA2MT3 |
| M | Decentralised RMA (Managerial Level) | DRMA1 | DRMA1CY1 DRMA1CY2 | DRMA1IS1 DRMA1IS2 DRMA1IS3 DRMA1IS4 | N/A |
| O | Decentralised RMA (Operational Level) | DRMA2 | DRMA2CY1 DRMA2CY2 DRMA2CY3 | N/A | N/A |
| O | Employed in other offices | O | N/A | N/A | OMT1 OMT2 |

Table 5.4: Unique interviewee codes

The recruitment of interviewees was a rather elaborate process, particularly because it involved individuals from countries with which the researcher was neither familiar nor had ever visited. For this reason, the first country visit in 2013 set the pace for introductions and familiarity with the potential interviewees, including the rectors of each respective university who ‘provided’ access to the researcher to conduct this study. When the precise focus of the study was finalised, the researcher contacted each interviewee via e-mail, explaining the objectives of the study, the role of the interviewee (see example in Appendix 3a) and the proposed meeting date. This was a cumbersome process for the foreign interviewees since careful planning was required to make sure that the largest number of interviewees were available during the planned weeks of intensive data collection. Travel arrangements had to follow in

order to match the interviewees' availability. As expected, the recruitment of local (Maltese) interviewees was certainly less cumbersome in this regard, since the interviews could be conducted according to the researcher's and interviewees' availability.

Despite the challenges, the researcher managed to interview most of the participants targeted, as can be seen from *Table 5.3*. As soon as the interviewees confirmed their availability and willingness to participate, a consent form (see Appendix 3b) was sent to each one, which the researcher personally collected during the actual interviews. Consent will be discussed in more detail in section 5.6. The process of building the interview guide is discussed next.

5.5.1.2 Building the interview guide

In view of the exploratory nature of the study, the researcher adopted a flexible approach to the interviewing process since the field was relatively unknown. King (2004) suggests that a qualitative research interview is “not based on a formal schedule of questions to be asked word-for-word in a set order” (p. 15). Rather an interview guide is suggested, in which the researcher lists the topics (which could be in the form of questions) to be covered in the course of the interview. The guide points or questions would be followed by suggestions for probing further detail as a follow-up to the responses. Murphy and Dingwall (2003) argue that it is more helpful to think of qualitative interviews as extending along a continuum in terms of the degree of control that the researcher seeks to exert over the content and structure of the

encounter. They identify five continua along which the researcher ‘places’ the interviews in a research process, which were adopted in this study:

- (1) **Degree of structure:** At one end, interviews may be structured and follow a sequence of standard question formulations, while at the other end, they may be unstructured and without a pre-determined sequence of questions (Kvale, 1996). A mid-way approach was adopted in this study, through semi-structured interviews. This involved formulating a set of open-ended questions *a priori* (a guide) to provide an agenda to the interview while keeping the overall research questions into perspective. It also allowed for flexible and free-flowing discussion to generate answers that are meaningful and context-relevant to the interviewees. A similar approach was adopted by Trindade and Agostinho (2014) in their exploratory work among RMAs in Portugal, to establish working definitions of research management and to identify the skills and competencies required to perform an RMA role.

- (2) **Openness of purpose:** The flow of questions adopted during these semi-structured interviews was funnel-shaped, starting with broad questions on the university, its strategies and research. They were followed by more specific probes on university research management, structures, challenges and specific strategies. Willis (2004) refers to this technique as *emergent probing* since it provides room for the interviewer to pursue avenues of discussion that may not be in the interviewing schedule, but which are of relevance to the study.

- (3) **Exploration versus hypothesis testing:** As explained earlier, this study is of an exploratory nature and it is not intended to credit or discredit any hypotheses during the research process. This is because the area being researched is quite unexplored and it would be premature to test any hypotheses that may be derived from the existing literature, since this does not mirror the contexts of small island states.
- (4) **Descriptive versus interpretative purpose:** In this study, the researcher sought a combination of description of experiences and interpretations of the descriptions. This entailed primarily, obtaining a holistic view of the research management function within the participant universities (descriptive), but also uncovering respondents' views and personal experiences within their own settings (interpretative). In order to achieve this objective, the researcher adopted an iterative process in interviewing, whereby each interview sought to elaborate and build on the knowledge gained from the other interviews.
- (5) **Intellectual-emotional dimension:** This might range from a rational logical discourse between the interviewer and the respondent to a more emotional description of the topic. The semi-structured interviews combined both, by following a more rational and logical discourse in order to analytically clarify conceptions of the issues being discussed. At the same time they sought emotional descriptions and reactions to the research management aspects that affected the daily lives of RMA's.

According to Murphy and Dingwall (2003), the greater the existing body of knowledge on the topic being studied, the greater is the structure that can be possible in the approach, as the researcher identifies similarities and differences between his/her findings and the existing literature. However, a more open approach is recommended where there is limited literature available. In this study, the researcher designed the interview schedules on insights derived from the relevant literature (on small island states, research management and the conceptual framework) presented in earlier chapters, while allowing an element of openness and flexible structure in order to explore what has not been previously studied. The next section discusses the piloting of the study.

5.5.1.3 Piloting the study

After formulating the interview guide and before commencing the actual data collection, a pilot study of the interview was carried out at the UoM. A pilot study is the process of 'pre-testing' a research instrument, in order to refine that instrument, to foreshadow potential research problems and questions, in foreseeing possible gaps in data collection and to consider the impact of the instrument on validity, ethics and representation (Van Teijlingen and Hundley, 2001; Sampson, 2004).

The pilot study was conducted immediately prior to the researcher's immersion in the field. The UoM was a natural choice for the pilot study in view of the researcher's engagement within its RMO and therefore the direct hands-on involvement in the research management aspects. Two levels of piloting were conducted. A pilot study

was conducted first with a member of the senior management, who was not directly involved in the day-to-day research management processes but whose functions at the UoM facilitated the understanding of key concepts in university research and research management. A second pilot study was conducted with one of the selected interviewees in order to ensure that the questions were clear, the timing appropriate and the interview guide feasible and flexible. Both pilot studies were conducted in April 2015, prior to the commencement of the first intensive week of data collection held at the UCY.

The benefits of the pilot study were threefold. First, the researcher had the opportunity to test the proposed method and determine whether the planned procedures worked as originally envisioned. Second, questions and probes were amended, added or removed to minimise misunderstandings between the researcher's intentions and the interviewees' interpretations. Third, the pilot study offered the researcher the possibility to become more familiar with the data collection tool, thus increasing his confidence to facilitate trust building with the prospective interviewees. At this stage, a final (at least it seemed) interview schedule was drawn up and the researcher was ready to start interviewing. However, an important aspect became very clear from the very first interviews at the UCY (and then eventually at the UoI): that each university had its own peculiar features that warranted further exploration, in a less structured and more flexible manner by the researcher. The interview guide was therefore, 'informed' by some elements that were initially not evident to the researcher but which eventually turned out to be rather prominent.

One example of these peculiarities related to the fact that the three universities studied had very different origins: the UoM was established in 1592, the UoI was established in 1911 and the UCY was established more recently in 1989. As the data collection process progressed, it became evident that research and its management were influenced by the maturity of the university and its national standing over the years. Another aspect related to the huge financial difficulties which both Cyprus and Iceland have experienced following the 2008 global financial crisis. Although Malta was affected by the said crisis, the significant effect of the crisis on both Cyprus and Iceland was exacerbated by an unstable banking sector which had a ripple effect on the whole economy, including negative effects on the national university and the financing of research. As these factors unfolded and became more common in the interviewees' discourses, the researcher had to adapt the questions to probe further into these and other contextual aspects affecting each university.

In undertaking multiple case studies, the piloting phase does not end after testing the research instrument with one or two individuals. Rather, building the interview guide becomes an iterative process that keeps evolving during the data collection phase. Vis (2008) contends that qualitative research supports a process of understanding that involves continuous development. This process of understanding requires shifts and changes as new experiences emerge. Le Compte and Preissle (1994) argue that the term *interpretive* may be more appropriate than *qualitative* as it reflects better the nature of the researcher's involvement in extracting personal meaning out of the data being collected and analysed. As specific factors, such as the two examples highlighted above, became more evident during the data collection, the use of a case

study strategy inquiry became more legitimate in addressing the aims of this study. This warranted treating each university as a unique case operating in a specific context, while leaving room for personal interpretation and flexibility in the approach.

The final interview guide (that has evolved over the whole data collection experience) is annexed in Appendix 4. As suggested by King *et al.* (2003), the guide includes probing questions which were informed by the literature and by the interactions with the interviewees as the study progressed. The next section discusses the actual conduct of the interviews and sheds more light on the idiosyncratic features influencing each context.

5.5.1.4 Conducting the interviews

As described earlier, interviews were conducted over a period of eight months in the three participant universities. Face to face interviews were preferred over digital interviews in order to allow the capturing of a richer set of data drawing on the observation of non-verbal cues. This would not have been possible if the interview was not conducted in person. At the UCY and the UoI, interviews were held at the interviewee's own office for a duration not exceeding one hour at specific timeslots agreed beforehand. This approach was intended to accommodate the interviewees and to minimise any potential discomfort. In this process, the researcher capitalised on an element of familiarity that he had developed with a number of interviewees during the first visit to both campuses two years earlier.

The approach at the UoM was slightly different, in view of the fact that the researcher leads the team of RMAs, including a number of interviewees. Whereas familiarity with the context and the interviewees was not an issue of concern at the UoM, since the researcher knew all interviewees quite well, the issue of trust building took a different dimension than that at the UCY and the UoI. Whereas in the latter two universities, trust issues required the researcher to build a good rapport with the interviewees in order to elicit honest and reliable information, at the UoM an element of scepticism could possibly prevail on the part of the interviewees (more specifically RMA1 and RMA2), who were being interviewed by their superior. Building trust, therefore, required the researcher to make his position clear and to put the interviewees' mind at rest that the interview was neither a performance evaluation nor a test that could jeopardise their position as employees. Nonetheless, the researcher had limited control on the extent of his success or otherwise in minimising these potential pitfalls. The researcher focused his efforts on making the interviewees feel at ease by explaining as clearly as possible the purposes of the study and by clarifying their precise role and rights in the study (see Consent form in Appendix 3b). Moreover, the researcher avoided holding interviews with RMA1 and RMA2 at his own office at the UoM. Rather, interviews were held in a 'neutral' room, where possible. This was intended to reduce the possible superior-subordinate factor that could condition the interviewees' outlook in such a situation.

The challenge for the researcher to make interviewees feel at ease had another dimension, that related to language. Ironically, conducting interviews at the UCY and the UoI proved to be 'easier' than in Malta in terms of the language of the interview,

since in both universities English was the only language that could be used. All interviewees were very fluent in English, despite both countries having their own mother tongues. In contrast, at the UoM, some interviewees preferred to use the native language, Maltese, to answer the interview questions, despite the fact that English is one of two official languages in Malta. This necessitated three additional steps, one in which the transcript was translated by the researcher from Maltese to English; one in which the interviewee in question verified the translation of the interview transcripts (a process known as ‘back-translation’); and one in which the researcher confirmed that the essence of the interview data was not altered during the entire process.

One final reflection on the conduct of the interviews in this study concerns their meaning. Since the researcher is also an RMA himself, the interviews allowed the researcher to build a relationship with the respondents in a way that went beyond the formal temporary relationship between a researcher and the participant. The interview allowed both the interviewer and the interviewee to exchange views, opinions and practices that could provide mutual benefits beyond the context of the study. While this could be seen as a potential pitfall, since it could deviate the researcher’s and/or interviewees’ focus from the main purpose of the interview, there was significant benefit in terms of breaking the ice and building trust between both parties. In the following section, document analysis, the tool that complemented the interview process in this study, is discussed.

5.5.2 Document analysis

Document analysis is a research tool that involves the skimming (superficial examination), reading (thorough examination), and interpretation of documents which are relevant to the phenomenon being studied (Bowen, 2009). Its use in this study was to ensure convergence and corroboration of the data collected through interviews in search of “a confluence of evidence that breeds credibility” (Eisner, 1991, p.110). Specifically, it provided a source of secondary data (already available) on the contexts within which each participant university operates and was useful at various stages in the study. In the preliminary phases, the documents enabled the researcher to identify, explore and select the three cases to be studied in this research. During and after the interviews, documents were used to examine trends, establish patterns and understand the linkages in the data collected.

Specific targets were set for document analysis in this study, which comprised primarily: (a) ascertaining the extent of coverage given to research management and RMAs in university high level meetings and strategy documents, including the evaluation of standpoints and styles of reasoning; (b) determining how target groups (RMAs in this case) are defined and the qualities specified in the calls for applications/contracts of employment; (c) tracing continuities and turning points in research management/RMAs along the time; (d) gathering a wider understanding of the respective contexts (national or university); (e) corroborating evidence from the interviews in order to identify any contradictory or positive evidence; and (f) to provide greater confidence in the trustworthiness of the findings (Perakyla and Ruusuvuori, 2011).

Document analysis targeted a number of historical and more recent documents at each of the three universities. Table 5.5 lists the documents accessed and analysed during the period of data collection.

| Document | Type | UCY | UoI | UoM |
|--|-----------------|-----------|---------------------------------------|-----------|
| Minutes of Council Meetings | Minutes | 2009-2013 | 2009-2015 | 2009-2015 |
| Multi-annual strategy | Strategy | N/A | 2006-2010; 2011-2016; 2016-2021 | N/A |
| Vision document | Strategy | 2010 | N/A | 2016 |
| Evaluation System for Public Universities (Bibliometrics) | Policies | N/A | 2015 | N/A |
| Research Fellowship and distribution of overheads | Policies | N/A | N/A | 2013 |
| Policies for academics working on research projects | Policies | 2015 | N/A | N/A |
| Job Description/contract of employment of an RMA | Policies | 2015 | 2015 | 2015 |
| Documents relating to the European Charter for Researchers | Policies | 2015 | N/A | N/A |
| Quality Assurance reports | External review | N/A | 2015 | 2015 |
| Organigrams | General | 2015 | 2015 | 2015 |
| Website information | General | 2015 | 2015 | 2015 |

Table 5.5: Documents accessed by university, type and period covered

Obtaining these documents from each university entailed varying levels of difficulty. First, not all three universities have the same policies regarding access to these documents. For example, minutes of Council meetings at the UoI and the UCY were available on the respective universities' websites and could therefore be analysed remotely, whereas at the UoM the rector's permission was required and the same documents could only be accessed during a specific period from the university rectorate's offices. In addition, Council minutes of the UCY were only available until

May 2013, after which no further access was possible (due to change in policy not to make these minutes accessible through the website). All the other documents were largely publicly accessible documents, available from the respective university's website. One main challenge related to cross-country comparability since no one document had a precisely comparable counterpart. For this reason the researcher sought access to identify at least one comparable document by type. This comprised a review of strategy documents, policies and some general documents.

The researcher was rather selective as to the extent and type of documents accessed. The highest weighting was given to Council minutes, not only because of their volume (monthly meetings at the UCY and the UoI; bi-monthly meetings at the UoM) but also because of their content, namely the university's executive decisions and discussions. Moreover, it was decided to include corporate strategies and related vision documents outlining the university's 'sense of purpose' and future roadmap for how resources can be allocated (Lynch, 2000, p. 7). These documents convey a strong statement about the university's identity, about how it is viewed by its leaders and how they want it to be viewed by others.

In addition to Council minutes and strategies, document analysis extended to the specific policies relating to the conduct of research. The range and types of policies available across the three universities give an indication of the different weighting given to specific policies by each university. For example the UCY has embarked on acquiring the certificate of research excellence under the European Charter for Researchers (HRS4R), whereas the other two universities did not give this aspect any

priority. As another example, the UoM deemed it essential to formalise the procedures for utilisation and distribution of overhead money available from research projects. Finally, the UoI's use of formal metrics for measuring university (and the researchers') performance deserves particular mention as a distinctive set of related policies have been introduced.

Document analysis was used in this study because of its particular strengths in ensuring efficiency, accuracy, availability and coverage (Wesley, 2010). It provided access to data which could not be made available through the interviews, particularly since the interviewing period was rather limited in the foreign universities. Moreover, document analysis is considered a cost-effective way to collect data while limiting obtrusiveness (Bowen, 2009). In contrast with the interviews, the data contained within the documents analysed was not collected by the researcher and hence it was unaffected by potential (and inevitable) bias involved during compilation. Therefore, document analysis is deemed to have added extra rigour to this study, as it provided independent data that could be analysed in conjunction with the other interview data.

Despite its strengths, document analysis is not without limitations. One such limitation is that although the data within the documents is not compiled by the researcher, there is still an element of researcher's subjectivity in the selection and interpretation of the data presented. Moreover, the researcher is at the mercy of whatever documents are available and s/he may access an incomplete collection or outdated documents (Yin, 1994). In a university context, the selected documents may reflect the ideologies of whoever is responsible for providing direction at any

particular point in time, thus making the documents biased towards specific agendas. Documents may also prove inaccessible, as was the case at the UoM and the UCY (after 2013). Limitations in accessibility could jeopardise comparability. The problem of accessibility may also be coupled with the problem of sufficiency. Since the documents are not produced for the purpose of addressing the researcher's agenda, they could lack the appropriate level of detail required by the researcher for the purpose of reaching the study's objectives.

Bowen (2009) argues that "the absence, sparseness, or incompleteness of documents should suggest something about the object of the investigation or the people involved. What it might suggest, for example, is that certain matters have been given little attention or that certain voices have not been heard" (p. 33). This means that the researcher should be prepared to search for additional, related documents, which could fill gaps in the data and shed light on the issues being investigated.

Availability and sufficiency represent only one end of the spectrum in document analysis. Documents need to be assessed also for their authenticity, credibility and representativeness (Scott, 1990). Authenticity was not really a matter of concern in this study since all documents were either publicly available or easily traceable to the original source (with no issue of authenticity). On the other hand, credibility cannot be taken lightly, particularly since:

The facts of history and evaluation never come to us 'pure,' since they do not and cannot exist in a pure form; they are always refracted through the mind of the recorder especially since the facts we find in documents have been selected by the recorder. (Caulley 1983, p. 20)

The lack of purity is an inevitable concern when analysing secondary data, especially minutes of meetings, since minute-takers are very sensitive to the extent of coverage, rigour and detail provided. For this reason, document analysis could only serve a secondary purpose in this study, mostly to corroborate evidence collected first hand by the researcher through the interviews. This perspective is supported by Bryman (2004) who argues that caution is required in treating documents as depictions of reality, which are not necessarily representative. However, in the context of qualitative research no case needs to be representative in its own sense. Indeed, documents from each university were examined and common or divergent factors associated with behaviours in different contexts were analysed.

Finally, the researcher faced another challenge when analysing documents from the UCY and the UoI, due to language. With the exception of key policy and strategy documents, all other documents were in the native Greek or Icelandic language. Because of the impracticality to appoint a professional translator to translate all the material, the researcher had to resort to Google translate as a quick online translation source. Although the outcome was not a perfect translation of the original text, it provided enough clarity for the researcher to understand the essence of the content and matters of relevance. After discussing the data collection procedures adopted in this study, ethical considerations are briefly presented next.

5.6 Ethical considerations

One of the most important aspects that render a research study ‘trustworthy’ is the appropriate consideration of ethical aspects affecting interviewees, readers and users. “Research ethics deal primarily with the interaction between researchers and the people they study” (Mack *et al.*, 2005, p. 8). Ethics are not a problem of knowledge but a call of relationships (Krog, 2011) based on the “non-negotiable values of honesty, fairness, respect for persons and beneficence” (Soltis, 1989, p. 129). According to Woods (2006), a researcher is accepted on the field of study only if the interviewees are reassured that he/she is ‘good’ and can be trusted not to ‘harm’ them with his/her findings.

Different universities and research institutions set their own ethical standards to ensure research rigour and to protect the interviewees. Since this study is hosted by the UoM, it is required to comply with the guidelines of the UoM Research Ethics Committee (UREC). This Committee mandates that the researcher provides the relevant information about his/her proposal, together with the questions to be asked, a sample consent form, as well as an identification of the person who takes responsibility for the research and its compliance with the relevant regulations. UREC approval for the questions documented in section Appendix 4 was sought by the researcher prior to conducting the fieldwork. The Faculty subcommittee of UREC (also known as FREC) concluded that there were no ethical concerns that had to be brought to the attention of UREC.

In ensuring high ethical standards, the formulation of the interview questions in this study followed the fundamental research ethics principles originally articulated in the Belmont Report prepared by the National Institute of Health (1979), namely:

- **Respect** for the dignity and autonomy of participants. This is based on the principle that after obtaining informed consent from the interviewees at the participant universities, interviewees are not ‘used’ simply as a means to achieve the research objectives but are treated as individuals who deserve to be respected.
- **Beneficence** requires a commitment to minimise social and psychological risks of research. The researcher achieved beneficence in this research by being open with the interviewees about the objectives and scope of the study and by giving them the possibility to check the interview contents once transcribed.
- **Justice** requires a commitment to ensure a fair distribution of risks and benefits associated with the research. Once the three universities accepted to participate in this study, then it was only fair that they be given access to the outcomes of the study. Justice requires that these universities do not just ‘bear the burden’ of being investigated during the study but also to receive some form of return that could also contribute towards improving their research management practices.
- **Respect for the communities** places an obligation on the researcher to respect the values and interests of the community in research and, wherever possible, to protect the community from harm. The community in this research refers to the interviewees, particularly the RMAs, who shared their views and experiences with the researcher, who in turn was obliged to respect them by safeguarding their confidentiality and dignity.

The above fundamental research ethics principles revolve around the concept of informed consent, which is:

A mechanism for ensuring that people understand what it means to participate in a particular research study so they can decide in a conscious, deliberate way whether they want to participate. Informed consent is one of the most important tools for ensuring respect for persons during research (Mack *et al.*, 2005, p. 9).

Christians (2011) argues that this right entitles interviewees to agree voluntarily whether to participate or otherwise in the study and puts an obligation on the researcher to provide them with full and open information.

Initially the researcher sought and obtained informed consent from the rectors of the three participant universities through an official confirmation of acceptance to carry out the research. Subsequently, specific contact points were identified within each respective university in order to facilitate access. Moreover, each interview participant was also provided with an 'Informed Consent Form' (Appendix 3b), an interview schedule and an information sheet (Appendix 3a) on the scope and objectives of the study. The researcher also explained the principle of voluntary participation; any expected risks and benefits; what was expected from the participant; how confidentiality was protected; as well as the name and contact information of the researcher and the institution he represented.

During the conduct of the research as well as afterwards in the analysis and interpretation of data, the researcher made every effort possible to ensure that the

study was accurate, mainly by keeping an audio record of the interviews and by asking interviewees to confirm the information compiled from the interview notes and the transcripts. Privacy and confidentiality were also strictly safeguarded during and after the research, by adhering to the protocols agreed with the interviewees in the consent form. The process of data coding and analysis is discussed next.

5.7 Data coding and analysis

After conducting the interviews and reviewing the documents, the data was systematically coded and analysed by the researcher in order to identify the most important themes. This process “requires a level of empathy and understanding of issues, along with the ability of the researcher to listen and interpret” (Brod *et al.*, 2009, p. 1277). Both primary data (through interviews) and secondary data (through document analysis) were coded and analysed through a process known as thematic analysis, which is discussed next.

5.7.1 Thematic analysis

Thematic analysis is a method for identifying, analysing, and reporting patterns (themes) within a set of data. This method emphasises the concept of a *theme*, which is “a *phrase* or *sentence* that identifies what a unit of data is about and/or what it means” (Saldaña, 2009, p. 99). The researcher conducted a rigorous, but flexible process of data filtering and coding, in which broad categories of themes were identified. This process was deemed fit for this study since, on the one hand it allowed for the organisation and description of the data set in rich detail (Braun and Clarke,

2006) and on the other hand it facilitated the interpretation of various aspects of the research topic by identifying and describing both implicit and explicit ideas in the form of themes (Boyatzis, 1998). The thematic analysis process in this study can be divided in two main phases: (a) data coding and theme generation; and (b) analysis and comparison. Each phase is discussed in turn below.

5.7.1.1 Data coding and theme generation

This process started immediately after the first interview was transcribed and proceeded to cover document coding as well. In view of the large quantity of data, it was decided to use NVivo, the computer software for data coding. First, all interview transcripts were uploaded in NVivo and then all documents and extracts (including print screens and photos, where it was not possible to obtain the documented material in text) followed suit. The process followed the phases suggested by Braun and Clarke (2006) as documented below:

- (1) ***Familiarisation with the data:*** at this phase the researcher familiarised himself properly with the data collected from the fieldwork in each university. This familiarisation phase involved reading and re-reading the data in search of meanings, patterns and trends that were worth discussing. It largely took place during the transcription of the interview data. According to Bird (2005), this is a key phase of data analysis using interpretative qualitative methodology, and is recognised as an interpretative act where meanings are created, rather than simply a mechanical exercise of putting spoken sounds on paper (Lapadat and Lindsay, 1999). This step covered both interviews and document analysis.

(2) ***Generating initial codes:*** this second phase required the researcher to generate an initial list of codes representing the most interesting aspects contained in the data. With the use of NVivo, the researcher organised the data into meaningful codes that represented groups of data with a common element. All data extracts were coded at this stage and were collated together within each code. It was also possible to code a data extract more than once, depending on whether the extract fitted into one or more aspects. These would later be consolidated in a detailed analysis of the most relevant data. Inter-rater coding was also applied at this stage for data validation purposes (see more in section 5.8).

(3) ***Search for themes:*** after generating as many codes as possible, the researcher re-focused the analysis at a broader level, in order to identify themes. This involved collating relevant coded data extracts to form an overarching theme, which included a list of data codes sharing a common element. At this stage, some codes became themes in themselves, while others were housed within relevant sub-themes.

(4) ***Reviewing themes:*** this phase involved the refinement of the themes identified in the previous phase. This process was carried out first at the level of coded data extracts and subsequently at the level of each thematic data set. At this stage the researcher re-read all the collated extracts for each data code and data theme in order to consider whether they appeared to form any coherent pattern. This was an iterative process in which the researcher reviewed and refined the code map of each theme until he was satisfied that the candidate themes adequately captured the contours of the coded data. According to Saldaña (2009), there is

no standardised or magic number of themes to be achieved, as the main criteria to be satisfied were twofold: (a) the extent of ‘independence’ of each theme (i.e. its ability to portray an aspect that is not portrayed by another theme); and (b) its relevance to the research questions.

(5) ***Generating a thematic map:*** At this stage the researcher opted to download all the coded material structured under themes and sub themes to Microsoft Excel and to generate pivot tables from the same database. This was not an easy task since NVivo does not allow the generation of just one report to download all the data. A thematic map including classifications of each data coded was drawn up to reflect as accurately as possible the meanings evident in the data set as a whole. The map included three main categories which were organised around the three research questions, namely research management structures, challenges and strategies by each individual university. A template of this map is annexed in Appendix 5.

With the thematic map in hand, the researcher was in a position to start analysing and comparing the data. This process was also multi-phased as explained below.

5.7.1.2 Analysis and comparison

This phase commenced with the careful reading of each individual piece of data coded. Notes and insights were generated and written on a word processor, using the initial thematic map as a guide for headings and sub-headings. The final result of this long process of thinking and free-writing was a relatively long document containing

a rich collation of information and insights about each theme and sub-theme of the thematic map.

Once this process was completed, the researcher started building a separate matrix based on the themes and insights. This was the beginning of another lengthy process in which the researcher, first classified each theme and sub-theme by respondent/source type (including documents), and secondly by university – this enabled cross-university and cross-source comparison. These classifications were necessary to enable the comparative analysis between the three case studies. As a third step, each theme and sub-theme were subsequently mapped based on the researcher's own insights first and then with specific references from the literature. A fourth phase (which was actually conducted concurrently with the other three) involved the researcher identifying common elements between different themes and linking them together. Finally, since the third research question explores the strategies adopted by the universities in addressing their challenges, it was necessary to map the identified strategies in relation to the identified challenges. Hence, for each strategy (classified by respondent/source type and by university) further insights were generated about the link with specific challenges, while other common-points were noted and documented.

The template matrix that resulted from this complex process of data analysis and comparison is annexed in Appendix 6. This matrix was used to prepare the material for the focus group and eventually for the write-up of the discussion chapter. It has provided a concise and transparent illustration of the manner in which the data was

given meaning and was interpreted in relation to the research questions and to the overall objectives of the study. Such transparency is central to the validity and reliability of the entire research process. This is required in order to gain the trust of the readers and to encourage engagement in the discussion. The next section discusses in more detail the various steps undertaken by the researcher to enhance validity and reliability of data, processes and outcomes of this study.

5.8 Validity and reliability

In providing details on the procedures adopted to generate meaning and to interpret findings at different levels of inference, the researcher is also required to reflect on issues of validity and reliability, since “qualitative analysis can be evocative, illuminating, masterful – and wrong” (Miles *et al.*, 2014, p. 276). According to Gibbs (2007), *qualitative validity* means that the researcher checks for the accuracy of the findings by employing certain procedures, while *qualitative reliability* indicates that the researcher’s approach is consistent across different researchers and different projects. Achieving validity and reliability in this study required the researcher to adopt an iterative process of verification, in which the “qualitative researcher moves back and forth between design and implementation to ensure congruence between question formulation, literature, recruitment, data collection strategies, and analysis” (Morse *et al.*, 2008, p. 17). Verification was a continuous process throughout the study and served to constantly remind the researcher to be proactive and to take responsibility for ensuring rigour.

This research adopted a number of verification strategies which were in line with what was suggested by Morse *et al.* (2008), namely:

- **Methodological coherence:** the methodology attempted to ensure congruence between the research questions and the components of the method, through a rationalisation process covering, the choice of strategy of inquiry, formulation of the research questions, data collection and data analysis.

- **Appropriateness of the sample:** the researcher achieved this by first familiarising himself with the three university contexts in order to identify interviewees that could contribute meaningfully to the research topic. Eventually, different levels of interviewees were identified as a result of this familiarisation process and a distinction was made between the questions asked at each level in order to address different facets of the study.

- **Collecting and analysing data concurrently:** this formed a mutual interaction between what was already known through the literature and what the researcher needed to know. This interaction was achieved by a process in which data collected through an interview with one person at one university was inspired by the analysis that the researcher would have carried out on the data collected from a previous interview. This approach was not always possible at the two foreign universities, because the timing between interviews was at times very tight. However, where it was possible, it enabled the researcher to constantly refine questions and approaches based on data already collected.

- **Thinking theoretically:** during the iterative process of data collection the researcher focused on the most salient aspects of research management in the participant universities with the aim of identifying theoretical similarities or distinctions between the cases being studied. Ideas that emerged from the data were reconfirmed or repudiated through new data, thus giving rise to new ideas that, in turn, were verified or rejected through the data already collected.

These verification strategies constituted a strategic attempt to add rigour to this qualitative study. Rigour is synonymous with *trustworthiness* and is characterised by four aspects: credibility, dependability, transferability and confirmability (Lincoln and Guba, 1985). This study addressed these aspects by:

- **Comparing multiple settings** (Owen, 2014) to address the risk of being an insider researcher. By comparing the Maltese context with the Cypriot and Icelandic contexts, the researcher opened up his perspectives and identified alternative aspects about university research management that were less present or non-existent in the Maltese context. Examples include: decentralised research management structures, formal research strategies, research metrics, alternative funding sources and mitigation of the risks and effects of an economic crisis.
- **Making use of an interview guide** (King, 2004) to enable comparability between the different contexts by ensuring that a similar approach and relevant questions were applied consistently. This allowed the researcher to detach himself from excessive spontaneity in the inquiry process.

- **Obtaining ethical clearance** (Saldaña, 2009) of the university research ethics committees as well as informed consent of each participant. This ensured that the research had the necessary endorsements in place.
- **Piloting the study** (Chenail, 2011) before starting the data collection, once with an independent non-RMA and subsequently with an interviewee RMA.
- **Structural corroboration of results through other tests** (Guba and Lincoln, 1982) wherein documents were analysed in order to corroborate results obtained from the interviews (i.e. triangulation).
- **Respondent validation** (Woods, 2006) wherein the interviewees were given back an exact transcript of their interview so they could confirm the accuracy and/or suggest amendments.
- **Inter-rater coding** (Armstrong *et al.*, 1997; Morse, 1997) wherein an independent academic from the faculty hosting this study at the UoM was given a sample of data extracts and was asked to code them. Results were compared with those of the researcher and a 73% match was noted. Although the literature does not provide any specific guidance on a satisfactory level of matching in inter-rater coding, the researcher applied his judgement to conclude that the percentage obtained provided sufficient comfort in the process. Incongruences were analysed to determine the extent of mismatch. However, they were not deemed significant so as to require changes in the coding process.
- **Giving voice to participants** (Clough and Nutbrown, 2007) by including direct quotes in the results chapter, thus crediting interviewees for their contribution to the study.
- **Ensuring a clear audit trail** (Lincoln and Guba, 1985) of the process and research methodology, where every step in the data collection and the rationale

adopted was clearly documented in the researcher's field notes. A matrix for the analysis of the data was developed, where findings (coded data and themes) were linked to each other and to inferences from the literature and to the different contexts.

- **Consulting with a focus group** (Clough and Nutbrown, 2007) such that after data was collected and analysed, the researcher presented the results to the members of the focus group, who in turn provided insights, feedback and criticism.

The steps and measures undertaken by the researcher to enhance validity and reliability in this study are summarised in

Table 5.6.

| |
|---|
| <p><i>Prior and during data collection</i></p> <p>Thinking Theoretically</p> <p>Methodological coherence</p> <p>Appropriateness of the sample</p> <p>Comparing multiple settings</p> <p>Obtaining ethical clearance</p> <p>Making use of an interview guide</p> <p>Piloting the study</p> <p>Collecting and analysing data concurrently</p> <p><i>After data collection</i></p> <p>Thinking Theoretically</p> <p>Comparing multiple settings</p> <p>Structural corroboration of results with other tests</p> <p>Respondent validation</p> <p>Giving voice to participants</p> <p>Ensuring a clear audit trail</p> <p>Consulting with a focus group</p> |
|---|

Table 5.6: Summary of measures to enhance validity and reliability

The next section further contributes towards ensuring the validity and reliability of the research process by documenting the researcher's reflections on the limitations of this study. Future studies and any comparisons to this study need to acknowledge these limitations and need to verify whether the same assumptions hold or otherwise.

5.9 Limitations

Two levels of limitations can be identified in relation to this study: one concerning the scope while the other concerns the practical aspects. In terms of *scope*, this study is limited in the extent to which it can be generalised. First because the contexts of the three small island states are very idiosyncratic and second because it follows a qualitative approach, which favours richness of detail as opposed to generalisability of results. Results of this study cannot be extrapolated blindly to universities in non-selected small [island] states or in non-European territories or to an entire nation.

From a *practical* perspective, the primary limitation of this study concerns the risk of bias in view of the researcher being an RMA and leading the team of RMAs at the UoM. The researcher has, over the years, contributed towards the enhancement of the RMO at the UoM, hence the risk of bias lies in the way the data collected is interpreted owing to the general background knowledge available through personal experience. Although this direct engagement could be considered as a limitation, one can also argue that being an insider researcher and having a deep understanding of the subject (i.e. the researcher's ethnographic aspect), could have also contributed to

building trust with respondents due to the elements that he shared in common with them. This risk of bias could not be eliminated completely, however, the researcher has devoted the necessary efforts in order to mitigate such risk as much as possible (as explained in section 5.8).

There were other limitations from a practical point of view. One was to overcome the common misconception among respondents from the UCY and the UoI that the researcher's mission was an Erasmus+ mobility visit. Such visits are quite common within university contexts and their main intention is for sharing experiences between the sending institution and the host institution. The purpose of this research mission was in fact deeper than an Erasmus+ mobility visit and required more rigorous and systematic steps to be followed. The researcher had to clarify the purpose of the mission very clearly in order to elicit honest and open responses to his inquiries.

Another challenge was related to the availability of interviewees. Since most of the data had to be collected within a week of intensive interviews, the researcher had to make sure to meet as many potential interviewees as possible. This was not always easy since some interviewees were abroad on university business or on absence leave during the interviewing period. However, following careful choice of the dates, flexibility and constant communication with the host universities, the researcher managed to organise the interviews over two weeks with minimum absences.

A third limitation related to the fact that interviews were held during specific weeks of intensive interviewing. Although this was necessary for practical reasons, the researcher acknowledges that the data refers to a specific period of time and does not capture any developments that could have occurred afterwards. This limitation was addressed by the researcher through regular updates obtained from selected contact points in each university and from publicly available documents, which he continued to review until a specific cut-off date (end 2015).

A fourth practical limitation concerned the sequence of the interviews at the two foreign universities. During the intensive weeks of interviewing, the researcher did not have the luxury to choose the timing and order in which to conduct the interviews. Although this was not a major issue at the UoM, at the UCY and the UoI there were instances where the researcher had to trade off a desired sequence (of interviewing) in favour of practicality and respondent availability.

Finally, the researcher faced some practical limitations regarding the quality of the data. As explained earlier, language was a greater barrier for documents (at the UCY and the UoI) than for conducting interviews. Whereas the latter had to be conducted in English, there was no control over the native language used in most of the former. Earlier on it was also argued that the researcher also faced challenges from respondents who wished to speak the native (Maltese) language (at the UoM) and from others who wished that their interview transcript was not preserved. In terms of documents, the researcher also faced the limitation that documents were not always

readily available while the Council minutes were (by their nature) a selective summary of the actual proceedings and not always comprehensive and exhaustive.

Acknowledgement of these limitations is not in any way intended to dilute the effectiveness of this research but to make the reader and the author aware of the parameters and assumptions of the study. These factors need to be taken into consideration and, where possible, addressed and/or mitigated in other future studies involving similar conditions. The next section concludes this chapter with a summary of the main aspects addressed.

5.10 Conclusion

In this chapter the researcher elaborated on the methodological approach undertaken in order to address the objectives of this study. The research paradigm was discussed first, including the positioning of the study from an epistemological and ontological point of view. A discussion on the choice of case studies as a strategy of inquiry ensued, including case selection and the selection of the unit of analysis. The rationale for the formulation of the research questions was followed by a detailed analysis of the data collection procedures, namely semi-structured interviews and document analysis, which were complemented by inputs from a focus group of independent experts, to help mitigate the risk of bias.

Issues of ethics and informed consent were also considered and followed by a discussion on the process of data coding and analysis. This was a two-phase approach, which entailed first data coding and theme generation with the assistance of computer software. The second phase entailed an analysis and comparison of data codes and themes, which produced a detailed matrix mapping the research findings, with the researcher's insights and the literature. The last two sections that followed manifested the researcher's reflexivity on validity and reliability on the one hand and the limitations of this study on the other hand.

Important lessons were learned from the reflections on the research methodology. First, the approach towards this type of qualitative study needs to be sensitive to the contextual aspects, hence the use of case studies as a strategy of inquiry. Second, the combination of data collection procedures is essential to corroborate data obtained in order to ensure rigour and trustworthiness. Third, bias is inevitable for an insider researcher. However, this does not mean that the researcher needs to be passive in the face of this risk. Additional measures need to be adopted to mitigate the risk of bias, including consultation with independent experts to provide feedback on the researcher's own interpretation of the results. Finally, researcher reflexivity is essential not only to demonstrate awareness of the limitations of the study, but also for the reader and for future researchers to be aware of the parameters and those factors that condition such study. In the next chapter the results of this study are presented.

CHAPTER 6

KEY RESULTS AND FINDINGS

CHAPTER 6 – KEY RESULTS AND FINDINGS

6.1 Introduction

The aim of this chapter is to present the key results and findings of the three research questions of this study. A summary of the results is presented in Table 6.1, which lists the main themes that emerged in response to each research question. The structures, challenges and strategies for managing research in the three universities are compared and provide the basis for the main discussion, presented in Chapter Seven. The results of RQ1 are presented first.

6.2 RQ1: How is the research management function organised in the national, publicly-funded, flagship universities in three European small island states?

RQ1 explored the research management structures in place in each university and the interviewees' overall understanding of the research management function. Responses from the interviews were corroborated with an analysis of the respective organisational structures and university websites in order to formulate a concise comparison between the three universities. Three main aspects shed light on the organisation of the research management function, namely: the composition of research management teams; the structure of the research support services provided; and the job titles of individuals who support research. These aspects are presented in the following sections.

| | |
|--|--|
| <p>RQ1: How is the research management function organised in national, publicly-funded, flagship universities in European small island states?</p> | <p>Team composition</p> <hr/> <p>Structure of the services provided</p> <hr/> <p>Job titles</p> |
| <p>RQ2: What are the key challenges faced by the three universities in managing their research; and</p> <p>RQ3: What strategies do these universities have in place to address the research management challenges?</p> | <p>RMA-related results</p> <p>Skills, qualifications and gaining trust</p> <ul style="list-style-type: none"> Job skills, qualifications and gaining trust Keeping up to date <p>Multi-functionalism and RMA specialisation</p> <ul style="list-style-type: none"> Going the extra mile Role overload RMA specialisation <p>Stressful and demanding job</p> <ul style="list-style-type: none"> Stressors for RMAs Researchers are demanding Staff turnover Role ambiguity <p>Career-related challenges</p> <ul style="list-style-type: none"> Compromise academic background /personal research vs. administration Limited job opportunities and restricted job mobility <p>Institution-related results</p> <p>Context-related</p> <ul style="list-style-type: none"> Mindset towards research Agenda-setting University status <p>Resource-related</p> <ul style="list-style-type: none"> Resources for academics/researchers Resources for RMAs Resources for the university <p>Relationships and perceptions</p> <ul style="list-style-type: none"> Internal relationships External relationships and perceptions <p>Policies and processes</p> <ul style="list-style-type: none"> Formal university strategy and direction Selectivity decisions in research Reactionary vs pro-active approaches in research management |

Table 6.1: Summary of key results and findings

6.2.1 Team composition

In Chapter One it was argued that the type of research that falls within the scope of this study is Mode Two research, which often requires the support of a team of specialised managers and administrators. One KEY interviewee at the UoI recognised that this type of support requires building a good team of RMAs and to maintain it:

[The] office is growing a lot and we are now about...fifteen or something like that. And one challenge is to hold these people together, to keep them occupied, to keep them on their toes to be ready to act when needed and to be effective. ...So this is one challenge, you have to have a good team. ... If you do not have a good team of research managers, everything becomes a problem. (KEYIS2)

KEY interviewees from the UoM and the UCY concur with this perspective, though one argues that this process takes time since support structures cannot be built overnight:

More and more companies come in saying: 'where's your research capacity at the University?' And now they are realising that the research capacity at the University cannot be built overnight. (KEYMT1)

According to a KEY respondent from UCY, this time-lag arises because building research support structures requires good quality human resources and they are often not available:

We have to find them. Cyprus has a number of people. Now we have good people. But sometimes, maybe we need people from outside. (KEYCY1)

Nonetheless, all three universities have managed to build their own respective teams of RMAs to support researchers at various levels and at different stages. Table 6.2 provides a comparative summary of the research management teams in each respective university.

| Number of staff | UCY | UoI | UoM | TOTAL |
|---|-----------|-------------|-----------|-------------|
| | # | # | # | # |
| Total number of staff employed in Research Management (FTEs) | 21 | 19.5 | 29 | 69.5 |
| at Centralised Research Management Office (FTEs) | 12 | 7.5 | 25 | 44.5 |
| pre-award | 3 | 3 | 2 | 8 |
| post-award | 7 | 3.5 | 22 | 32.5 |
| both (including directors and senior managers) | 2 | 1 | 1 | 4 |
| at Decentralised Level (Schools/Faculties/Institutes/Centres) (FTEs) | 8 | 8.5 | 0 | 16.5 |
| pre-award | 2 | 4 | 0 | 6 |
| post-award | 6 | 4.5 | 0 | 10.5 |
| at other offices (FTEs) | 1 | 3.5 | 4 | 8.5 |
| (HR, Legal Office, Finance Office, International Office, Knowledge Transfer Office) - not fully focused on research management and administration but are called in when required | 1 | 3.5 | 4 | 8.5 |

Table 6.2: The research management teams in each university

More detailed information about the demographics, qualifications, academic background and years of experience are included in Appendix 7.

One aspect that can be immediately noted from this table is that the three structures vary from each other in terms of type of support and number of people. Whereas the number of Full Time Equivalent (FTE) RMAs at the UoM (29) is higher than those at the UCY (21) and the UoI (19.5), the UoM structures are entirely centralised. On the other hand, resources at the UoI and the UCY are more spread. The latter employs more RMAs at a centralised level (12) than at a decentralised level (8), while the former employs more RMAs at a decentralised level (8.5) than at a centralised level (7.5).

The research management structures of the three universities differ in terms of the types of support provided, mainly between pre-award and/or post-award activities. At the UoM a large majority of RMAs employed at centralised level (22 out of 25) are engaged solely on post-award activities, while only two are engaged solely on pre-award activities. In contrast, the UCY and the UoI dedicate different levels of resources for pre-award and post-award activities. On the one hand, the UCY engages more resources on post-award (13) than on pre-award (5) activities. On the other hand, the UoI employs a rather balanced engagement of RMAs on pre-award (7) and post-award (8) activities. While this approach underlines the UoI's relative strength in supporting research at pre-award stage compared to the other two universities, it also highlights that the level of post-award support at central level is limited, compared to that of the other universities. This was acknowledged by one of the respondents who explained that the university (UoI) has embarked on a project of strengthening its post-award support:

We are now at the time to strengthen our post-award team. And we have actually introduced a proposal to the rector, which he is now considering and it included hiring new people with international experience in post-award at central level.
(KEYIS2)

Another observation that can be made regarding the levels and types of RMAs concerns the direction in which the research management structures have developed. At the UoI, the structures seem to have developed in a bottom-up fashion, with changes and novel approaches in research management being implemented primarily at a decentralised level. This development is probably a reflection of the organisation of academic units, which at the UoI, are organised on the basis of Schools (five in total), which host within them a number of Faculties and Institutes (See Appendix 8a). Each school employs at least one RMA (at director level) who drives the research

management agenda of the School and reports to the Dean of the School. In contrast, research management at the UCY and the UoM is more centrally oriented with change following a top-down direction. Academic units in these universities are organised on the basis of Faculties (See Appendix 8b and Appendix 8c), and the employment of RMAs (where it exists) is carried out in a sporadic manner depending on the priorities of the Faculty and the availability of resources. In the next section, a comparison of the structure of the services provided by the three universities is presented.

6.2.2 Structure of the services provided

An analysis of the structure of the services provided underlines other similarities and differences between the three universities. Table 6.3 lists a number of services which the research management functions are responsible for in each university. It also includes two forthcoming plans that have been mentioned by respondents and which indicate the direction that the universities will be taking in the future.

Four primary points can be noted from the information presented in Table 6.3. First, there are indications that the decentralised offices at the UoI are more *involved in strategic aspects* than their counterparts at the UoM and the UCY. This is probably due to the UoI's shared management structures between central administration and the five different Schools (see Appendix 8a). The strategic aspects of research management at the UoM and at the UCY are driven by central administration. Although the decentralised RMAs at the UCY (where they exist) do get involved in

| Services Provided | UCY | UoI | UoM |
|--|---|--------------------|---|
| Strategic aspects - overall strategy and direction | C | C | C |
| Strategic aspects - SFIC strategy | D (partly) | D (partly) | N |
| Strategic aspects - research metrics | C (limited) | C | C (limited) |
| Strategic aspects - management of overheads including decision-making | C | D + C | C |
| Getting documents signed by legal representative | C | C | C |
| Pre-award support - prospecting | D (partly) | D | C (limited) |
| Pre-award support - proposal preparation (support in technical aspects) | D | D | C |
| Pre-award support - proposal preparation (financial management and compliance) | C (two offices) + D | D + C | C |
| Post-award support - project management (support in technical aspects) | D (partly) | D (partly) | N |
| Post-award support - project management (financial management and compliance) | D + C | D (partly) + C | C |
| Post-award support - reporting | D + C | D (partly) + C | C |
| Industry liaison and knowledge transfer | C | C | C |
| Post evaluation of research projects | N | C (limited) | N |
| Forthcoming plans - consolidation strategies | Y - Research Support Service (C) | N | Y - Research Support Service (C) |
| Forthcoming plans - widen support | Y - research project managers split between C+D | Y - (post-award C) | Y - research project managers split between C+D |

Notes:

roles are included only where RMAs have a say in one way or another

"partly" refers to instances where there are differences between SFIC (i.e. some SFIC offer the services others don't)

"two offices" means that the support is provided by staff situated in two different offices

"limited" means that the service provided is restricted and not wide in scope

C = Centralised D = Decentralised

Y = Yes N = None

Table 6.3: Structure of research management services provided by each university

the pre-award phase, their involvement in prospecting for new funding opportunities remains rather weak. The UoM is in a similar position, although the limited attempts at prospecting are only undertaken at centralised level. A similar contrast exists with respect to research metrics, with the UCY and the UoM providing limited formal support in the measurement and evaluation of research. This contrasts with the UoI, whose strategy is based on a centrally managed and fully-fledged research metrics system. These contrasts between the three universities show that the mindset towards research management of the UoI is more strategic and this involves decentralised levels (Schools) in most of the services provided. On the other hand, the UCY and

the UoM adopt more centralised approaches and strategy aspects are narrower and more informal in scope.

A second aspect concerns *fragmentation*. As both centralised and decentralised levels are involved in supporting research, the services provided by the UoM and the UoI tend to be fragmented, at times. A case in point is proposal preparation at the UoM, which is supported by more than one office:

We don't have one research service. It's fragmented. We have a Research and International Relations Service, Financial Services and HR Services. ... I think it is good to have one service. If you have fragmented parts of the research service each one does one part, which affects the other parts but sometimes there may be no cohesion. (CRMA1CY1)

Another example is that of financial management and compliance in which input is provided by RMAs at both the centralised and the decentralised levels.

There are different needs for different Schools and within Schools there are different needs between divisions. But I think that there has to be a good collaboration between the central and the decentralised in this way. ... There should be a common understanding of how to manage them. (DRMA1IS2)

Despite the fact that the UoM does not provide research management support at a decentralised level, one respondent still highlighted fragmentation as a possible deficiency in the research management structures:

I don't know if it is just a feeling that I have or if it is true, but for example Project Support is very embedded in the funding programmes so you have a big awareness of deadlines and this and that. And then we have somebody in HR dedicated to projects...but who does not have that [foresight] 'let me see what projects got funded in the last month. All of these are gonna need HR calls. Let me follow up with the academics, let me prepare because we need to hire asap, once the project starts'. (OMT1)

Thus, fragmentation seems to be inherent in the nature of research management within the three universities and not necessarily due to the way structures are set up.

The third aspect derived from the structure of services provided concerns the *post-evaluation* of research projects. With the exception of limited evaluation exercises carried out at the UoI at centralised level, no post-evaluation of research projects is conducted by the three universities. One respondent at the UoM believes that such post-evaluation exercises are healthy, though still lacking:

I think that at a managerial level, if we can work as a group and maybe we can discuss the outcomes of the projects we have, [we] would take our team to the next level. ... We haven't started doing it yet, but I think the direction is there. (CRMA1MT5)

This sentiment is mirrored by a respondent at the UoI:

After projects finish, there is no one who really evaluates and looks at the bigger picture. ... I think that is something very valuable. As I was saying, you should try to focus on getting stronger applicants to apply. (CRMA2IS1)

The only example of post-evaluation that could be noted at the UoI derived from the minutes of the Council meeting held on 13th January 2011. During this meeting, the Council decided to allocate research funds to selected researchers who have excelled in a previous research endeavour funded by the University. Hence, a decision was taken to invest the next batch of funds into what was deemed to be a more efficient use of resources, based on results obtained.

A fourth observation concerns the *forthcoming plans*. The prospects for all the three universities are converging towards broadening the research support services,

although the planned routes are different. The UCY and the UoM plan to widen support by employing research project managers at both centralised and decentralised levels. While at the UoM this is a completely new initiative, the UCY seems willing to embark on a second attempt to employ research project managers at a decentralised level. The first attempt was unsuccessful or rather short lived:

We did try this but I think it failed in some sense. We did appoint what we call officers in schools to help in this way as well, but one person was not enough. On the other hand what is missing is to have people who are really trained as project managers. (KEYCY3)

In contrast to the UCY and the UoM, the UoI aims to widen support by enhancing post-award structures at centralised level. As already discussed above, support structures are largely decentralised at the UoI. The aim is to widen support at centralised level in order to enhance consistency and reduce fragmentation in the actual implementation of research projects.

In addition to widening support, the UCY and the UoM plan to embark on consolidation strategies based on the concept of *one-stop shop*. A respondent from the UCY remarked that:

In the university we have two different services, one for our research department here and one for the financial services for the actual implementation. ... They said that they will combine the two services, so that researchers and academics get their job done from a one-stop shop. (CRMA2CY2)

At the UoM, the general feeling about the one-stop shop concept is the same as that of the UCY:

We're not a one-stop shop obviously because as Project Support [Office] we depend on other people. We depend on the Rector's assistants to get the documents signed; we depend on Finance to get approved documents; from the Payments section. So we do depend on others. (CRMA1MT3)

One must note that these two respondents both identified the need for a one-stop shop service in order to address the fragmentation that was discussed earlier in this chapter. Although the concept of one-stop shop was not mentioned by respondents from the UoI, the forthcoming plans identified to widen post-award support can be considered a positive move towards enhancing university research support structures. Yet, despite the positive prospects for enhancing the research support mechanisms and to reduce fragmentation within the three universities, there are several discrepancies and inconsistencies related to the job titles of university RMAs. These will be discussed briefly in the next section.

6.2.3 Job titles

| | UCY | UoI | UoM |
|--|-----------|-------------|-----------|
| | # | # | # |
| Total number of staff employed in Research Management (FTEs) | 21 | 19.5 | 29 |
| at Centralised Research Management Office (FTEs) | 12 | 7.5 | 25 |
| Director/Deputy Director | 1 | 1 | 1 |
| Head of Department | | 1 | |
| Senior Manager - Pre-Award | | | 1 |
| Senior Manager - Post-Award | | | 1 |
| Manager - Project Support Office | | | 4 |
| Sector Coordinator for Economic Research Program Management | 1 | | |
| Project Manager | | 5.5 | |
| Research Officer | 1 | | |
| Supervisor - Project Support Office | | | 3 |
| Project Support Officer III | | | 5 |
| Project Support Officer II | | | 9 |
| Project Support Officer I | | | 1 |
| University Officer | 9 | | |
| at Decentralised Level (Schools/Faculties/Institutes/Centres) (FTEs) | 8 | 8.5 | 0 |
| Director of Research | | 4 | |
| Research Manager | | 1 | |
| Project Manager | 1 | | |
| University Officer | 7 | 3.5 | |
| at other offices (FTEs) | 1 | 3.5 | 4 |
| (HR, Legal Office, Finance Office, International Office, Knowledge Transfer Office) - title unrelated to Research Management | 1 | 3.5 | 4 |

Table 6.4: Job titles of staff engaged in research management

A summary of the job titles of staff engaged in research management is presented in Table 6.4. The data highlights the wide variety of job titles that are used across the three universities for staff employed in research management. The job titles used by the UCY are relatively more generic, with the title 'University Officer' being used for 16 out of 21 employees engaged in research management. The same title is also used at the UoI, although in the latter case, the title is only used at a decentralised level. The term 'Director of Research' is also commonly used at a decentralised level at the UoI, to refer to RMAs heading the research management function at School level. At the UoM, job titles for RMAs reflect the support element provided through the Project Support Office (PSO), the office that supports researchers in externally funded research projects. Moreover, the terms pre-award and post-award used in the titles of the senior managers employed within PSO indicate a clear link to research management.

The variety in job titles across the three universities could be an indicator of the extent of recognition which research management has achieved as a separate profession within the university. In general, interviewees from the three universities responded positively as to whether they consider that research management is recognised as a separate profession in their university. However, some underlined the need for RMAs to be specialised:

Kind of yes, because now you have many calls, and opportunities, you need to be specialised. And you need to have background on some things like IPRs. (CRMA2CY2)

Oh definitely. Six years ago I would have said no. But today I find it very specialised. (CRMA2IS1)

Others underlined the need for RMAs to get trained in research management, to interact with RMAs from other countries and to engage in professional networks in order to expose their profession and foster better recognition:

Yes, I think so. I think it's becoming a profession in itself. And my university participates very much at the Nordic level. ... [We] collaborate a lot on best practices and benchmarking. ... We have actually been for 5 or 10 years building up a community in the Nordic countries for research managers. And we actually have been recognising that this is becoming a profession or a discipline in itself. (KEYIS2)

Well. It could be as well. For example, I have been doing training and I intend to do more training on how to manage IP, on how best to structure our patent portfolio. ... I read about those things and I became an expert at the end of the day. And those are all critical to research management. (OMT1)

A respondent from the UCY remarked that the extent of recognition of RMAs as separate professionals is influenced by the wider context:

I think that it was only in recent years that we started taking research more seriously and we realised that according to what research we decide to do we could have different results and different impact on the country's economy. So I think, research management can become a profession. (CRMA1CY2)

The feedback from various respondents indicates that job titles take time to develop and to reflect the true nature of the job. For example, at the UoM, the job title structure for RMAs spans multiple levels from administrative officers (I to III), to supervisors, managers and senior managers. It provides a career path for RMAs who wish to have a career in research management to move up the higher echelons within the university. Yet, so far, this structure only caters for RMAs employed within a centralised office. The forthcoming plans at each university, could potentially bring more changes in the RMA structures and subsequently to job titles. This could influence the extent of recognition of the profession in the forthcoming years.

6.2.4 Summary

This section presented the results of RQ1. These results highlight the fact that, while the UoM adopts a centralised research management structure, the UCY and the UoI adopt a mix of both centralised and decentralised structures. The structures at the UoI are more consistent across the different academic units than those at the UCY. Moreover, the structures at the UoM and the UCY are more oriented towards post-award activities while those at the UoI are relatively more oriented towards pre-award activities. Finally, the job titles adopted at the UoM are more clearly specified compared to the other two universities. Job titles at the UCY reflect an element of fragmentation and inconsistency across various categories of RMAs, while those at the UoI reflect the decentralised orientation of research management structures. The next section shall now present the combined results of RQ2 and RQ3.

6.3 RQ2: What are the key challenges faced by the three universities in managing their research?

RQ3: What strategies do these universities have in place to address the research management challenges?

The aim of RQ2 was to investigate the key challenges faced by the three universities in managing their research, whereas that of RQ3 was to examine what strategies do these universities have in place to address the research management challenges. The results for RQ2 and RQ3 are presented together, since by combining the challenges and strategies, the comparison is clearer. The results of this combined analysis are presented in this section, systematically split in two categories, namely: (1) challenges and strategies that are related to RMAs; and (2) challenges and strategies

related to institutions. Four primary themes were identified at both levels and are summarised in Table 6.5. The RMA-related results are presented first.

| RMA-related | Institution-related |
|--|-----------------------------------|
| (1) Skills, qualifications and gaining trust | (1) Context-related |
| (2) Multi-functionalism and RMA specialisation | (2) Resources-related |
| (3) Stressful and demanding job | (3) Relationships and perceptions |
| (4) Career related | (4) Policies and processes |

Table 6.5: Classifications of research management challenges and strategies

6.3.1 RMA-related results

The RMA-related results are categorised according to four primary themes, namely: (1) skills, qualifications and gaining trust; (2) multi-functionalism and RMA specialisation; (3) stressful and demanding job; and (4) career-related. Each are discussed in the following sections.

6.3.1.1 Skills, qualifications and gaining trust

Table 6.6 lists the identified challenges and strategies related to the need for RMAs to possess specialised job skills and qualifications, while gaining the trust of the researchers and keeping up to date. In the three columns representing each university,

the ticks indicate which university adopts which strategy in relation to the identified challenges. Where exclamation marks are used, they are intended to indicate that the strategy is either informal or still not fully in place.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|---|--|---|-----|-----|-----|
| A. Job Skills, Q/cations and Gaining Trust | 1. Experience is required | - Career paths | | | ✓ |
| | 2. Qualifications are required | - Qualifications are required | | | ✓ |
| | 3. Specialised skills are required | - Continuous professional training for RMAs | ✓ | ✓ | ✓ |
| B. Keeping up to date | 1. Updating with new rules and developments | - Collaborate/benchmark with strong partners | ✓! | ✓ | ✓! |
| | | - Regular meetings centralised-decentralised | | ✓ | |
| | | - Supporting participation in professional assoc. | | ✓ | ✓ |
| | 2. Superiors not knowing what the job really entails | - Regular meetings | | ✓ | ✓ |
| | | - Use of IT system | | | ✓ |
| | 3. Researchers not-trained for running projects | - Matrix structures for research support | ✓! | | ✓! |
| | | - Decentralised structures | ✓! | ✓ | |
| | 4. Continuous training for RMAs | - Joining forces with other countries (patrons) | | | ✓ |
| - Membership in professional associations | | | | ✓ | |
| - Continuous professional training for RMAs | | ✓ | ✓ | ✓ | |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.6: Challenges and strategies relating to skills, qualifications and gaining trust

6.3.1.1.1 Job skills, qualifications and gaining trust

Respondents identified a number of specialised skills which are required to manage university research. One respondent underlined the need for negotiation skills:

I think you need to have some negotiation skills so that you know when you want to find a compromise and the space where they [referring to the researchers and the RMA needs] can both meet. (CRMA1CY2)

Another respondent emphasised the need for flexibility, adaptability and the ability to look holistically at the issues at hand:

You have to have the attitude that I'm not just stopping here but I will see the whole picture, and that at times I'm going to be a manager and at times...I'll be the caretaker of the situation, but I have to be prepared to do everything. (CRMA1MT4)

Others mentioned communication skills, patience, time-management skills, technical skills and people skills as key for the RMA job.

Inter-personal skills. Very important. Communication skills, mathematical skills... (DRMA1CY1)

You have to know accounting, you have to be calm, to meet the deadlines, to communicate with academics...right communication skills, mathematics is needed sometimes, computing, excel. (CRMA2CY3)

I must add that knowing about organisational politics helps me a lot with the academics. ...Time management, people's skills, communication skills, political skills. Those I see them as very important, in my opinion. (OMT2)

One particular respondent argued that RMAs need to have a package of specialised skills, experience and qualifications to do the job.

I think you need to have a certain frame of mind and a certain way of operating. I think skills and experience are more important than a qualification to do this job. ... The qualification is only one part of it. It gives you the analytical capacities to be able to do the things. But you need to have a certain package. (DRMA1CY2)

There was a general recognition that building trust is an uphill struggle and one that takes time, but which eventually fosters better working relationships.

It gets easier every time, I must say. As soon as people see that we are of help and we are beneficial, they are more willing to spend money on this, because that's the whole deal, we have to get more money to get more personnel. (DRMA1IS1)

A number of strategies were identified to address these challenges. All three universities support the regular provision of training to RMAs. This can take two forms: either the RMAs attend training abroad organised by the funding agencies and training professionals or by the university bringing over specialists to deliver training in-house. In addition, two specific strategies were identified at the UoM, which are worth highlighting, namely the existence of a career progression ladder for RMAs

(see Appendix 9) and to have certain minimum required qualifications in order to work in research management. These strategies encourage careers in research management while adding a certain level of credibility to the RMAs' work in facilitating the building of trust with stakeholders.

6.3.1.1.2 Keeping up to date

Another way to build trust is to keep constantly up to date with developments. Yet this is not easy:

You need to know what is going on...to keep [yourself] updated. ... Recently in Erasmus+ we had a change in how to submit something so we had the responsibility to inform everybody in the departments. (CRMA2CY2)

You have to know different things. ...So it's not something you can go somewhere for six months, get it, come back and ok, let's do it. Projects are continuously changing. They issue new guidelines, they issue new rules all the time. ...You need a team to do the job in first instance, but also get constantly updated. (CRMA1CY3)

A number of strategies were identified to address this challenge. The UoI approach is based on collaboration and benchmarking with strong partners. Indeed, the UoI's strategy specifically identifies the top ten universities against which university performance is to be benchmarked. In contrast with the UoI, benchmarking at the UCY and the UoM is not formalised, hence the exclamation mark indicated under their respective columns. The UCY and the UoM adopt other strategies to address this challenge, including the provision of training to RMAs (both universities) and supporting participation in professional associations (UoM).

Two more challenges were identified in relation to keeping up to date with developments. One challenge relates to when superiors do not know what the job of the RMA really entails:

They don't really understand. You have to say what is happening. If you don't, they would expect that everything is fine and everything runs smoothly. (CRMA2CY2)

Another challenge relates to when researchers are not trained for running projects.

Recently yes, he is being guided. But maybe he didn't have the experience in project management, so some things could have been made better at the planning stage. (CRMA1MT5)

All three universities are quite active in addressing these challenges through a number of initiatives, namely the existence (or plans) for decentralised support, matrix structures in research support and the provision of training to RMAs:

The University provides the Work Resources Fund, which I find extremely useful and I always search to train myself as needed. ...If I find a course which I find to be helpful to do my job I will do my best to attend. So I've been into Cyprus for training, and I followed training in Malta last year on writing proposals. (CRMA1MT2)

We have training. ...We have been supporting these research directors and also people from the division of Research and Innovation to take short courses abroad. As usual here in Iceland, we learn a lot from people abroad. (KEYIS1)

Well, we send them to seminars. ...We receive overheads for every project. This money is reserved to train people on the topic. ...For example, we shall bring an expert from the UK on IPR. So we use that money for this purpose. (KEYCY3)

The UoM and the UoI also support the participation of their RMAs in professional associations and hold regular meetings between RMAs at various levels to ensure that they are updated on recent developments. The use of an IT system at the UoM was

also identified as an important tool to provide information on relevant developments within the university and external to it, particularly in relation to research and research funding (as discussed during UoM Council meeting held on 10th January 2010).

6.3.1.2 Multi-functionalism and RMA specialisation

A number of challenges and strategies were identified around the theme of multi-functionalism and RMA specialisation. These are presented in Table 6.7 and are grouped in three categories, namely: the need for RMAs to go the extra mile and engage in multiple tasks; role overload; and the challenges for specialisation.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|--|--|---|-----|-----|-----|
| A. Going the extra mile: multiple tasks, sometimes unrelated to RM | 1. Multi-functionalism of RMAs - not only RM tasks | - Having well-connected top RMAs to be able to influence policy-makers | ✓ | | |
| | | - Regular meetings centralised-decentralised | | ✓ | |
| | | - Crucial role of RMO to bring together RMAs from centralised and decentralised together | | ✓ | |
| | | - Regular revision of job descriptions | | ✓ | |
| | 2. Multi-functionalism of RMAs - decision-making tasks | - RMA is key to take decisions due to experience, qualifications & involvement in a project/faculty | ✓ | ✓ | ✓ |
| B. Role Overload | 1. Multi-functionalism: pre-award; post-award | - Splitting pre-award from post-award | | | ✓ |
| | | - Ensuring a smooth transition from pre to post | | | ✓ |
| | 2. Seasonality | - Decentralised structures | ✓ | ✓ | |
| | | - Combination of centralised and decentralised | | | |
| C. Specialized RMAs | 1. Threats to specialisation | - Matrix structures for research support services | ✓ | ✓ | ✓ |
| | | - Recruitment of research project managers | ✓! | ✓ | ✓ |
| | | - Research directors in schools | | ✓ | |
| | 2. Loneliness and Indispensability | | | | |
| | 3. Need for Specialisation | | | | |

✓ indicates which university adopts which strategy to the challenges identified

Table 6.7: Challenges and strategies relating to multi-functionalism and RMA specialisation

6.3.1.2.1 *Going the extra mile*

Some respondents remarked that they often end up engaged in work that is unrelated to research management. These remarks were expressed by RMAs from both the centralised and the decentralised levels. At a decentralised level, the ‘other work’ involves:

Being in charge of every administrative aspect of the faculty, including research (DRMA1CY1)

and

working for the science committee of the School (DRMA1IS1).

At a centralised level, one respondent noted that carrying out tasks which are unrelated to research management over and above normal duties may create a conflict with other pertinent deadlines:

Recently I had to edit a book, because we were collecting reports of research projects that were funded by the [Leventis] Foundation. ...It was not part of my job but I did it, and it was really difficult because at the same time we had some deadlines for the Erasmus+ programme. So I was trying to keep up with both and also answering some questions of researchers and they were coming here but I was editing the book. So it was really a conflict. (CRMA2CY2)

Involvement in ‘other tasks’ may restrict the ability of RMAs to do more fruitful things and may also lead to job dissatisfaction. One respondent at the UCY claimed:

I need bureaucratic help [so I can] do things which are more important. I don't think I should be in a position of making copies and filing and all that stuff. ...I am sad to say that it doesn't give me good satisfaction. I'm a musician and my mind travels. Maybe I need a different kind of adventure! ... For me it's boring. It doesn't give me a chance to put all my skills in it. (DRMA2CY1)

A number of specific strategies were identified that convert the challenges of multi-functionalism into opportunities. Having top RMAs well-connected to policy-makers was underlined as a crucial move at the UCY:

And also we have this European Office in Brussels that helps a lot the local people. (KEYCY1)

This strategy was also highlighted in a document published in 2010 by the UCY providing a general overview of the research activity at the university:

The University of Cyprus has ensured its active presence on the European stage through its contribution to the establishment and support of the European Office of Cyprus (EOC). ...[The] EOC has become the main link between the University of Cyprus and EU policy-making centres and key decision makers, and thus ensures the accurate and timely dissemination of information on EU policies and programmes. (University Research [ISSN 1986-2504], 2010, p. 26)

The UoI takes a different approach and carries a regular (annual) review of the job descriptions of RMAs employed within the RMO in order to ensure better recognition of the tasks carried out and a fairer distribution of workloads.

We have interviews every year with our boss, and then we go through our job description and see if it has changed. So we change it every year. ... If for example all of a sudden I'm receiving all the visitors that come to our department [and] it was not part of my job description, we update it. (CRMA1IS2)

In addition, at the UoI, the centralised RMO holds regular meetings between centralised RMAs and decentralised RMAs. This may also be considered a strategic move by the central RMO to bring centralised and decentralised RMAs closer together and to enhance consistency.

6.3.1.2.2 *Role overload*

Multi-functionalism has also been associated with role overload in an RMA job. The need to cater for pre-award and post-award demands is a primary factor, especially at a decentralised level, where segregation of duties is more difficult than at a centralised level due to lower and less flexible resources. One respondent expressed his concern briefly, but concisely:

Overload! I think it's the fact that you have to do proposals ...[and] to deal with IP. In Cyprus this has only just started. They don't have any formal structure. In this case ...we try to, I have to deal with it. (DRMA1CY2)

On the other hand, at a centralised level the volume may be higher, while seasonality may cause excessive stress due to multiple and tight deadlines:

When there are these large calls, it is very stressful. ...It's more the overload which causes stress. ...Speaking about multi-tasking, I can end up answering the phone, acting as a helpline on certain queries and at the same time reviewing proposals. At another time I can be developing an application for someone. (CRMA1MT2)

One specific strategy adopted by the UoM to address role overload is that of splitting pre-award and post-award duties at the central RMO. This was done by appointing a senior manager on post-award support and a senior manager on pre-award support. A different but related approach is adopted by the UCY and the UoI. The delegation of RMA roles to decentralised offices and their combination with RMA roles at centralised offices were identified as useful strategies that spread the workload and address seasonality. The decentralised RMAs tend to have better anticipation of forthcoming proposals due to their proximity to academics and researchers:

Most of the time, because we know the job now, we know that there are deadlines and that we need to meet those deadlines. So we prepare for them. (DRMA2CY3)

6.3.1.2.3 *RMA specialisation*

Interviewees also identified the inability to specialise as another challenge that is consequential to multi-functionalism, role overload and limited resources. One centralised RMA at the UCY expressed frustration:

I mean, I want to do more but I cannot specialise because we're centralised here and we need to do other things. (CRMA2CY2)

Other respondents underlined the consequences of not having specialised research project managers to support researchers:

What we don't have, the missing link, is that we don't have somebody close to the researcher with some expertise, project management expertise, administrative expertise. (CRMA1CY3)

I think if we had good project managers we would have been much better. ... We have a limited number of managers... and the majority of these or probably all of these are from domains like humanities [and] social sciences. ... [T]hat orientation is very useful but probably [they] do not have all the capacities they should have in order to help in an efficient way other research. (KEYCY2)

Although frustration owing to the inability to specialise was expressed by several respondents, it is only one side of the coin. One particular respondent at the UoI expressed frustration because the job was too specialised such that it caused an element of loneliness, routine and indispensability:

I would not want to lose any functions that I do now, but I would like to do something else also.

.... I think it's that, you are so alone. ... It's a bit different now, but still, I can't be away for a long time. ... For example, I can't go on summer holiday in June because I have a specific job in June that I have to finish there. (CRMA1IS1)

This alternative perspective highlights the fact that the challenges of specialisation are twofold: on the one hand it is difficult to specialise due to limited resources, but on the other hand specialisation may mean becoming indispensable, work overload,

limited time and restricted career development opportunities. From this feedback it seems that, either way, specialisation is very challenging for respondents.

However, careful analysis of the three university contexts revealed that the appointment of research directors in Schools at the UoI and the planned recruitment of decentralised research project managers at the UCY and the UoM can be considered a positive move towards specialisation. Moreover, the matrix research management structures that are foreseen at the three universities are also meant to provide a level of specialisation, which involves breadth rather than depth (see proposed matrix structure at the UoM in Appendix 10).

6.3.1.3 Stressful and demanding job

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|------------------------------|---|--|-----|-----|-----|
| A. Stressors for RMAs | 1. Nature of the job: audits; peak times; continuous developments; bureaucratic; rejected proposals | - Move towards stonger post-award at centralised level | ✓ | ✓ | ✓ |
| | | - Consolidation strategies incl. one-stop shop | ✓! | ✓! | ✓! |
| | 2. Deadlines, continuous deadlines | - Teamwork between RMAs | ✓ | ✓ | ✓ |
| | 3. Lack of resources to do the job | - Multi-functionalism and breadth specialisation | ✓ | ✓ | ✓ |
| B. Researchers are demanding | 1. Different characters of researchers | | | | |
| | 2. Different needs of researchers | - Metrics | | ✓ | |
| | 3. Trust building with researchers requires patience | - RMO evaluates research effort and giving input in recruitment / promotions of academics | | ✓ | |
| C. Staff turnover | 1. Moving within the same university | - Career path for RMAs | | | ✓ |
| | 2. Job continuity and stability | - Career path for RMAs | | | ✓ |
| | | - Gap funding; internal research support funds; charging of costs to projects / indirect costs | | | ✓ |
| | | - Indefinite contracts for RMAs | ✓ | ✓ | |
| D. Role ambiguity | 1. RMA job not understood well by others | - Having own professional association | | ✓ | |
| | | - Consolidation strategies incl. one-stop shop | ✓! | ✓! | ✓! |
| | | - Supporting participation in professional assoc. | | ✓ | ✓ |
| | 2. Lack of recognition to the RM profession | - Formalised and coherent decentralised support | | ✓ | |
| | | - Information sessions | ✓ | ✓ | ✓ |
| | | - Supporting participation in professional assoc. | | ✓ | ✓ |
| | | - Having own professional association | | ✓ | |
| | | - Continuous professional training for RMAs | ✓ | ✓ | ✓ |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.8: Challenges and strategies relating to a stressful and demanding job

Two adjectives that have been constantly associated with the job of RMAs in the literature are ‘stressful’ and ‘demanding’ (see Shambrook *et al.*, 2011; Katsapis, 2012 discussed in Chapter Three). The jobs of the RMAs in the three universities are no different, as the respondents identified a number of factors that cause stress and that make their job demanding, presented in Table 6.8. They were classified according to four categories: inherent stressors pertaining to the nature of the job; stress owing to researchers’ demands; effects of staff turnover; and role ambiguity. Each category is discussed below.

6.3.1.3.1 Stressors for RMAs

One respondent indicated that the occurrence of stress is related to peak times and the level of responsibility:

It can be stressful... There are periods when...you are stressed out, maybe because of a particular system, maybe because...there is lack of resources, or it's a challenging period, but also the higher the level of responsibility the more the stress that we get. (CRMA1MT1)

Others identified audits as important sources of stress, since they need to be addressed on top of the normal day-to-day work and/or because the audit may extend to periods when the RMA was not yet employed at the university:

We are undergoing an audit right now. ...It is exposing the differences we have between the different units within the university and also at different times. ...The audit started from 2009, so it started before I started here really. (DRMA1IS1)

Yes. Definitely. Probably six months ago I would have said 'not too bad'. But with an audit on top of that I would say it is very stressful. (CRMA2IS1)

Bureaucratic processes (e.g. to effect a payment for an invoice) and unsuccessful proposals were also associated with stress by some respondents:

Yes, a bureaucratic process. Then it goes upstairs and needs to pass through eight offices to make a payment. And if something is missing, you lose a day or two... and this goes on and on... (DRMA2CY1)

I had a case this week where I spent like a day of work on a proposal, then one partner dropped out and the whole proposal dropped. In that case you would say 'I did all that work and it was for nothing'. (CRMA1MT2)

In addition to these challenges, one must add the continuous deadlines as a source of stress:

The main stress of the job, I think, is meeting deadlines and trying to get things together, bringing the loose ends into one. (CRMA2MT2)

Another respondent underlined the lack of control on deadlines:

Sometimes the Managing Authority sends us e-mails 'give us your spending targets', and they need it from today till the end of this week. So within a couple of days. (CRMA1MT3)

The challenge becomes bigger (or smaller) depending on the level of co-operation from researchers and colleagues in other departments:

People sometimes look for the help too late or they think that they do not need it. ... If there is a deadline maybe in one week I say... 'ok tell me two weeks prior so that I know that we are going to get a proposal on a certain date', because if they send it to me and I didn't know about it then my day might be fully booked. But if I already knew it was coming... (DRMA1IS3)

Difficulties will definitely be gathering all this information from different offices within the administration for instance, and to get them altogether. (DRMA1IS2)

An analysis of the strategies identified shows that the three universities are not passive in the face of these inherent work challenges. The move towards strengthening post-award support at centralised level is a strategy that addresses the pressure caused by deadlines mostly at the time of reporting or mass submission of proposals. Although consolidation strategies, including the concept of the one-stop

shop, are still in the pipeline for the three universities, they are also aimed at dealing with the pressure caused by deadlines and the inherently stressful nature of the job. By being multi-functional and having breadth specialisation, RMAs in the three universities are also addressing these identified inherent challenges.

6.3.1.3.2 *Researchers are demanding*

Apart from the inherent challenges related to the job, researchers can also exert pressure through their demands. Respondents noted that researchers have different characters, some are appreciative, others are less so or have high expectations from RMAs. One respondent argued that the attitudes are not linked to the field of expertise but more to individual personalities.

It all depends on the person. It is hard to generalise. I am quite close and work well with a lot of people. But then I also meet regularly researchers who do not understand what we do. ...There's the whole spectrum. And it doesn't really go into the fields. That is completely irrelevant because the academic field doesn't seem to matter. It's a personality issue. (CRMA2IS1)

Moreover, researchers have their own needs, objectives and personal career paths that may impinge on their relationship with RMAs. Researchers may complain when the evaluation they receive from university bodies is not in line with what they expected or when a promotion is not granted. One respondent argued that research management may also provide remedies in such situations:

I've had people complaining every year. ...I just try to...use logic, to argue our decision, try to explain the reason for the evaluation when people complain. And if people aren't happy we have another committee that will discuss that. (CRMA1IS1)

Another respondent underlined the fact that researchers expect RMAs to provide complete administrative support, so that they can focus solely on research:

So they are happy, but they want to see more value. We had cases when they wanted us to handle the whole administration, which we managed to do and the academic came back and said 'yes, thanks to your decision I will now enter into more project proposals'. (CRMA1MT2)

Addressing the demands of researchers and adapting to their characters may ultimately contribute towards building trust and a healthy long-term relationship. However, this is a slow process that requires patience:

There was a particular person who had told us: 'I'm not going to give you anything. I will let the others practice on you.' ...As time went on, he learned to trust us, he learned how we work [and] we learned his personality. (DRMA2CY3)

At the UoI, the use of metrics to measure and evaluate the performance of each individual researcher can be considered a strategy through which needs are monitored and addressed. This is because researchers can identify the appropriate path to follow in order to achieve their objectives, based on the formal processes afforded by the metric system. Moreover, at the UoI, the RMO is involved in evaluating the research effort and in providing input towards the recruitment and promotion of academics. This puts the RMO in a better position to understand researchers' and to build trust through more tailored and individual approaches.

We help almost everyone of them and we are involved in every hiring business of the university and in the academic advancement business of the university. ... So we know these people. They are always coming to us, with academic output, asking about the evaluation or complaining about the evaluation. But we don't want communication at the complaining level but we prefer it to be a dialogue. (KEYIS2)

This rather formal approach through the use of metrics could be noted only at the UoI. However, in all three universities, one-to-one relationships, individual attitudes and personal approaches can be considered as the more informal means adopted to address the challenges posed by the researchers' demands.

6.3.1.3.3 *Staff turnover*

Another element that was identified as contributing towards RMA stress is that pertaining to staff turnover. This has two dimensions: people moving to new jobs; and job continuity and stability.

There are two aspects associated with new jobs, one concerning the research teams and its effects on the job of an RMA, and one concerning RMAs directly. On the one hand, the job of an RMA can be challenging because the composition of research teams is changing on a regular basis, especially research support officers who, very often, have an indefinite contract. The RMA may suffer from frequent changes in the research team, since s/he has to deal with new staff all the time:

...if there's ongoing fluctuation in the staff, like project officers coming and going. ... [This] happens sometimes, that project officers don't stay from day one till month 36 of the project. (CRMA2MT2)

On the other hand, due to a need for a change of routine, RMAs themselves may also change jobs, not necessarily by moving outside the university, but to other roles within the university:

I would like to do something else also. You know, 90% of your work you're doing the same thing. (CRMA1IS1)

It gives me satisfaction but up to a level I guess. I would like to do more. ... But that's just me I guess. Someone else might prefer to have a more routine job. ... Because if you've been doing this for a couple of years everything becomes routine. (DRMA2CY2)

The existence of a career progression ladder among RMAs can be considered a positive strategy adopted by the UoM to address routine work and to motivate RMAs to stay.

The second dimension of the challenge pertaining to staff turnover relates to job continuity and stability. This challenge can also be associated with both the research teams and the RMAs. As argued before, research teams face a major challenge in the three universities since sources of funding may not be diverse enough to maintain the same composition of the team over a period of time. The UoM has addressed this limitation by putting into force procedures (which were formally approved and minuted in the university council meeting held on 12th April 2012) which earmark a proportion of the overhead funds from research projects to be used for gap funding.

As much as the case for research teams, the challenge of job continuity and stability can be of particular relevance to RMAs employed at the UoM. All RMAs at the UoM are employed on definite contracts, in contrast to the RMAs at the UoI and the UCY who have indefinite contracts. This move by the UoM can also be considered a strategic one, since it enables the recruitment of additional RMAs each time a batch

of new projects (or one large project) is awarded at a relatively fast pace. One respondent lauded the benefits of definite contracts:

Having a contract makes people...work a bit harder and be more committed. And even the fact that there is flexibility here. I feel they are given a lot of trust. (OMT2)

The adoption of definite contracts allowed the UoM to increase the team of RMAs in line with the requirements of new projects and services. One respondent from the UoM highlighted the ever-increasing number of research projects and the growing demands for RMA support:

Over the past four years we definitely have had more projects and projects of higher value. But also, when it comes to post-award, we are having less problems with the auditors, ineligible funds. ...That is something which is very important. (CRMA1MT1)

Figure 6.1 illustrates the value of research grants awarded to the UoM over the period 2004 to 2016.

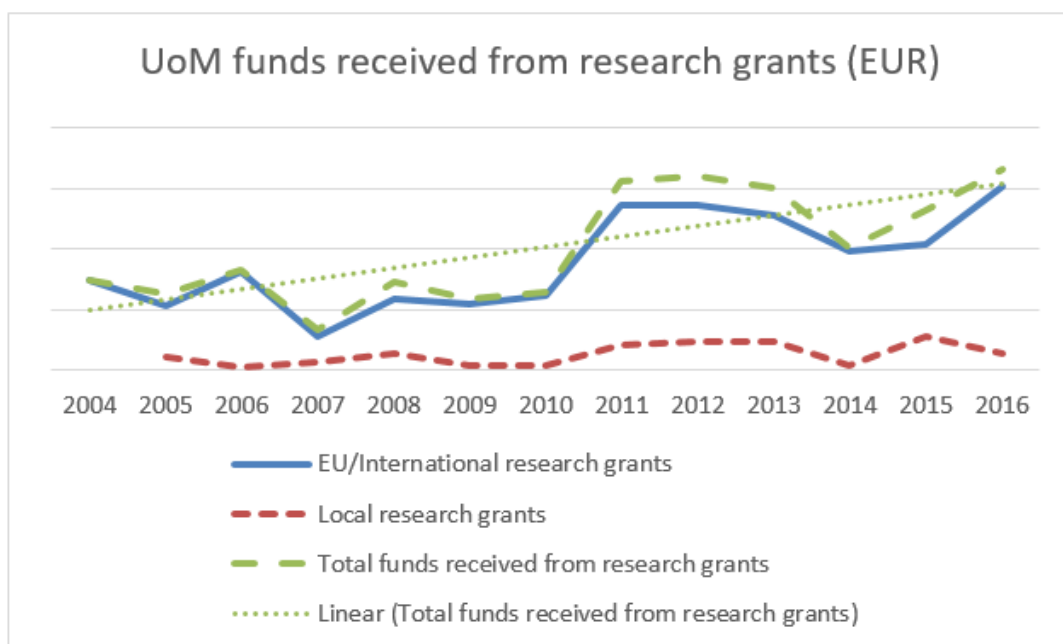


Figure 6.1: UoM funds received from research grants (2004-2016) (EUR)

The funding from research grants has more than doubled in the 12 years between 2004 and 2016 and has followed a general upward trend. This indicates that the risk to job continuity for RMAs at the UoM is in actual fact rather remote. EU/international research grants are the main contributors to this positive trend, while local research grants have remained relatively stable over time, apart from a slight upward trend. The upward trends are not only evident in terms of grant value but also in terms of the actual number of projects, as shown in Figure 6.2.

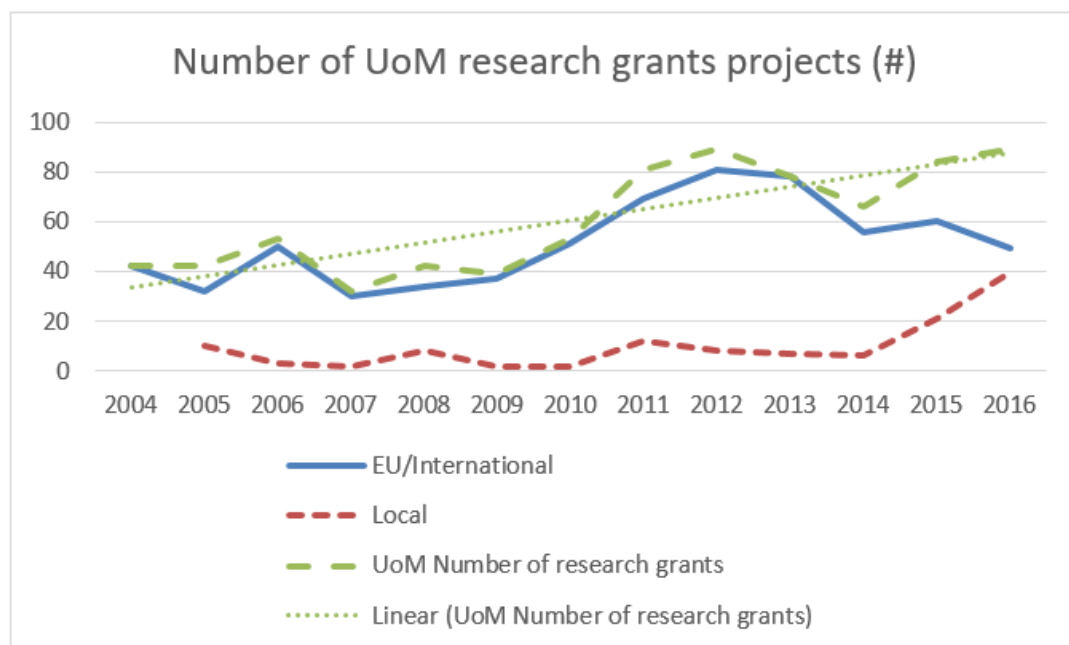


Figure 6.2: Number of research grants awarded to the UoM (2004-2016)

Equally comparable data was not available from the UCY and the UoI. However important insights can be derived from similar statistics. The UoI follows a similar trend to that of the UoM in terms of funds received from research grants as illustrated in Figure 6.3.

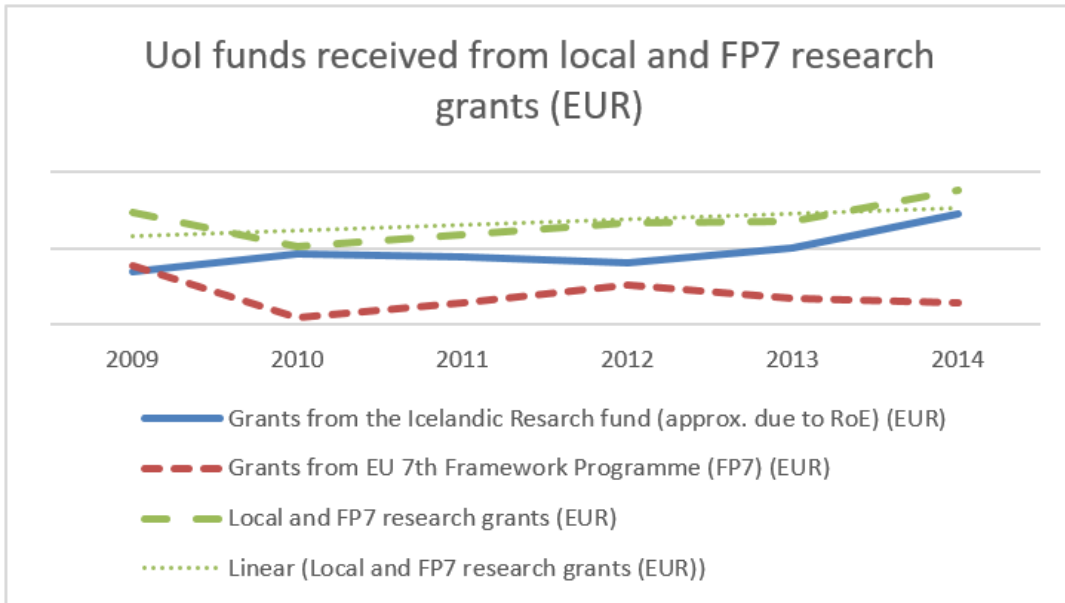


Figure 6.3: UoI funds received from local & FP7 research grants 2009-2014 (EUR)

Similar to the UoM, this positive trend is not only evident in terms of grant value (EUR) but also in terms of quantity of research grants, as illustrated in Figure 6.4.

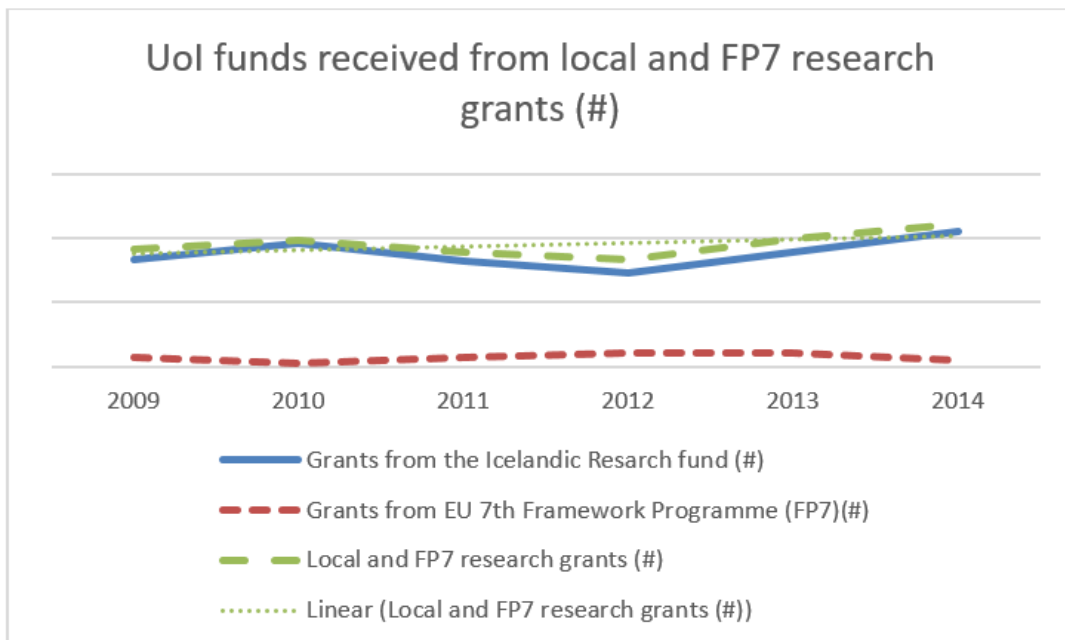


Figure 6.4: Number of local & FP7 research grants awarded to the UoI (2009-2014)

The UCY statistics present a rather contrasting scenario in terms of research funding over the period 2011-2015. Figure 6.5 demonstrates a negative trend, particularly in terms of local research funding. This trend is mainly attributed to the economic crisis 2012-2013 and its aftershocks, which has led to an ongoing decrease in local research funding (together with a decrease in other public funding, as discussed further in section 6.3.2.1).

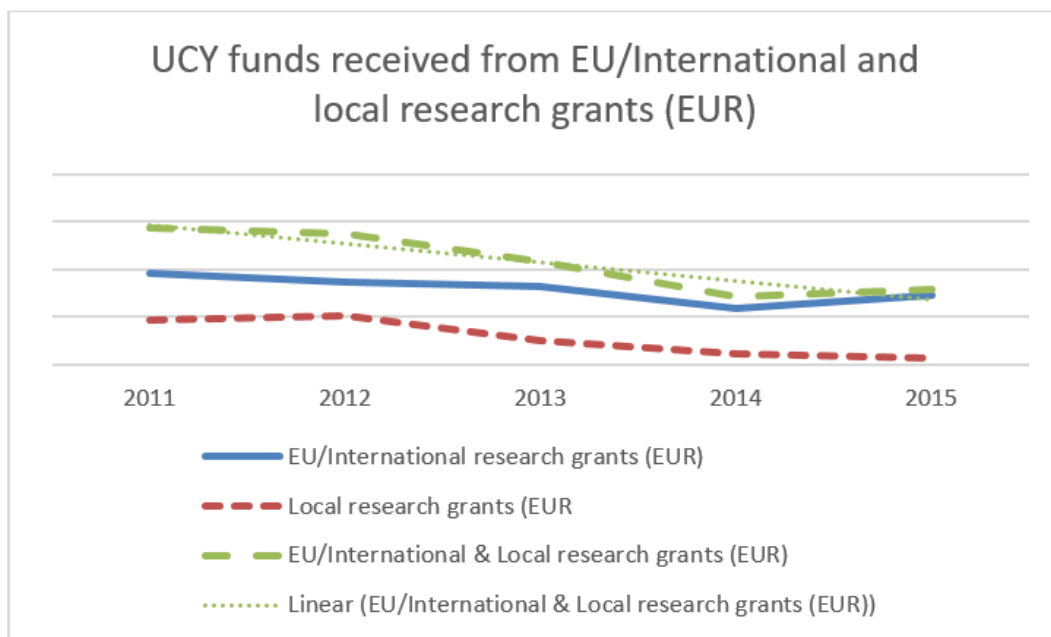


Figure 6.5: UCY funds received from research grants (2011-2015) (EUR)

The decrease in research grants, particularly at local level was also reflected in a decrease in the actual number of research grants, as illustrated in Figure 6.6.

Figure 6.6.

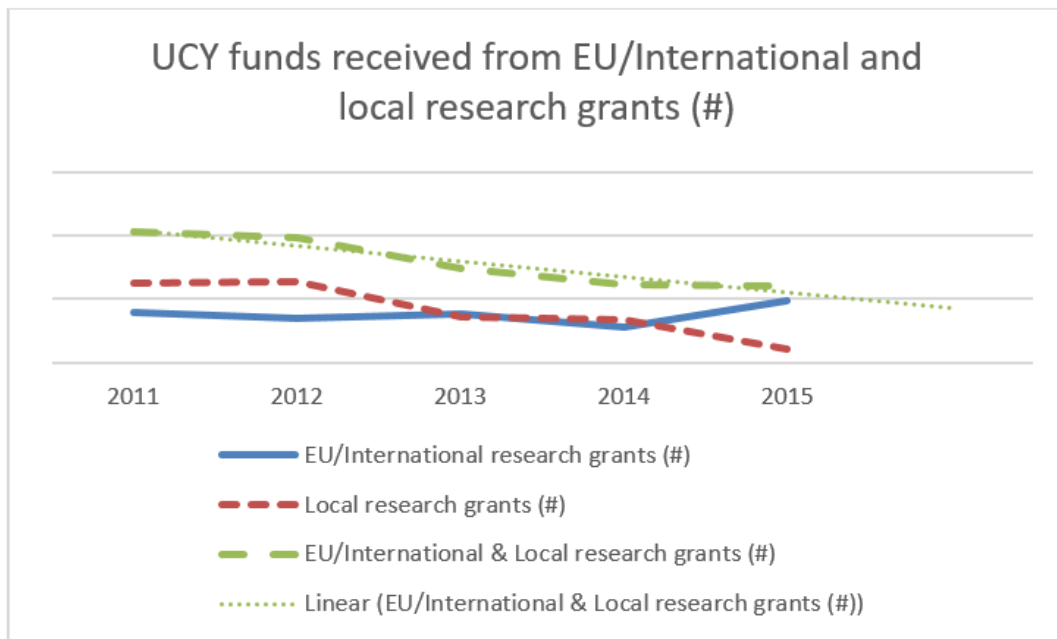


Figure 6.6: Number of research grants awarded to the UCY (2011-2015)

Data before 2011 and after 2015 could not be accessed for the purpose of this research. Therefore, any interpretation of these results for the UCY need to be made with caution, taking into consideration the local scenario and the effects of the economic crisis and its aftershocks. Despite these difficulties faced by the UCY, RMAs did not lose their jobs during the economic crisis. Therefore, despite of the lack of an upward trend at the UCY, job continuity and stability for RMAs are not considered to be under significant threat.

6.3.1.3.4 *Role ambiguity*

Whereas RMA stress due to concerns over job continuity and stability at the three universities is probably more of a perception than a reality, role ambiguity presents a more realistic source of stress. Two specific challenges can be attributed to role

ambiguity. The first relates to the fact that the role of the RMA may not be well understood by others. One respondent was rather clear about this fact:

I was really stressed, especially the first time that I was supposed to help out a professor to do his research proposal. I was really stressed because I didn't know where my limits were. ...People think that they are coming here and think that they will have their proposal finished. This is not part of our job. We just give them guidelines. (CRMA2CY2)

However, other respondents remarked that the role of an RMA became clearer over time:

They know what I do now. They didn't at the beginning. But now they are pretty familiar. (DRMA1IS1)

I think most of them understand. After a number of years they started to understand. In the beginning no. Absolutely not. (DRMA1IS4)

It is worth noting that this response was given by two RMAs at the UoI, who share two similar characteristics: first, they both work at decentralised levels, hence they have a closer relationship with the researchers; and second they have held their positions for over five years, thus they could contrast the level of understanding of their role by researchers over a span of time.

These mixed feelings about role ambiguity are not limited to a decentralised level.

One respondent from the UoM argued that on the one hand,

[They] (referring to researchers) appreciate my work and they know I'm very diligent and they trust my opinion and they seek my opinion before taking decisions. (CRMA1MT3)

But on the other hand,

Since I end up doing everything, then sometimes the person finds it difficult to distinguish in my role what I should be doing and what I am actually doing. (CRMA1MT3)

A second challenge associated with role ambiguity is the lack of recognition of the research management profession by non-RMAs. A respondent at the UCY was rather reflexive and expressive:

I enjoy coming to work. Don't get me wrong. ...I don't mind even of having to stay here until 2 'o clock in the morning as long as I am contributing to something. ...But I think it's like a circle. If you don't understand that research management is a developmental profession, it's difficult. (DRMA1CY2)

In response to whether the respondent feels more part of the research management profession, the reply was:

I think it is, because it is a developing role. I think that by time it is more understood as a profession. (DRMA1CY2)

Another respondent at the UoM underlined the fact that:

The skills related to this kind of work are quite specific. And I feel that they weren't really taught as such in a specific context. It's like I had to do patchwork. This I learned from here, this would be useful from there. They're all kind of brought together like this. But I would imagine that there could be a field on its own which brings things together, these skills and others... (CRMA2MT3)

At the UoI the general response was more positive, though an element of time-lapse has been factored into most responses, as one interviewee pointed out:

Oh definitely. Six years ago I would have said no. But today I find it very specialised. (CRMA2IS1)

Almost all respondents from the UoI have associated the extent of recognition of the profession with membership in professional associations of research managers.

Although European (i.e. EARMA, UK ARMA) and international associations (i.e. INORMS and SRAI) were mentioned most during the interviews, it is important to note that Iceland has its own professional association for RMAs (IceARMA), which according to one interviewee:

I think it helps a lot...for visibility to the outside, even though it is not visible maybe to other people. But having an Association, knowing who to call, having contacts...I think that makes a difference. (CRMA2IS1)

No such associations exist in Cyprus and in Malta. However, the UoM does support the participation of its RMAs in conferences and seminars organised by supra-national associations, as highlighted by one respondent:

Yes, from my seniors I have definitely received continuous support. I have been invited to join the BESTPRAC, the COST action for best practices in research support services, and that gives you a level of exposure. ...So you can see how other institutions are working and how they are dealing with the problems that at the end of the day are common to us all. (CRMA1MT1)

Evidence of similar participation in supra-national associations of RMAs was rather lacking at the UCY.

Other strategies addressing role ambiguity that are common to all three universities comprise: RMOs organising regular information sessions for researchers about the role of RMAs and available research funding opportunities; and continuous professional training for RMAs in order to keep themselves up to date with the latest developments. In addition, the rather formalised and coherent decentralised support across all the Schools at the UoI can be considered as an additional strategy that brings RMAs closer to researchers, such that their roles can be more clearly understood by stakeholders.

6.3.1.4 Career-related challenges

The last batch of RMA-related results relates to the careers of RMAs. These include: (1) a compromise between personal research (of RMAs in possession of a doctorate degree) and the job of research management; and (2) limited job opportunities. The results are summarised in Table 6.9 and presented in more detail thereafter.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|--|--|--|-----|-----|-----|
| A. Compromise RMAs personal research vs. supporting research | 1. RMAs compromise: own research vs administration and supporting others | - Accommodating schedules for RMAs | | ✓ | |
| | | - RMAs being highly qualified and academically close to the field that they are 'managing' | | ✓ | |
| B. Limited job opportunities and restricted job mobility | 1. Job mobility restrictions for RMAs | - Career progression at UoM with specific titles, packages and benefits | | | ✓ |
| | | - Opportunities for horizontal career movements | ✓ | ✓ | ✓ |
| | | - Recruitment of project managers jobs that are close to the field | ✓ | ✓ | ✓ |
| | | - Resilience and multi-functionalism - Breadth specialisation | ✓ | ✓ | ✓ |

Table 6.9: Challenges and strategies related to the careers of RMAs

6.3.1.4.1 *Compromise RMAs' personal research vs. supporting research*

Almost all the feedback regarding the compromise between the RMAs own research background and their administrative/managerial role came from respondents at the UoI. The Schools at the UoI employ a number of RMAs with a doctorate degree (two out of four interviewed hold a PhD; another two interviewed are reading for a doctorate degree and another one who holds a PhD could not be interviewed due to unavailability). Only one RMA holds a doctorate degree at the UoM and the UCY, although two RMAs (one from each university) are currently reading for a doctorate. One RMA who is in possession of a doctorate degree indicated that at one point she

had to choose between an academic/researcher career and an administrative/managerial career. In her opinion, managing both a research profile and a research management profile entails long hours of work because both profiles can be quite demanding:

[For] some people, if they would be interested in their own scientific career it's not a good job...especially if they have a family. (DRMA1IS3)

Eventually she continued to explain that:

When I started my PhD...I thought I was going to continue doing research. But then I just had enough and I saw this as an opportunity, being in a research environment. I like the opportunity to work at the university. (DRMA1IS3)

The compromise between a research career and an RMA career is very clear according to this respondent. However, a doctorate degree for RMAs is far from a wasted effort. The other PhD holder at the UoI stressed the importance of academic knowledge in research management:

I think the academic knowledge is of help. It gives me insight in the people who I work with and I understand. I think better than other people who come from the other way round. They understand maybe the financial side better than me probably, but I understand what they need, what they want, how they operate. ... In my view, in order to be a good research manager you have to know the field. You have to be active out there, both writing proposals and reviewing them. In order to be selected to review you have to be updated in your research and with an active CV and publications. Hence I see it as a plus for my institute that my research is active, so that I can be selected to review boards and committees outside of the University. (DRMA1IS1)

The same respondent argued that it is up to the individual RMA to negotiate his/her position with the institution, in order to achieve a balance between supporting the researchers and staying active in the field of research. In this regard, accommodating schedules for RMAs and the possession of high level academic degrees can be considered as two strategies in the right direction that the UoI has been adopting.

Such strategies enable RMAs to maintain an active research profile while capitalising on their knowledge and familiarity with the research to improve services to university researchers.

6.3.1.4.2 Limited job opportunities and restricted job mobility

The second challenge for RMA careers relates to the nature of the labour market in small island states, which, as argued in Chapter Two and Chapter Four tends to be rather restricted. The strongest feedback came from the UCY, with a generally negative feeling among respondents about opportunities for promotion and salary increases. The economic crisis which Cyprus was experiencing during the period of conducting the interviews accounts for this pessimism, with employees in the public sector experiencing a nation-wide salary reduction of approximately 30%. However, this reduction in financial returns was over-shadowed by feelings of lack of appreciation for the work of RMAs. One respondent stressed that, at times, a simple ‘thank you’ would ease the negative feeling. When asked about the level of job satisfaction, the response was:

I think it's developing as well. I think if you asked me this question three years ago I would say 'not much'. But now, I think...the fact that they (referring to the directors of the Centre) say thank you, means it is more understood and appreciated. That makes a big difference, doesn't it? ... For me it's not so much the financial. It's more about the promotion - giving a person reward for the service. (DRMA1CY2)

Another respondent at the UCY admitted that the appreciation for her work is all she gets at times, but that might be enough for the RMA to keep going:

I don't feel that anything motivates me besides myself, to say I'm gonna give more. Or just people say thank you or appreciate your work. I mean this is the only thing that motivates me. Or your superior that says 'ah well done and'....That's the only thing I mean. (CRMA2CY2)

Moreover, moving between RMA jobs to other universities is not easy. According to one respondent at the UCY, there is limited incentive to move away from the UCY, since other universities are less influential and smaller in size:

It's not an easy transfer between universities. You have to pass exams. And a position has to be opened for you. And if you go there you have to quit here to go there, to take the position. This job security we have creates a lot of problems for us. In part, and I wouldn't want it in any other way. It creates problems, because if you make one bad choice, you are stuck with it for the rest of your life. (DRMA1CY1)

A similar feeling was expressed by a respondent from the UoI who added that if an RMA wants to change the university job he/she would probably have to leave the country:

What if nobody likes me and they throw me out? What am I going to do? I can't go anywhere else? ... How many posts are there here? There may be 5. And these people (referring to RMAs in Iceland in total) may be around 45-50. They're not leaving. So what am I going to do? Wait? So in any case I would have to leave the country. (DRMA1IS2)

In such environments, (publicly-funded institution, no alternative jobs, an economic crisis and low motivation) the positions get stuck and so does the approach. RMAs can develop an element of comfort that would deter efforts to improve the way things are done. This situation is not congruent with the fast pace of developments in research and the demands it poses on the university administrative machine and resources. A respondent from the UoM echoed the feelings expressed at the UCY about cosiness and stagnation:

If you've been working in this job for twenty, thirty years, it will be more difficult for you to change. So, yes, this is a weakness to live in such a small country like Malta. The opportunities are limited. (CRMA2MT1)

Another respondent put the blame on the institutions and the way they are run rather than on the individuals:

I mean, you wouldn't be in a private company, you receive an e-mail and don't look at it for three days. It's not an expectation from the private company. But I feel that within this institution it's the norm. (CRMA2MT2)

However, another respondent argued that the people are also to blame. Some people seek a job at the university because it gives them stability and security:

In Malta people think that when you work in a public institution you are safer. And there are still people who have that mentality that they prefer to go to work in a public institution where the job is secure for life. (OMT2)

Despite the feelings of pessimism and entrenchment expressed by respondents across the three universities in relation to job opportunities and job mobility, a number of strategies could be identified that address these challenges. The first relates to those RMAs who seek motivation by expanding their horizons, including furthering their studies, moving horizontally within the same university (from centralised to decentralised or vice-versa or to academic roles or a combination of roles) and breadth specialisation. One respondent at the UoM underlined the importance of universities supporting RMAs in furthering their studies:

I am very happy about it because when you have the knowledge about how to manage better your own job, I think it motivates you more and you know more what you are doing, what is expected from you. (CRMA1MT5)

The plans to recruit project managers at decentralised levels at the UoM and the UCY are also strategies in the same direction. Finally, the career path provided by the UoM for RMAs can be considered a breakthrough in allowing RMAs the possibility to move up the career ladder within the same institution. Moving up the ladder is not automatic for RMAs as they are required to prove their experience and their development in terms of skills and qualifications. A closer look at the public calls for applications over a number of years at the UoM (as part of the Document Analysis) demonstrates that as demands and responsibilities in research management increase, so do the qualifications and skills requirements.

These strategies raise the question as to what is the role of individuals and what is the role of institutions in addressing the contextual challenges. This debate may be a never-ending one. A clear answer is probably not possible, particularly when considering that both individuals and institutions operate in very peculiar and idiosyncratic contexts. A closer look at the institution-related challenges in the next section provides a wider perspective about the limiting factors in the three universities and the strategies that they adopt to address them.

6.3.2 Institution-related results

Whereas the previous section (6.3.1) has discussed the challenges and strategies that impinge on individual RMAs, this section presents a number of challenges and strategies from an institutional perspective. They are categorised according to four primary themes, namely: (1) context-related; (2) resources-related; (3) relationships

and perceptions; and (4) policies and processes. Each are discussed in the following sections.

6.3.2.1 Context-related

This theme and the one which follows (resource-related) are the two themes that were most prominent in the majority of the interview discussions held during this study.

Table 6.10 summarises the results relating to the contextual realities faced by the three universities. Each are presented in further detail below.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|--|---|--|-----|-----|-----|
| A. Mindset towards research | 1. Fragility of the research environment / integrating the research agenda in the minds of people | - Investing in infrastructures (incl KTO) | ✓! | ✓ | ✓ |
| | | - Building Science parks close to unis | | ✓ | ✓ |
| | | - Working in close collaboration with the university's host city | | ✓ | |
| | | - Engage in effective lobbying | ✓ | | |
| | | - Metrics | | ✓ | |
| | | - Investing in a good IT system | | | ✓ |
| | 2. Efficient and effective use of the limited resources | - Metrics | | ✓ | |
| | | - Evidence-based leverage | ✓ | ✓ | |
| | | - Choose by idea/person rather than by area | ✓ | ✓ | |
| | | - Co-financing projects with a great potential | ✓ | ✓ | |
| | 3. Acknowledgment of the need for research management | - Career related strategies for RMAs | | | ✓ |
| | | - Supporting participation in professional assoc. | | ✓ | ✓ |
| - Recognition that the admin machine is very imp | | | ✓ | ✓ | |
| 4. Resistance to change already-established structures | - Metrics | | ✓ | | |
| | - Consolidation strategies incl. one-stop shop | ✓! | ✓! | ✓! | |
| B. Agenda Setting | 1. Limited control over agenda setting | - Internal incentive mechanisms/ selectivity | ✓ | ✓ | ✓ |
| | | - Metrics | | ✓ | |
| | | - Joining forces in a lobby group for small states | ✓ | | ✓ |
| | 2. Resource requirements to follow the externally-driven agenda | - Having specialised RMAs | ✓ | ✓ | ✓ |
| C. Being the national (sole), publicly-funded, flagship university | 1. The scrutiny of the public | - Metrics | | ✓ | |
| | | - Allocating funds on competition & track record | ✓ | ✓ | ✓ |
| | 2. Struggle for autonomy | - Specialisation and selectivity strategies | ✓ | ✓ | ✓ |
| | | - Setting up of KTO/ILO | ✓! | ✓ | ✓ |
| | 3. Teaching vs. research struggle | - Specialisation and selectivity strategies | ✓ | ✓ | ✓ |
| | | - Buying yourself out of teaching time; | | ✓ | |
| 4. Cosiness, selectivity and grudges | - Metrics | | ✓ | | |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.10: Challenges and strategies related to the contextual realities

6.3.2.1.1 *Mindset towards research*

A number of challenges were identified that shed light on the mindset towards research within the three universities and the national context. The first challenge relates to the fragility of the research environment. Specific emphasis was made by respondents at the UCY and the UoM about the fact that research has never really been ingrained in the people's mindset. One respondent from the UCY attributed this fact to the relatively young age of the UCY, the first university to be set up in Cyprus, in 1989:

I think it is not a surprising fact for me that research was never really placed on a strategic framework. The University was set up mainly to satisfy the needs of the Cypriot students to have a university in their own country so that they do not leave every time to Greece and the UK, mainly. And I think that it was only in recent years that we started taking research more seriously and we realised that according to what research we decide to do we could have different results and different impact on the country's economy. (CRMA1CY2)

This mindset was not restricted to a university context but also to the wider landscape, including companies and policy-making:

As a country...you don't have many R&D enterprises, you don't see many big companies that have a research and innovation department. It's a culture that was mainly built on trade and services and on family businesses. So research is something new for people outside the university. And research is also a secondary issue when it comes to policy-making. There is no horizontal understanding of research. (CRMA1CY2)

Similar comments from the UoM mirror the sentiments expressed at the UCY, when referring to the very limited amount of funding available for research in Malta:

This problem is indigenous of Malta. Look at the factories: Foreign Direct Investment (FDI). You know, it's not from internally. So when they decide to move it (referring to the FDI) they move it. (KEYMT2)

This climate has been the cause of hostility towards research and its integration within the university mission. Another respondent at the UoM speaks of a rather colonial mentality that is still generally prevalent:

Unfortunately in Malta we are skewed towards a colonial mentality, [that] what happens, which is great, happens abroad and we might get some share of it and get others to invest here and create that destiny for us here. (KEYMT1)

However, as opposed to Cyprus, the colonial mentality in Malta cannot be attributed to the relatively young age of the university.

In Malta we've had the university forever (referring to the fact that the UoM traces its origins to 1592). ... You have to appreciate that this University has gone through various cycles, but really and truly, it was for many many years really a university of the professions...lawyers, doctors, engineers, teachers, medics, clerics. ... There was no research vision there. ... What there was was this model of foreign direct investment coming into Malta. So all the R&D was not meant to happen in Malta but the R&D was basically happening externally and then in Malta there was simply the operational function based on that R&D. And we see our economic model, till today, is very subservient to that foreign intellectual property which is simply mechanised here. (KEYMT1)

This comparison between the UCY and the UoM underlines the effect that each individual context can have on the path followed by institutions, people and mindsets.

This contrast is enriched further when analysing the Icelandic context. In Iceland the government has doubled the national funding for research in 2015, despite the economic crisis and collapse of the Icelandic banking system (2008-2011). According to a respondent from the UoI:

Increasing the funds at the national research council very substantially shows that there is a good understanding of research by the government and among politicians in parliament. Of course there are always some sceptics. ... But in general the understanding is good, and especially when it comes to education the understanding is much better. (KEYIS2)

Despite the challenges, a number of strategies were identified that indicate that the mindset towards research is becoming more positive. At the UoM, the setting-up of a Knowledge Transfer Office (KTO) was approved in the Council meeting held on 17th September 2009; a Centre for Entrepreneurship and Business Incubator (CEBI) was approved in the Council meeting held on 7th February 2013; and a Research Support Services Directorate was approved in the Council meeting held on 9th October 2015. Similarly to Iceland, in Malta, a science park has been set up in close proximity to the university to facilitate close interactions between the scientific community in industry and academia. The UoI has taken this interaction a step further, through the development of formal agreements and continuous discussions to work in close collaboration with the host city, Reykjavik (where the UoI is situated) to enhance the university's outreach to society. This was evidenced in the UoI's Council meeting minutes for 13th June 2013 and 3rd October 2013. In addition, the UoI utilises metrics as a means of elevating research to a level on a par with teaching. A particular strength that could be identified at the UCY (as evidenced by the document entitled 'University Research' [ISSN 1986-2504], published by the UCY in 2010), is the regular effort to engage in effective lobbying. This is done particularly through the European Office of Cyprus (EOC) in Brussels. This effort is intended to bring Cyprus and the universities closer to European policy-makers with the aim of safeguarding and promoting the interests of the Cypriot society.

A second challenge that emanates from the mindset towards research and that highlights a number of differences between the three universities is that relating to the efficient and effective use of limited resources. The UoI uses metrics to allocate

the limited resources available on the basis of actual research outputs. Researchers/academics decide for themselves which path to follow in a bottom-up approach. One respondent made this strategy very clear:

For example, people who are very active in research get automatically more time for research and less time for teaching. And they automatically get more funds for seed capital for research projects. ...We have limited resources and we want to make sure that the people who are the most active in research...get as much of the limited resources as possible. (KEYIS2)

This strategy is complemented by another strategy at the UoI, that of evidence-based leverage, which is also adopted at the UCY, although in the latter case it is not coupled with a formal metric system. The strategy rewards active researchers, with a supplement from internal research funds whereby the amount depends on whether the grant obtained is national or international:

So one of our incentives is that if you apply abroad, you are supplemented within the university with a much higher percentage than if you apply internally. ...If you apply at the national level, the supplement is 40%. ...And if you get a grant from Europe or from America or from the Nordic countries, it's 60%. (KEYIS2)

It is worth noting that this supplement is not a salary supplement but a supplement of research funds. This means that the limited internal funds are directed to support and hopefully generate more research and not simply to improve the wealth of individual researchers. The UCY adopts the same principle when it comes to allocating the limited internal research funds, although at the UCY the allocation is more targeted:

That's why we keep the internal research projects, even if they are small research projects not a lot of money, but we consider these internal research projects...as a step in order to go to the next steps, which are the European projects. (KEYCY2)

These strategies at the UoI and the UCY contrast with the UoM's strategy to date, whereby the limited internal research funds are allocated to all researchers (who answer to a call for applications with a valid proposal) equally. This strategy does not distinguish higher potential proposals from lower value ones for the university.

Two more strategies adopted by the UoI and the UCY but not by the UoM were identified which address the limited resources. One is that of co-financing projects with a high potential from internal funds. Prominent examples of these funds include the Centennial fund at the UoI (approved in the minutes of Council meeting held on 16th June 2011) and the funds from the Leventis Foundation at the UCY (as evidenced in the document entitled 'University Research' [ISSN 1986-2504], published by the UCY in 2010). The principle of co-financing is to support projects that are not fully-funded from an external source through internal funds, on the basis of their potential. A second strategy is that of allocating funds on the basis of the idea rather than by discipline. At the UoI, a call for applications was issued a year before this study, seeking excellent researchers. According to one respondent this is what happened:

We got about 1000 applications. And we had like 400 that were taken into consideration and then we hired ten lecturers which all could end up as professors a few years later, because they were very active in research. ...So this was kind of head hunting...without mentioning any areas. (KEYIS2)

Through this strategy, the UoI has utilised its limited resources to attract high quality researchers that could potentially contribute to improving the university rankings. Thus, the limited funds available were used as an investment to generate a greater return in the future.

A third challenge attributed to the research mindset concerns the acknowledgement of the need for research management. The general feeling across the three universities was that, whereas there is greater awareness of the need for research at the university and its contribution to society, there is little acknowledgement of the need to have a strong administrative machine to support the researchers. One respondent at the UCY made it clear that resources for research are mostly directed towards the researchers and not for RMAs to support them:

For the researchers. For the researchers (emphasis by respondent). It is a very top priority. [But] they (referring to top university management) do not connect the two, that they have to give more resources to support the researchers, ...people, people, (emphasis by respondent) actual people to support research. (DRMA1CY1)

Although this challenge was also expressed at the UoI and the UoM (but to a lesser extent), these two universities have a number of strategies aimed at seeking the well-being of RMAs. First, the review of the Council minutes at both universities demonstrate an element of recognition by Council members about the importance of a strong and adequate administrative machine to support research. This is evidenced through the minutes of the UoI Council meeting held on 15th January 2009; and the UoM Council meetings held on 13th February 2013, 14th May 2014, and 15th February 2015, among others. Moreover, the document entitled ‘Strategy of the University of Iceland 2016-2021’ gives a certain prominence to building strong administrative structures at the UoI. Two more strategies that were already highlighted earlier are related to supporting the RMAs’ participation in activities organised by professional associations and the career path provided by the UoM to RMAs within the university (as evidenced in Appendix 9).

One final challenge that emanates from the research mindset is the resistance to change. At the UCY there was a general feeling among RMAs that certain necessary changes in the administrative structure have not yet been made because of clashes between personal agendas:

The difficulty, I think, is that some people want to do this, but personal goals [take over]. ...This is the real reason that delays. (CRMA2CY3)

Feedback from respondents at the other two universities was attuned to this sentiment although the emphasis was on the fact that, once a structure is set up in a certain way it is very hard to change it afterwards. One respondent at the UoM attributed this resistance to individual mindsets:

Coming from the private sector I had a bit of a culture shock, in going into a public institution. For example, the thing I heard most and I still hear it sometimes is: 'we've been doing this for twenty years, why are you changing it now?' (CRMA1MT2)

Another respondent at the UoI attributed this resistance to a *laissez-faire* attitude adopted by the university which then back-fired when procedures started being implemented:

In the beginning, when I started many years ago, a lot of people just had their first research grants to the university. No one was checking and looking at what they were doing. So we were not very popular in the beginning when we used to say 'the University is the owner of the grant not you.' (DRMA1IS4)

Despite the challenges, the three universities are not passive in the face of resistance to change. As already discussed earlier, consolidation strategies and moves towards providing a more comprehensive and tailored support through a one-stop shop are in the pipeline for all three universities. In addition, the metrics system at the UoI can

also be considered as a driver for change, since it expects researchers to be research active and on the alert, if they want to advance in their academic careers.

6.3.2.1.2 Agenda-setting

It is a known fact that very often small (island) states have limited control over the agenda set by larger countries, international organisations or economic blocs (refer to Chapter Two for a more detailed discussion). Different respondents have referred to this reality from different perspectives. One respondent at the UCY was of the opinion that:

One of the numbering barriers to why we do not have a professional infrastructure and an organisational infrastructure for effective research management...is the fact that at European Level, which is a main driver for research in small states, ...the objectives, the priorities, the terminology, the administrative procedures are constantly changing. ... [So we are] constantly having to monitor the discourse at European level in order to be able to understand the meaning behind the terms...in order to understand the objectives in order to be able to develop proposals. (KEYCY1)

This process of adjustment of the local level to the European level is noted from the documents analysed. One example relates to the UoM's travel policy, which was changed in order to adopt EU guidelines. These guidelines were set by larger countries without much consideration to the needs of smaller ones. Another example comes from an analysis of the salary structure at the UoM to incentivise academics to seek external funding (approved in Council meeting held on 12th April 2012). The idea was to increase academic salaries through a supplement if he/she is awarded an externally funded research grant. However, in its Horizon 2020 framework programme, the EU has imposed a cap on similar incentives for all participants in the

programme, independently of whether they are large or small states, old or new members, universities or companies.

A respondent from the UoM indicated that external influence goes beyond restrictions on incentives mechanisms. Significantly, external agendas direct funds towards specific type of research instruments:

By managed externally very often there is the agenda of that external agency, which many a times is very utilitarian, very prescriptive and not necessarily the best way of spending funds. ...Money, unfortunately, is regimented and compartmentalised in project style, application-oriented, top of the chain, applied research. (KEYMT1)

This respondent continued to argue that smaller states can get a good share of European research funding only if they are able to fit in the European agenda:

If a small state of Europe is willing to work on the big research agenda, which is dictated mostly by the need of Europe in the macro, then they (referring to the EU funding institutions) are more than happy to see us participate. And in that regard they are generous when you look at our relative size. On the other hand, they are not willing to re-adjust their agenda...to fit mostly what is good for Malta. (KEYMT1)

This feedback suggests that the limitations imposed by external agenda-setting are more related to size rather than membership or otherwise in international organisations or economic blocs. Iceland is not an EU member, but according to one respondent, it still has limited possibilities to influence the agenda, despite the special arrangements that it has with the EU:

We just have to take the legislation from Europe, we cannot change it. By joining the EU we would have a vote or be at the table like people say, to discuss. So we are takers in a way at the moment. But, in some cases we are also influential. But I think in the larger context we cannot change a lot of things. (KEYIS1)

A number of strategies were identified to address the challenges of limited influence over agenda-setting. First, all three universities adopt internal incentive mechanisms despite possible external restrictions. As discussed earlier, the UoI and the UCY use internal funds to support ideas that fall outside the scope of external funding mechanisms, while the UoM has specific procedures to re-invest overhead money received on externally funded projects into further research. The UoI uses metrics to allow freedom to the researchers to select their own path. Moreover, the UoM and the UCY have over the past five years jointly attempted to embark on a second strategy, that of joining forces in a lobby group for small states, better known as EU²S² Association. One UoM respondent hailed this as a major effort to advance the interests of fellow universities in small states and to act as lobby group at EU level rather countering the agendas of larger universities on their own.

We set up the European Union Universities of Small States (EU²S²). We got basically all the small states together and we pushed an agenda to try and get a chunk of Horizon 2020 money focused on small states' needs. And it is from that debate that the notion of twinning and teaming emerged at EU level. (KEYMT1)

Finally, the employment of RMAs who are specialised in specific areas has also started to take effect in all the three universities, despite the challenges associated with specialisation mentioned earlier. These include lawyers that are specialised in Intellectual Property Rights, knowledge transfer professionals, RMAs that are specialised in human resources management and dedicated project managers (in the pipeline).

6.3.2.1.3 *Status of a national, publicly-funded, flagship university*

Apart from the challenges imposed by the mindset towards research and external agenda-setting, the three universities face some peculiar challenges owing to their status as national, publicly-funded, flagship universities. In practice this status means that they are the main universities with the largest share of the market in the country, they are publicly-funded and they are comprehensive universities (i.e. covering all academic disciplines). First of all, this status exposes the universities to *intense scrutiny* from the public. One respondent at the UoI remarked that the public places high expectations on the university:

It puts pressure on us to teach most subjects. ...And we also have to perform, since we are a research university and we have put ourselves apart from the other universities in a way. We have to perform well in research and we have to be well managed in research too. (KEYIS1)

This challenge is well assimilated by the UoI. The document entitled ‘Strategy of the University of Iceland 2016-2021’ portrays the UoI as a leader of the country’s research landscape, through the following statement:

The University of Iceland plays a key role in the development of Iceland as a knowledge-based society. It is the country’s leading scientific institution, provides education of professionals in diverse fields, actively collaborates with industry and society, and cultivates Iceland’s culture and history. The University of Iceland collaborates closely with universities and research institutes all over the world and its strength as an international research university is evidenced by its position on lists of the highest ranked universities in the world. (Strategy of the UoI 2016-2021, p. 3)

Being constantly in the public eye, the national university is particularly subject to a continuous *call for transparency*. As a consequence, there is the burden of compliance procedures and public scrutiny, including actions against the university

if the public perceives that, for some reason, the university has not acted impartially. Court proceedings, tribunals and other compliance matters may disrupt the university's operations. The minutes of the UCY Council meetings held on 20th November 2009 and 1st February 2010, provide evidence of this public scrutiny. Consequently, a publicly-funded university may become crippled by strict bureaucratic procedures:

For instance, if we are short of staff, it's not as easy to have a replacement, or to issue a new call, because you have to follow a set of procedures. So maybe had it been a private company it could have been a bit easier. (CRMA1MT1)

The use of metrics at the UoI and the allocation of internal funds based on competition and track record at all the three universities are the main strategies identified which address the challenges associated with public scrutiny. These strategies provide an element of transparency which is expected from a publicly-funded university.

Another common challenge in the three universities is the *struggle for autonomy*. A respondent from the UoI stressed that:

We are an international university that has strong roots in Iceland, serves the needs of the Icelandic society. ... We need to teach and focus on what the society needs. So there is flexibility to do what we need to do, but we need to work inside our own parameters. (KEYIS1)

The university needs to strike the right balance between being autonomous and pursuing its own agenda while still addressing the needs of the country and coping with the demands/pressures of its stakeholders:

We are by far the largest university in Iceland and we are 80% of the system. So what we do has a strong effect on the system. We are very much aware of this situation and we should lead. (KEYIS1)

A respondent from the UoM argued that autonomy can be jeopardised when funding becomes very restricted:

It (referring to the UoM) does need a bedrock of cash ... or assets, which allow it to build its own research agenda, at least as a basis. And on top of that you get all of the other [externally-funded] research grants. ...Unless you are going to have the ability to build this pyramid, going from basic research all the way to applied research, I fear that it's going to be very difficult for us to break this mode. (KEYMT1)

Moreover, when the university funding is derived from taxpayers' money there is the risk that the university is perceived as an extension of the civil service. One respondent at the UoM emphasised that:

Many people think that for the University of Malta to work in the interests of Malta...it needs to be publicly-funded. ...That means that...there is this unrealistic relationship of ownership of the public sector which means that the public sector has something, which it can dispose of and manipulate as it wishes. [This] defies the very nature of a university, which should be autonomous and able to react quickly to develop, to be one step ahead, to have goodness to give to the rest of the country. (KEYMT1)

Despite the struggle for autonomy, it was observed that over the time all three universities have managed to move forward with their own agendas. A clear example is the setting up of KTOs in the three universities that enable the creation of university–industry linkages through the transfer of knowledge. Moreover, the adoption of a formal strategy at the UoI is also evidence that universities in small island states can set their own agenda.

Autonomy is manifested in the university's ability to satisfy both the teaching and research demands of a nation. Reaching a *balance between teaching and research* is far from easy for each of the three universities, although different perspectives were

noted in this regard. At the UoM specific emphasis was made on the teaching overload experienced by academics, who are few in number in their areas of specialisation and who work with small teams that need to cater for most of the teaching requirements:

One of the biggest problems vis-à-vis the research is that our academics are overloaded with teaching. We are still the only university in Malta. Now others might come in, but at the moment we are the only one, bogged down with massive, massive teaching. If you had to tell me one thing which is stopping Malta from building a profile to date is that we have not been able to afford to build clusters of researchers who are focused mostly on research. (KEYMT1)

At the UoI and the UCY the situation is slightly different, since both universities have already started allowing their academics to buy themselves out of teaching in order to dedicate more time for research. At the UoI this process has been managed mostly through the metrics system, which automatically monitors the teaching and research activity of academics and on that basis, the teaching load and the research load are negotiated accordingly:

People who are very active in research get automatically more time for research and less time for teaching. ...In many cases, people who have a very strong interest in projects, international projects for three years or something like that, they can come up to me for money and apply for...a lower teaching duty at the time and the duration of the projects. (KEYIS2)

At the UCY, the success in attracting a number of European Research Council (ERC) grants (seven in all were active during the period of data collection) has made it easier for the university to gear itself into mechanisms that relieve academics from their teaching load towards more research. ERC grants make it mandatory that the principal investigator (i.e. the grant holder) dedicates not less than 50% of his/her working time to the grant. One respondent at the UCY stated that:

The load is the same for lecturers, assistant professors, associate professors and professors. But, if someone has an ERC project, he can buy his teaching, because the project gives him the money. (KEYCY2)

A last observation deriving from being national universities is three dimensional. First, national universities can provide an element of *cosiness and comfort* for their employees. Being the main (or the only, as is the case of Malta) university on the island, academic positions may be unchallenged, such that there is limited push to carry out research on top of the teaching and other duties. A UCY respondent admitted that:

Some professors have abandoned their research. They don't publish a lot, they don't have European projects. (KEYCY2)

The second dimension concerns *selectivity* in response to national development needs. In the rather restricted context of a small island state, selectivity between one discipline and another is very difficult, as manifested by one respondent's feedback:

What are you gonna do? Put a gun against people's heads and tell them you must become a biotechnologist? What am I gonna tell the bright kids of this country? It's only molecular medicine or nothing? Or else pack up and go away. And what if I have an aspiring physicist or environmentalist? Aren't these also going to be useful for the economy? Damn right they are. Should we not also be supporting research in those areas? Of course we should. (KEYMT1)

In this scenario, any strategic approach ends up being broad and largely unfocused to cater for many (if not all) disciplines. The strategy of the UoI does set certain targets and key performance indicators that are wide-reaching, such as increasing the number of PhDs or increasing publications in high impact journals, rather than having specific targets on individual disciplines.

The third dimension concerns *personal grudges*. In Chapter Two it was argued that once social unity is distorted it is very difficult to be restored in a small community (Farrugia, 2002). This characteristic has been emphasised at the UoM, mostly owing to the fact that until very recently the UoM has been the only university on the island. According to one respondent, this position gives the UoM an elite status that appeals to intellectually-rich people, but which can create resentment in others, who may not be equally successful in being part of the so-called elite:

This is an elite place. There is no doubt about it. The people that come over here, God has given them good brains and they use them. Fine. And I want to keep the standards all the time. 'Cos that's what is required at the end of the day. ... You need top people doing this. Now, somehow in this country, people resent it. (KEYMT2)

This perception towards the university is quite peculiar and needs to be understood within the specific context of the UoM. It is not surprising that a similar sentiment was not expressed at the other two universities, since they have been operating in a multi-university context for a number of years.

This section on the status of national, publicly-funded flagship universities concludes the context-related results. The next section shall now present the resource-related challenges and strategies.

6.3.2.2 Resource-related

Resource-related results can be split in three levels: (a) for academics/researchers; (b) for RMAs; and (c) for universities in general. Each are discussed in turn below.

6.3.2.2.1 Resources for academics/researchers

Table 6.11 lists the challenges and strategies relating to managing the resources available for research. The discussion is focused around two primary challenges, those relating to brain drain and those relating to the teaching versus research struggle/balance.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|--|----------------------------------|---|-----|-----|-----|
| A. Resources for academics/researchers | 1. Brain drain | - Bibliometrics; Incentives for researchers | | ✓ | |
| | | - Snowball effect: excellence breeds excellence | | | ✓ |
| | | - Niche areas & measures to attract good people | | | |
| | | - Attract people who are very well connected | ✓ | | |
| | | - Starting funds (seed funds) and work resources | ✓ | ✓ | ✓ |
| | | - Part of overheads re-invested into research | ✓ | ✓ | ✓ |
| | | - Certificate for HR excellence in research (HRS4R) | ✓ | | |
| | 2. Teaching vs research struggle | - Buying research time out of teaching | ✓! | ✓ | ✓! |
| | | - Self-ruling incentives system (Bibliometrics) | | ✓ | |
| | | - Employ post-docs/build doctoral school | ✓ | ✓ | ✓ |
| - Reward system (less formal) | | ✓ | | | |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.11: Challenges and strategies related to resources for academics/researchers

Respondents referred to different circumstances that have led to brain drain in various contexts. In Cyprus, the absence of a national home-grown university until 1989 led to students going abroad to obtain their academic qualifications, with the risk of staying abroad.

The University was set up mainly to satisfy the needs of the Cypriot students to have a university in their own country so that they do not leave every time to Greece and the UK. (CRMA1CY2)

Moreover, in times of crisis and with restricted funding, including that for research, PhD students, PhD holders and other researchers have left the country in search for a

better economic environment. This was experienced by the UCY, as explained by one respondent:

Yes we lost some and we are trying to bring them back now because we think that the crisis is almost fine. (KEYCY1)

At the UoM, the lack of post-docs and funding for them was identified as a source of brain-drain for PhD qualified staff. This highlights the problem of continuity in research investment in such a small context. According to one respondent at the UoM, the lack of funding for post-docs creates a missing bridge between PhD graduates and tenured academics:

We never had the money, the luxury, of employing people at post-doctoral level, merely to conduct research, research only or research focused. So we have a lot of academics who are heavily burdened with teaching and we haven't been able to create clusters around certain topics, because we've never had the money simply for posts in specific areas. This may change. Recently they (referring to the Ministry of Education) have launched a post-doctoral fellowship scheme. (KEYMT1)

At the UoI, the biggest risk of brain drain that was identified with post-docs was due to the relatively low salaries as compared to tenured positions. However, one respondent argued that this is a temporary situation:

Post-docs have a very low salary. They come in as post-docs and very soon they become lecturers and then the salary goes up. (CRMA11S2)

A number of strategies could be identified that address the problem of brain drain. First, *seed-funding* is made available in all three universities to support the launch of research endeavours. A respondent from the UoI explained that:

We have this initial seed capital for new groups and also capital for building research infrastructures...labs or something like databases. (KEYIS2)

At the UCY, the availability of seed funding was given prominence in the document entitled 'University Research' [ISSN 1986-2504], published by the UCY in 2010:

The new Research Policy of 2004, introduced start-up funding. This policy reveals the University's commitment to encouraging research among new members of the academic staff by offering them funding to develop the infrastructure, in terms of laboratory equipment or other resources, that is necessary for their research. This will enable them not only to pursue their research effectively, but will also ensure that they are competitive in attracting external research funds, in areas where such funds are available.

At the UoM, academics/researchers receive annual funding from the first day of employment in the form of work resources funds:

Each member of staff has a personal work resources fund which he/she administers and which is safeguarded and determined by the Collective Agreement. Such fund is at the individual academic's discretion to spend on teaching/learning resources or personal professional development. (NCFHE, 2016, p. 41)

As a second strategy, each university has mechanisms for *re-investing overhead money into further research*. If these research funds become substantial, there will be larger incentives for researchers not to leave their positions at their respective university. At the UoM, Article 6 of the document entitled 'Manual of Conduct and Procedures' that accompanies the Academics Collective Agreement for the period 2014-2018 provides evidence of this strategy.

A third strategy was identified at the UCY through a document entitled 'General Information regarding the *European Charter for Researchers (HRS4R)*'. At the time of the study, this document was being presented to the University Council for discussion and approval. The HRS4R is a certificate of HR excellence in research awarded under the European Charter for Researchers. It declares that the university's systems and processes facilitate the life of researchers and follow prescribed standards

in the recruitment of researchers. This strategy was not identified in the other two universities.

At the UoI, the use of *metrics* can be considered a strategy that allows researchers to establish their own path while being evaluated for their work in a transparent manner. Moreover, at the UoI the principle of '*excellence breeds excellence*' started being given significant importance. The strategy of having an open call for researchers without prescribing the discipline and recruiting ten active researchers from around the world is a good example of this strategy:

So we have just recently introduced an idea which was initiated at this office. It was about hiring about ten new academic staff, and they were all acknowledged internationally, without any definition of area. Only high academic profiles in any of the areas of the university. (KEYIS2)

In attracting world class researchers, the chances are that other foreign and even local researchers will be attracted towards the university. In response to this challenge, the UoM identified niche areas and adopted measures to attract key people. Digital gaming is one such example of how this strategy succeeded when the UoM managed to attract a whole team of researchers from a university in Denmark to relocate their research to Malta:

Take the example of the Institute of Digital Games. ... It was a move to have it here. So the rector was in Denmark...and then the whole group [of researchers] wanted to leave. We took them all in. Now the Institute of Digital Games is set up here. ... It was an institutional thing, it wasn't an individual [move]. (KEYMT2)

This strategy is opposite to the open call adopted by the UoI, but which has had equally positive outcomes in terms of attracting excellent researchers and to breed new excellence.

6.3.2.2.2 Resources for RMAs

Since the interviews were held with RMAs it is quite natural that a number of challenges and strategies concerning RMAs were also identified. These are listed in Table 6.12.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|-----------------------|---|---|-----|-----|-----|
| B. Resources for RMAs | 1. Need for a strong administrative machine | - Recognition that the admin machine is very imp | | ✓ | ✓ |
| | | - Consolidation strategies incl. one-stop shop | ✓! | ✓! | ✓! |
| | | - Recruitment of research project managers | ✓! | ✓ | ✓ |
| | | - RMO bringing de/centralised RMAs together | | ✓ | |
| | | - Closely-knit RMAs and teamwork | | ✓ | |
| | 2. Funds for training | - Empowering RMAs to take decisions, to lead | | | |
| | | - Joining forces with other countries (patrons) | | ✓ | |
| | | - Membership in professional associations | | ✓ | ✓ |
| | | - Provide training to RMAs (incl. by external firms) | ✓ | ✓ | ✓ |
| | | - Participation in BESTPRAC; RMA Conferences | ✓! | ✓ | ✓ |
| | | - Work Resources Fund for RMAs | | | ✓ |
| | 3. Caring for RMAs - job conditions | - Project Support Development Fund | | | ✓ |
| | | - Autonomy, trust flexibility, possibility to work from home; paid for overtime (v limited) | | ✓ | ✓ |
| | | - Career paths and different salary scales | | | ✓ |
| | | - Annual review of performance & job description | | ✓ | ✓ |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.12: Challenges and strategies related to resources for RMAs

Three primary challenges and corresponding strategies could be noted related to resources for RMAs: the need for a strong administrative machine; funds for training; and RMA job conditions. Each will be discussed in turn below.

In order for the university to address the needs of the researchers it must have a strong administrative machine. However, as already argued before (when discussing the mindset towards research), this aspect is not always acknowledged and adequately addressed within the universities. Respondents gauged the extent of acknowledgement by the university's level of investment in human resources for

research management. At the UCY one respondent argued that it is not enough to invest in research without investing in research management:

The problem is this. The university is not strategically thinking about research in an administrative manner. They are only thinking about the research in an academic manner. And they are trying to help the researchers to find more funding and help them in dealing with their financials, but they are not actually doing the practicalities behind this job. (DRMA1CY1)

Nonetheless, evidence suggests that the extent of such recognition varies across the three universities. At the UoM, the Council meeting held on 9th October 2015 approved the setting up of a Research Support Services Directorate to serve as a one-stop shop for academics undertaking research. This new directorate also gave the go-ahead for the recruitment of research project managers to build a closer relationship with researchers, which reflects an acknowledgement of the need for a strong administrative machine. At the UoI, the central RMO has been actively engaged in bringing centralised and decentralised RMAs together through regular meetings:

We have regular meetings. We have three layer groups of research managers. ... [One] where we have only two/three from my office and one from each School, 7, maybe 8, people in all. ... And then we have a medium-sized group, most of them are post-award specialists. Then, we have the full group. The small group is meeting maybe once a week or every other week; medium sized maybe once a month, and the big group is two or three times per semester. (KEYIS2)

Two more challenges concerning resources for RMAs relate to the availability of funds for training and the job conditions. Although in general the responses about the provision of training were rather positive, at the UCY constant reference was made to the fact that since the economic crisis kicked in, funding for training decreased dramatically:

In the past we had a lot of money for training. So I could go to good institutes abroad. But this was up to 2008. After that, the training for the university officers was cut tremendously. (CRMA1CY2)

Another respondent argued that holding training sessions on the university premises and attending training abroad do not have the same benefits. Local training lacks the networking element that could be exploited by attending training in other countries:

In previous years yes. For FP7 yes. For HORIZON 2020 yes. But because of the crisis they do not have enough money. So they didn't send us abroad for training but they brought the trainers here. Ok it wasn't bad, but I'm sure that if I was in Brussels I would have met with people having the same problems as me. (CRMA2CY3)

In addition, one respondent remarked that decentralised RMAs at the UCY are disadvantaged compared to centralised RMAs:

Because they have [more] funding...from overheads, from the central income that we have from the state. They have sources to fund training. And they have more resources than us. (DRMA1CY1)

According to this respondent, the problem is a psychological one, since the centralised and the decentralised offices are sometimes not seen as providing one holistic service:

The problem is that they (referring to centralised RMAs) think that we are different. They don't think of me as part of their group. ...We have the centralised office, we have the decentralised offices, but if we meet once in a while and feel like we are under one wing of research at the university, then we won't feel this thing of two different offices. ...If it's something useful for everyone, then we should do it together. (DRMA1CY1)

In contrast to this pessimism, respondents at the UoI expressed satisfaction with the level of training available. When asked whether the university provides training for RMAs, one respondent maintained that:

Yes. On my request. So I do go on courses and I do go on conferences, yes. ... Usually, when I ask for something I get it, because I do not go for three times a month or something like that. Every now and then...and I have not had a no yet. (CRMA1IS1)

This positive feedback was noted despite the recent economic crisis experienced by Iceland. Similarly to the UoI, respondents at the UoM were generally satisfied with the level of training available. The availability of annual funds that could be used for continuous professional development, were identified by the UoM RMAs as a strong means through which they could keep themselves updated on developments. Such funds allow flexibility and freedom to RMAs to attend relevant training:

Through the work resources fund I think we have, sort of, the liberty to...for instance if ... you want to go to a conference, you know, indirectly, that the university is providing that support. (CRMA1MT1)

In addition, the UoM has put policies in place to ensure that each externally funded project contributes a small proportion of funds out of the overhead money for a Project Support Development Fund (as per Article 6 of the document entitled 'Manual of Conduct and Procedures' that accompanies the Academics Collective Agreement for the period 2014-2018). This fund is intended to be used for the collective development of RMAs involved in supporting the university research.

In terms of job conditions for RMAs, responses were rather varied across the three universities. The economic crisis and the subsequent reduction in salaries is probably

the main contributor to a general dissatisfaction among RMAs at the UCY about their salaries and promotions. One respondent encapsulates the feeling of almost all operational RMAs at the UCY:

We don't have any promotions. Despite the fact that my department does its work very good, there are no incentives. And the only way to get a promotion is if a position is opened by the government and you have to apply. ...But generally there are no incentives for administrative staff right now. (CRMA1CY1)

Another UCY respondent stressed that:

The salary revisions are not based on an evaluation that you are doing yearly, annually. I mean, like any other government job. (CRMA2CY2)

The lack of connection between regular job evaluations and salary revisions or promotions is also noted at the other two universities. However, at the UoM and the UoI, an informal annual performance evaluation is conducted among RMAs, which, although does not contribute towards a salary revision or a performance bonus, is a regular source of feedback.

The benefits of this feedback only partially offsets the rather negative feeling at the UoI about the lack of an adequate salary structure. When asked about any measures that 'take care' of RMAs at work, with a direct reference to the salary, one respondent clearly replied:

No! But that's accepted here, that academics and support staff don't get paid the same. [Moreover, other RMAs] do similar things to me in a company and [they] get a much higher pay than me. But there is always a pay cut when you are working for the government. (DRMA1IS1)

However, the same respondent subsequently expressed satisfaction about the flexibility that the university allows to enable its employees to balance both personal requirements with work requirements:

But another thing is that there are advantages of working here that I like. I like that I can go to work as I please, that I can go to my children's schools functions, do some work on the weekend. As long as I can do my work I do not need to be here from 9 to 5 necessarily. (DRMA11S1)

These non-financial benefits seem to work well with RMAs, who, on one hand seem to accept the fact that their salaries might not be comparable to industry or might not be revised according to their performance, but on the other hand appreciate the element of autonomy and flexibility that they may be allowed by the university.

6.3.2.2.3 Resources for the university

The last group of resource-related challenges concerns university resources in general. Table 6.13 classifies them under four categories.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|--|---|--|-----|-----|-----|
| C. Resources for the university in general | 1. Inability to build critical mass | - Twinning/Teaming opportunities | ✓ | ✓ | |
| | | - Using local funds to leverage external funds | ✓ | ✓ | |
| | | - Direct money towards excellence & foster more | ✓ | ✓ | |
| | | - Collaborate/benchmark with strong partners | ✓! | ✓ | ✓! |
| | | - Inter-disciplinarity and clusters of excellence | ✓ | ✓ | ✓ |
| | | - Resort to external funding | ✓ | ✓ | ✓ |
| | 2. Research funding and over-reliance on external sources | - Seek alternative funding sources incl. donations | ✓ | ✓ | ✓ |
| | | - Part of overheads re-invested into research | ✓ | ✓ | ✓ |
| | | - Cost recovery of RMAs from projects | | | ✓ |
| | 3. Building the right research support structures | - Policies on the use of overhead money | ✓ | ✓ | ✓ |
| | | - Build in small steps, focusing on strong areas | ✓ | ✓ | ✓ |
| | | - Resort to external funding | ✓ | ✓ | ✓ |
| | | - Support focused around research centres | ✓ | ✓ | ✓! |
| | 4. Building research infrastructures | - Invest in infrastructures (incl. structural funds) | ✓ | ✓ | ✓ |
| | | - Resort to external funding | ✓ | ✓ | ✓ |
| | | - Building science parks close to universities | | ✓ | ✓ |
| - Invest in a good IT system | | ✓! | ✓! | ✓ | |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.13: Challenges and strategies related to university resources in general

It is worth noting from the table that the strategies that are deemed to deal with the challenges are fairly uniform across the three institutions. This indicates that the three universities are congruent in their approach where the general university resources are concerned.

The first challenge identified concerns the difficulties for universities to *build critical mass*. This challenge was particularly noted at the UoM. One respondent believes that:

Building a strong research infrastructure is paramount to building research clusters of excellence, indigenously. Because that creates at least a critical mass. Once you create that critical mass and some publications come out, then it's easier to argue that there is an active milieu. And then, when you have applications happening, there is a credible context to actually host certain projects. (KEYMT1)

However, building critical mass is an uphill struggle at the UoM:

We have managed in certain areas, and again, after many many years of plodding away. And where we managed to build research infrastructures and intellectual property,[it was] with great, much greater obstacles than in other places. (KEYMT1)

The biggest challenge seems to derive from the relatively small size of the research teams:

A cluster that creates critical mass, makes it easier to compete for projects, make it easier to build a brand in that area, makes it easier to bring money because success brings success and then the chain goes on. Whereas in a small [country], where certain disciplines are represented by the token academic here and there, it is much harder to create clusters of excellence. (KEYMT1)

Although at both the UCY and the UoI the challenge of building critical mass did not emerge as prominently as at the UoM, it became evident that both universities are actively seeking to address it. One respondent at the UCY argued that the projects awarded under the 'Teaming' mechanism of the European Commission offer a great potential to build centres of excellence and critical mass:

We had three such [Teaming] proposals in Europe shortlisted. They were chosen among the top thirty and they get half a million [euro] for one year to develop a business plan, then go back and apply for something like ten million [euro] to develop a Centre of Excellence. And in addition to the ten million, the University would provide infrastructure worth five million plus three million from the government. So it is something about like fifteen to twenty million for a Centre of Excellence. (KEYCY3)

At the UoI the approach to building critical mass is more geared towards using local funding, and hence it was partially jeopardised by the financial downturn of 2008:

Just before the financial turmoil turned in at the end of 2008, we had opened up proposals to select the strongest fields. And we were going to select four to be funded specifically, like Centres of Excellence. But this didn't happen because we had the financial downturn and then the cuts. So it is a tricky thing I would say, but I think we can do it. (KEYIS2)

The UoM is not passive in the face of this challenge and, similar to the other two universities, it encourages inter-disciplinarity and clusters to build critical mass:

It is basically in that inter-disciplinarity that we find strength. Even when you look at our University - the size of a research group at the UoM, two or three people make a research group here. In other countries you have research groups with fifty people - a number of professors, with a cluster of post docs, PhDs, master's students. So what to us is a faculty to others is a research group. (KEYMT1)

The challenge to build critical mass is closely linked to a second challenge, that of *funding for research*. At the UoM, one respondent summarises the challenge in a few sentences:

When you look at the University of Malta, you have already 84% to 87% of funds being spent on staff and staff-related costs. ...You have then about 9% on top of that which is for basic operations. ...And you are left with only 3%-4% of a budget... meant to be covering the library subscriptions which are becoming more and more expensive every year. Ultimately, what is left...ends up being, sometimes 100,000 or 200,000, and if we are lucky sometimes half a million [for research]. That is not enough for the range of activities that we are supposed to be sustaining. ...Small is a big challenge. (KEYMT1)

At the UCY, the Council minutes of the meetings held on 17th May 2010, 21st June 2010 and 17th October 2011 provide some examples of the concerns faced by the university's governing bodies due to the research budget cuts in times of crisis. The minutes of the Council meetings held at the UoI on 15th January 2009, 1st October 2009 and 17th December 2010, indicate similar concerns to those at the UCY.

In view of the restricted funding from local government, a strategic search for alternative funding sources could be noted in each of the three universities. Two possible sources of funding are donations (whether in cash or in kind) and student fees. However, obtaining funds from these alternative sources can prove challenging. The concept of donations for research is relatively new to Malta, with the Research and Innovation Development Trust fund (RIDT) set up towards the end of 2010. In Iceland and in Cyprus, the concept was introduced earlier. Council meetings held on 5th November 2009 and 7th May 2015 at the UoI, as well as those held on 12th July 2012 and 13th May 2013 at the UCY, document discussions about donations (some of which quite significant) made by the public in return for some form of recognition, including naming of buildings and national recognition.

The ability of the three universities to generate money from student fees (tuition, supervision and bench fees) is rather restricted, since such fees are highly regulated by legal notices. One respondent argues that this adds to the funding problems in a small country:

With all the legal restrictions of not being able to charge foreigners, that means three quarters of our potential revenue isn't there, simply because we cannot charge EU nationals for funds. So these are constraints we are imposed. (KEYMT1)

At the UoI, an administrative fee is charged to every student in addition to the fees mentioned above. However, from the review of the university's Council minutes (e.g. meeting held on 5th February 2015), it became evident that increasing such fees was far from easy, owing to the pressure from stakeholders about the possible negative repercussions that higher fees might have on the Icelandic community.

The limitations in raising funding from alternative sources drives the three universities to rely significantly on external funding. According to one respondent from the UoM, rather than resorting to external funds to fill a gap caused by limited resources at the local level, the university may have to rely almost completely on external funds to do research:

In certain areas we have the research. The problem is that when you get to a particular level you get stranded. So there has never been enough monies here. So what do we do? We go and get EU grants. When it is meant to be the other way round. 85% should be your own monies; 15% is the added value. No, what do we do? We make 2% internal monies and 98% outside. (KEYMT2)

However, this over-reliance on external funding is quite risky for a small country, and creates an element of vulnerability in terms of sustaining the level of the research

activity. This is because external funding is very often highly competitive and continuity is not guaranteed, hence the research agenda becomes very vulnerable:

Without having some own ring-fenced money for research, the university cannot drive its research agenda. (KEYMT1)

Some respondents argued that external funding very often comes with several *strings attached*, including significant compliance requirements, bureaucratic structures and co-financing requirements:

They know that if they don't do the timesheets the cost statement is not gonna get signed. (DRMA2CY3)

In most funding programmes nowadays, there is the idea of co-financing. ...But if there is a small entity, a small university which does not have an intrinsic budget to leverage on the circuit of funding out there, then the only way of surviving on a project of co-financing is by actually leveraging internal resources as their contribution in kind, many a time people's time. (KEYMT1)

Another respondent at the UoM underlined the fact that external funding often requires different beneficiaries to work together, possibly even from the same country. According to this respondent, this is not always an easy task:

Although this is healthy and important, it may mean that in a research landscape, which is not very wide like that in Malta, the University would need to work with partners which may not be very well geared to meet the requirements of the funding bodies (due to limited resources, talent, etc.). This situation may jeopardise the whole research project and the reputation of the institution. (CRMA2MT3)

In addition, external funding can prove to be a source of conflict within the university in terms of making use of funds allocated for overheads. The external origin of this overhead money, very often, gives the impression to principal investigators that they 'own' these funds and that therefore they should be entirely added towards their own

research funds. It becomes a challenge for the university to access these funds and a compromise is needed, which, according to a UoI's respondent, is far from easy:

There's a huge debate at the university right now and it hasn't been resolved yet. ... I mean, essentially this is supposed to be for overheads. That's something that our academics have struggled to understand. They just want to use it for research, because after all they have been allowed to do that, because we didn't have any administration staff to spend this money on. (DRMA1IS1)

Nonetheless, specific mechanisms could be noted in all three universities (as stated earlier) through which such compromise is reached and a portion of the overheads is re-invested into the PI's research funds. Moreover, the UoM adopts a system of time-booking for RMAs against each research project in order to legitimise the charging of administrative project support costs. According to one respondent, this is a major achievement for the UoM:

We have a system of time-recording and then there are big countries that do not have that system. (CRMA1MT1)

Despite its challenges, external funding remains attractive for the three universities.

According to one respondent:

They (referring to external funders) give much bigger grants. So one of our incentives is that if you apply abroad, you are supplemented within the university with a much higher percentage than if you apply internally. (KEYIS2)

Moreover, external funds provide a wider exposure to a researcher and may lead to publications in reputable journals.

I think Malta, in my opinion, is such a small country that the only way these researchers can create a name for themselves is to go for external exposures. Because if you're an academic, a researcher just locally-based, few people know you, whereas if you're out there with top universities you're getting the exposure, personally as well as for the university. (CRMA2MT2)

One respondent argued that without external funding, it is probably impossible to publish in reputable journals because the local funding on its own is not enough:

To produce that paper, because 'Nature' is a top journal, ... it costs a million euros. So for one paper in a top journal you need a million euros. Our research fund committee budget (at the UoM) is EUR 200,000 for the whole university. These are [our] realities at the end of the day. (KEYMT2)

In this regard, external funds can be considered an important asset for a researcher in a small country to reach the wider international circuit. However, this leap is not automatic. According to a UoM respondent, small island states may attract only a small share of the larger cake. Their contribution to an externally funded project may not constitute real research activity but simply administrative tasks that are peripheral to the research. The added value for a small island state is rather limited:

In a small economy, which many a time doesn't have the salaries of larger partners, ...what portion could Malta potentially take up and what nature of activity we ended up doing? One finds that, whether you like it or not, being small and with small budgets...basically your role automatically becomes peripheral. This is something which I believe very specifically Malta suffers from. (KEYMT1)

In addition to funding the research activity *per se*, two more challenges were identified related to university resources: the *building of research infrastructures* and the *building of research support structures*. The biggest challenges with these two aspects are that they are both costly and require considerable time and effort. The UCY and the UoM have gained access to European funding largely as a result of Cyprus and Malta joining the EU in 2004. This is due to the fact that these countries (together with ten others joining the EU in the same year) were lagging behind other EU members in terms of research infrastructures. Although progress has been made

since then, one respondent stressed that local governments should play their part in building research infrastructures:

You cannot expect the EU to give funding to sustain a country to be a country. A country should be sustained in whatever destiny it wishes to go by its own people. The EU, if anything, should be funding cross-border communication, synergy, that massification, so it can be competitive vis-à-vis the other blocs. ...Really and truly, the research infrastructure of Malta ought to be built by Malta. (KEYMT1)

In terms of strategies for building research infrastructures, all the three universities resort to external funds, in particular EU's structural funding. In addition, the UoM has invested in an IT system to cater for record-keeping, approval of expenses and audit trails. At the UoI and the UCY some interviewees hinted at new plans to invest in a similar system. Finally, as already discussed earlier, the UoM and the UoI can benefit from having science parks built close to the respective university premises, thus facilitating the transfer of knowledge from research labs to the scientific community.

As discussed earlier, research and research infrastructures require good research support structures. In all three universities, external funding plays a very central role in building such structures, particularly through the use of overhead money from research projects. In addition, the three universities have recognised that building these structures needs to be done in small gradual steps, focusing on strong areas and specific research centres, as one respondent at the UoI remarked:

You cannot do research without having any backup (support backup). And in order to have backup you need to spend money. And then you do little jumps, baby steps. That's the way to do things around here. That seems to be the best way. (DRMA1IS1)

This focus on incremental development is probably the strongest message that could be derived from the resource-related results. The three universities have acknowledged that their limitations warrant patience in the efforts to catch up with other larger states. However, progress in this regard is also conditioned by other contextual factors. The next section presents the challenges and the strategies related to the relationships and perceptions affecting the three universities.

6.3.2.3 Relationships and perceptions

A third batch of institution-related challenges and strategies can be attributed to the relationships that exist within and outside universities and the perceptions (largely externally) towards the university. These are listed in Table 6.14.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|--|---|---|-----|-----|-----|
| A. Internally - researchers vs. researchers | 1. RMA mediating between researchers | - RMAs as the go-to people, mediators (at centralised and at decentralised) | ✓ | ✓ | ✓ |
| B. Internally - RMAs vs. researchers | 1. RMAs gaining the trust of researchers | - Decentralised structures | ✓! | ✓ | |
| | | - RMAs in central office reaching out in faculties | | | ✓ |
| | | - RMAs negotiate academic salaries w/ gov | | ✓ | |
| | 2. Balancing various interests | - Constant communication RMAs w/ researchers | ✓ | ✓ | ✓ |
| C. Internally - RMAs vs RMAs | 1. Internal relationships between RMAs | - Regular meetings between RMAs; Teamwork | ✓! | ✓ | ✓ |
| D. Internally - RMAs vs other departments | 1. Balance between university needs and faculty needs | - Consolidation strategies incl. one-stop shop | ✓! | ✓! | ✓! |
| | | - Support focused around research centres | ✓ | ✓ | ✓! |
| | | - Centralised and decentralised structures | ✓ | ✓ | ✓ |
| | 2. Resistance to change from decentralised levels | - Constant communication RMAs w/ researchers | ✓ | ✓ | ✓ |
| | | - Decentralised structures and reaching out to faculties from centralised offices | ✓! | ✓ | ✓ |
| | 3. The concept of service | - Matrix structures | ✓ | ✓ | ✓ |
| | | - Supporting participation in professional assoc. | | ✓ | ✓ |
| | | - Having own professional association | | ✓ | ✓ |
| | | - Continuous professional training for RMAs | ✓ | ✓ | ✓ |
| | | - Joining forces with other countries (patrons) | ✓ | ✓ | ✓ |
| | | - Regular meetings between RMAs | ✓! | ✓ | ✓ |
| E. Externally | 1. Perceptions from outside the university | - Universities reaching out to the public | ✓ | ✓ | ✓ |
| | | - Formal university strategy accessible to public | | ✓ | |
| | | - Science communications (from lab to life) | ✓! | ✓! | ✓ |
| F. Closely knit & personalised relationships | 1. Stigma and reputation stick | | | | |
| | 2. Distortion of social unity | | | | |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.14: Challenges and strategies related to relationships and perceptions

These challenges and strategies can be divided in two groups, those relating to internal relationships and those relating to external perceptions and relationships.

6.3.2.3.1 *Internal relationships*

It is possible to categorise internal relationships in four categories. First, *relationships between researchers* within a university can cause constant challenges for the RMAs, as the latter are often called on to act as mediators to keep the research on track. One respondent expressed frustration at not being able to focus on the work due to the element of conflict that existed between two researchers:

We have to deal with clashes and conflict that are not really part of a project. It's sort of extra and time consuming as well as demotivating...it takes too long to take a decision and to deliver the output and related spending. (CRMA1MT3)

However, this mediator role seems to be inherent for RMAs in managing relationships between researchers:

Sometimes I end up being the mediator or sometimes even if they are not in conflict they have different opinions. (CRMA1MT3)

Being a constant reference point for researchers does not preclude challenges relating to the *relationships between RMAs and researchers*. Respondents across the three universities, especially those at the operational level, argued that one of the most challenging aspects of the job is to gain the trust of researchers. One respondent highlighted the fact that it takes time for collectivism to take over from individualism:

It takes time until they (referring to researchers and administrators together) start trusting each other, such that they believe that they are into the research projects together, as a university, not individually. (CRMA1MT5)

Another respondent interpreted the challenge from a technical side:

The challenge for the RMA is to insert him/herself into the world of the researcher, which is very technical and specialised, and to seal in the gaps which the researcher cannot fill i.e. admin support, guidance etc. (CRMA2MT3)

The effectiveness of the RMA job may often be at risk if it is incorrectly perceived by researchers. Moreover, perceptions in a small island state university can be contagious, putting the RMA job in a vicious loop that cannot be overcome very easily:

That's why it is a challenging endeavour for the RMA, because each researcher is different and future relationships depend on how well the RMA and the researcher can find a way to keep going, to co-exist and move on. (CRMA1MT4)

According to another respondent, the RMA job is challenging because it requires a balance between various interests, including those of researchers, institutions, funders, external stakeholders and RMAs, among others:

Many times I feel that I have one foot with one team and another foot with the other. And I need to show both teams that I am there and that I am working towards their benefit. So you need to mediate and deal with the interests of both. (CRMA2MT3)

A number of strategies were identified that address the RMA–researcher challenges. According to one respondent, constant communication with researchers is a much needed attribute of the RMA job:

So this is a challenge, to communicate with the researchers to make them understand you and to make you understand them and to compromise, and to find solutions for them. And whatever you do, you do it to serve them, but to serve them the right way not to over spend money, without need etc. (KEYCY3)

Decentralised structures are a very effective way to build trust and healthier relationships:

I think it is essential to be out and close to the researchers. They tried to do it centrally and they just failed. It wasn't working. And part of that was to put research directors in each of the schools to be closer to the people. (DRMA1IS1)

In the absence of decentralised offices, RMAs at the UoM engage into activities to reach out to faculties, such as through the 'Funding Fridays' initiative (as promoted on the UoM website). The latter is a once-a-week appointment for RMAs from the UoM central office to be present within faculties to meet academics and researchers and to discuss and search for funding opportunities together. At the UoI, the involvement of higher level (key) RMAs in negotiating better salary packages for researchers and academics with the government, can be considered another crucial step towards building healthier relationships between RMAs and researchers/academics:

Yeah, what we did many years ago, we went to the teachers union and we introduced some ideas to them, about a new salary system. And this salary system is based on points, and we said to the union 'we are willing to support you against the government to increase the total salary paid to all the teachers, if it is done in this way'. (KEYIS2)

A third category of challenges relates to the interaction of *RMAs with other RMAs*. Several respondents identified lack of communication as the main challenge that exists internally between RMAs. One respondent from the UoM highlighted the fact that the implications of ineffective communication can be wide-reaching in research management, with possible effects on researchers and external stakeholders:

Dealing with people is challenging in itself, because there are feelings, different agendas and egos. In an RMO, communication poses important challenges because the type of communication (good or bad, effective or ineffective) within

the RMO impacts on other relationships - with researchers; with external parties and on the way the RMO is perceived. (OMT2)

Another respondent from the UoM referred to the transition from pre-award to post-award and acknowledged that:

You cannot have super-humans, so you have to segregate the roles. Yet under these circumstances, communication is key. (CRMA2MT1)

However, the communication challenge between RMAs seems to be more wide-reaching. According to a UCY respondent, a challenging aspect of communication is to address problems at the right levels, without having to refer the matter to more senior management levels unnecessarily:

Similar level RMAs can understand each other better and if the more seniors get involved, other agendas may come into play. (CRMA1CY2)

Reference here is made by this respondent to the difficulties that exist at the UCY in changing old ingrained practices, which the respondent referred to as 'other agendas' and which interfere in the process of effective communication. According to another respondent, RMAs at the UCY do not come together to share experiences and learn from each other:

Another issue is that some people might attend a seminar, or attend a conference or something, including myself, but when we are coming back we are not informing others at the office of what we learnt. This is not good, because an information you have might be helpful for the others. (CRMA2CY2)

At the UoI, the sharing of information for mutual benefit is done through a number of meetings held regularly (fortnightly, monthly or per semester) and targeting different levels of centralised and decentralised RMAs.

The fourth challenge relates to the relationships between *RMA*s and other internal units. A decentralised RMA at the UCY highlighted a fundamental challenge for the university:

On the one hand you need to have in place standard, fair and transparent procedures, but on the other hand different departments, institutes, centres may have different requirements. (DRMA2CY1)

Reaching a balance between the general university needs and the needs of individual units is not an easy task, particularly because it may mean changing procedures that have been long ingrained in the minds of people:

The thing I hear the most and I still hear it sometimes is: 'we've been doing this for twenty years, why are you changing it now'? (CRMA1MT2).

This attitude in itself is incongruent with the underlying principle of research. The research endeavour is a dynamic one, and looks for novel things, ideas and approaches. So change becomes natural in research and in the processes to conduct and support research.

A number of strategies were identified aimed at achieving a balance between general university needs and the needs of individual units. These include: the planned consolidation strategies, including the concept of a one-stop-shop; the provision of tailored support focused around research centres; and the combination of centralised and decentralised structures/approaches. In addition, working in a matrix format (comprehensive support service across various faculties, institutes and research centres), provision of training, joining forces with other countries and holding regular meetings between RMA's, help in instilling a concept of service among those who are

indirectly involved in the support of research. As stated earlier, the UCY and the UoM are also exploiting the participation in professional associations of RMAs for this purpose.

6.3.2.3.2 External relationships and perceptions

The challenges attributed to relationships are not confined to the boundaries of a university but extend outwards, towards society. The relationship with funders and policy-makers, especially at a local level, represent one aspect of this challenge. One respondent at the UCY is of the opinion that:

They (referring to funders and policy-makers) don't have a basic understanding of the role of science in supporting their work. They don't differentiate between discussing based on evidence and discussing generally. (KEYCY2)

The UoI addresses this challenge through a formal strategy that, not only directs its own operations, but is also aimed at clarifying the perceptions of external stakeholders. Moreover, the three universities are also engaging with strategies that reach out to the public, particularly through science communication activities that expose what happens within university research 'laboratories' to the outside world. At the UoM, one respondent mentioned a number of science communication initiatives:

Now there are things like Science in the City, Malta Cafe Scientifique. ... [They] are very well attended. They are popular like a concert or something similar. People go. And [even] people who are not affiliated with the university. (OMT1)

Other activities that were identified through the UoM's website include: the publication of 'Think' magazine, which is a quarterly publication of research-related

matters at the UoM, and the screening of 'Lab to Life' documentaries by the UoM on the national television station. At the UoI, the organisation of a series of public seminars entitled 'Businesses will be' (as documented in minutes of the University Forum held on 16th November 2012) among others, reflect the university's engagement with society. At the UCY, the document entitled 'University Research' [ISSN 1986-2504], published in 2010, highlights a number of initiatives by the UCY to enhance Cyprus' European identity, the island's traditions and its cultural heritage.

Apart from 'communicating' the university's endeavours to the outside world, these communication strategies are essential to address the challenges arising from closely-knit and personalised relationships. In a small island state, stigma, reputation or affiliations may persist for a long time, hence appropriate communication and transparency are crucial in order to minimise incorrect perceptions. According to one respondent:

It can easily happen that you were working for an entity (say a local funding agency) with which a researcher may have had a negative experience (e.g. not agreeing with a rejected proposal) and you then apply for a job with the national university. So you will be facing this researcher in the immediate day to day job. (DRMA1IS2)

Another respondent from the UoM mirrored this feeling and expressed concern over pre-conceived ideas, which can be contagious:

Some people have negative perceptions of the university, despite being the only one so far on the island. That is a challenge in itself, because if you're going to work with someone who already has a bad perception about you, it is not going to be a smooth relationship. (CRMA1MT1)

These challenges indicate that relationships and perceptions can render the management of research in a small island state university complex, particularly because it entails dealing with a wide range of aspects. The last group of institution-related challenges and strategies identified can be attributed to policies and procedures. These results are presented in the next section.

6.3.2.4 Policies and processes

Table 6.15 lists three institution-related challenges that can be attributed to policies and processes, together with a number of related strategies.

| CHALLENGES | | STRATEGIES | UCY | UoI | UoM |
|--|--|--|-----|-----|-----|
| A. Formal university strategy and direction | 1. Formulating, implementing and monitoring a formal and wide-reaching university strategy | - Formal strategy through wide consultative process | | ✓ | |
| | | - Renewal of the strategy every 5 years | | ✓ | |
| | | - Sub strategies following on from the main strategy | | ✓ | |
| | | - Metrics and annual returns for academics | | ✓ | |
| | | - University follows the national and EU strategies | ✓ | | ✓ |
| | | - Consolidation strategies incl. one-stop shop | ✓! | ✓! | ✓! |
| B. Selectivity decisions in research | 1. Selecting how to make an efficient and effective use of the limited resources | - Metrics used to direct resources; incentivise | | ✓ | |
| | | - Snowball effect: excellence breeds excellence | | ✓ | ✓ |
| | | - Inter-disciplinarity and clusters of excellence | ✓ | | ✓ |
| | | - Attract people who are very well connected | ✓ | | |
| C. Reactionary vs pro-active approaches in research management | 1. Lack of strategic approach and proactive thinking in research support and towards RMAs | - Choose by idea/person rather than by area | ✓ | ✓ | |
| | | - Recruitment of research project managers | ✓! | ✓ | ✓ |
| | | - RMO bringing de/centralised RMAs together | | ✓ | |
| | | - Closely-knit RMAs and teamwork | | ✓ | |
| | | - Empowering RMAs to take decisions, to lead | | ✓ | ✓ |
| | | - Recognition that the admin machine is very imp | ✓ | ✓ | ✓ |
| - Regular discussions to upgrade the admin machine | ✓ | ✓ | ✓ | | |
| - Consolidation strategies incl. one-stop shop | ✓! | ✓! | ✓! | | |

| | |
|----|---|
| ✓ | indicates which university adopts which strategy to the challenges identified |
| ✓! | indicates that the strategy by the respective university is either informal or still not fully in place |

Table 6.15: Challenges and strategies related to policies and processes

One can distinguish between three challenges attributed to this theme, which are related to: (a) research, namely having a formal university strategy and selectivity;

and (b) research management, namely reactionary versus proactive approaches. Each will be discussed below.

6.3.2.4.1 Formal university strategy and direction

There are different perspectives on the need to have formal strategies in place across the three universities. At the UoI a formal university strategy with specific aims, objectives and metrics to measure/monitor performance has been in place for over ten years, since 2006. The plan is to continue with the same approach at least until 2021, since another five year strategy covering 2016 to 2021 (widely referred as Háskóli Íslands {HÍ 21}) has recently been launched. The approach towards formulating the strategy was rather iterative, based on extensive consultation:

The new strategy for the University of Iceland has been produced in extensive collaboration with the entire University community and stakeholders from diverse fields of industry and society. It was also based on various internal and external reviews of the University. ...The goal of HÍ 21 is to...serve as a guide to the future for us all – staff, students, and the society that the University serves and relies upon. (Strategy of the University of Iceland 2016-2021; p. 3)

In addition to the main university strategy, other sub-strategies were introduced based on the principles of the main strategy, including a strategy for international relations (documented in the minutes of Council meeting held on 2nd October 2014) and a policy for sustainability (documented in the minutes of Council meeting held on 17th March 2011).

In contrast with the UoI, no such formal and wide reaching approach to strategy was noted at the UoM and the UCY during the period of the study. However, one respondent from the UoM remarked that:

There is an [informal] institutional strategy, which more or less has to run in line with what the country does. (KEYMT2)

The emphasis of this comment is on the direction provided by a national level strategy instead of a university level one. The same respondent identified resource restrictions and limited infrastructures as the main factors behind this approach:

To have a [formal] strategy you have to have the cash and the infrastructure to enable it. Unless there is the infrastructure present and the cash to support the infrastructure, what's the point in doing a strategy? The strategy then becomes another piece of paper. (KEYMT2)

A similar approach is adopted at the UCY, whereby informal run-off-the-mill approaches seem to be more common than the more formal and written-down procedures and targets.

6.3.2.4.2 Selectivity decisions in research

The second challenge related to policies and processes concerns selectivity decisions in research. Such decisions are constantly faced by the three universities in allocating the limited resources for research. There was general agreement among the respondents across the three universities that selectivity decisions are indeed the most challenging. On the one hand, the three universities are expected to address the teaching, research and outreach needs of the country. On the other hand, the limited

resources need to be used as efficiently and effectively as possible. Therefore, it becomes very challenging to take decisions on research areas, projects or teaching programmes that may not be feasible to implement.

A number of approaches to selectivity (or the lack of it) in research were noted. The three universities are not selective in the support that they provide to successful grant applications (internal and external). One respondent at the UoM was very clear in her response:

[For] every project that is selected for funding, we would provide the support (CRMA1MT1).

Similarly, a respondent from the UCY emphasised that:

We know that they (referring to university top management) want us to get as many projects as possible. We know the direction yeah, they wanna get the projects and we do whatever it takes to support that. (DRMA2CY3)

Internal university research funds seem to be the only ‘tool’ for the university top management and RMAs to allow any selectivity, particularly to support an academic to make the leap in research activity:

We consider these internal research projects very important for the academics as a step in order to go to the next steps, which are the European projects. (KEYCY2)

However, as discussed earlier, such funds can be very limited and any selectivity may in actual fact be severely conditioned. At the UoM, the limited internal funds have, for the past years, been equally distributed among those researchers who had applied for an internal call for proposals. In recent years, towards mid-2016, the UoM has

started to ring-fence funding for specific projects following an open call for proposals, in addition to allocating small amounts of money to each ‘successful’ applicant.

At the UCY, internal funds are partly allocated to a wide number of researchers following an open call for proposals (similar to the UoM) and partly used for co-financing. It is through the latter that the UCY has introduced a level of selectivity:

So if someone wants to make astrophysics and he wants a telescope of five million euros, we have to decide. ... What is important is not to choose by subject but to choose good people. (KEYCY1)

Selectivity based on good people is indeed the idea behind the strategies aimed at funding inter-disciplinarity and clusters of excellence. At the UoM, one respondent stressed this point in particular:

Our biggest specialisation as a small country ought to be inter-disciplinarity, ironically. So, even when you say smart specialisation in Malta. Smart specialisation should be between things that are inter-disciplinary and generic, to cover specific areas. (KEYMT1)

This approach is extended further at the UCY, by trying to attract world class researchers who are very well connected in the international arena. These include individuals of a Cypriot nationality who have achieved high status overseas (known as the ‘University of the Diaspora’) and who are being encouraged to either return to Cyprus or establish strong positive links with the UCY. Such a strategy requires selectivity in directing specific funding for integrating talented individuals into the university’s research community. Finally, as discussed earlier, the UoI adopts a fully-fledged metrics system to facilitate and legitimise selectivity. Any direction of funds

towards one person over another or towards one area over another is purely bottom-up, since the researchers decide on the career path they would like to follow. Based on their annual submission and results, the university takes key decisions on the allocation of research funding and the spread of the teaching and research workloads.

6.3.2.4.3 Reactionary versus pro-active approaches in research management

The third aspect of the challenges and strategies related to policies and processes concerns research management and RMAs. This study has shown that very often, any strategic and proactive thinking in research is not matched by the same level of strategic and proactive thinking in research management. The discussion on RMA-related challenges indicated that the three universities provide limited incentives for RMAs. Strategies and approaches in research management across the three universities are rather reactive and largely conditioned by restricted resources. This sentiment is quite uniform across the three universities, as reflected by these three respondents from the UoI, the UCY and the UoM respectively:

I would say that in general, unfortunately, it is more reactionary, because we don't have time and we don't have enough people. So we tend to work on issues which are very urgent. (KEYIS2)

I guess we're not proactive generally to say 'ok we're doing this to help people out'. Things are created because they are needed at that time. (CRMA2CY2)

It is reactionary. I think it was a reaction, but I wasn't here from the beginning. (OMT2)

However, there are indications that a concrete effort is underway across the three universities to give research management a more strategic dimension. As already referred before, UoM's Council meeting held on 9th October 2015 approved the setting up a Research Support Services Directorate to serve as a one-stop shop for academics undertaking research. At the UCY:

The university is thinking of having a completely different research management service to involve those who are doing the financial part, the others from the research office who handle proposals etc. together. (CRMA2CY5)

At the UoI, there are plans to develop further the centralised post-award support:

We are now at the time to strengthen our post-award team. ...We intend to centralise all the post-award tasks, because it is so expensive for the university if you make mistakes. (KEYIS2)

At the UoI, the role of the central RMO to bring together centralised and decentralised RMAs may also be considered a strategy to build closely-knit teams of RMAs to offer more proactive solutions to research support. This is accompanied by a strategic move by the UoI to empower its decentralised RMAs to take decisions and to take the lead within their respective Schools.

6.4 Summary

This chapter presented the key comparative results and findings of the three research questions of this study, namely: (1) how is the research management function organised in the national, publicly-funded, flagship universities in three European small island states; (2) what are the key challenges faced by the three universities in

managing their research; and (3) what strategies do these universities have in place to address the research management challenges. The findings on the research management structures included a particular emphasis on the composition of RMA teams, the structure of the services provided and the job titles associated with research management. The findings on the research management challenges and the related strategies distinguished between challenges and strategies related to RMAs and challenges and strategies related to the institutions.

The next step is to present a comprehensive discussion about these results in order to determine the factors that shape research management in national, publicly-funded, flagship universities in the three European small island states. This discussion is presented in the next chapter and will facilitate the opening up of new research routes for further development in the understanding of research management within small contexts.

CHAPTER 7

DISCUSSING THE RESEARCH FINDINGS

AND

REVISITING THE CONCEPTUAL

FRAMEWORK

CHAPTER 7 – DISCUSSING THE RESEARCH FINDINGS AND REVISITING THE CONCEPTUAL FRAMEWORK

7.1 Introduction

This chapter presents an overall discussion for this study and has three objectives. First is to re-visit and crystallise the thinking process linked to the research questions. Second is to present an informed interpretation of the results in relation to the overarching question of this study, namely that of identifying the factors that shape university research management in three European small island states. Third is to re-assess the baseline conceptual framework of this study in the light of the outcomes of the entire research process. But first, the integrated thinking process is presented in the next section.

7.2 Integrated thinking process of the study

Given the complexities encompassing research management, both within universities as sub-systems and as a profession, discussing each finding separately would have been difficult, if not impossible. Hence, it was deemed best to clarify the position of the findings in the whole thinking process in order to enable a holistic picture of the phenomenon. This integrated thinking process is illustrated in Figure 7.1 with reference to five milestones in the research process linked to this study.

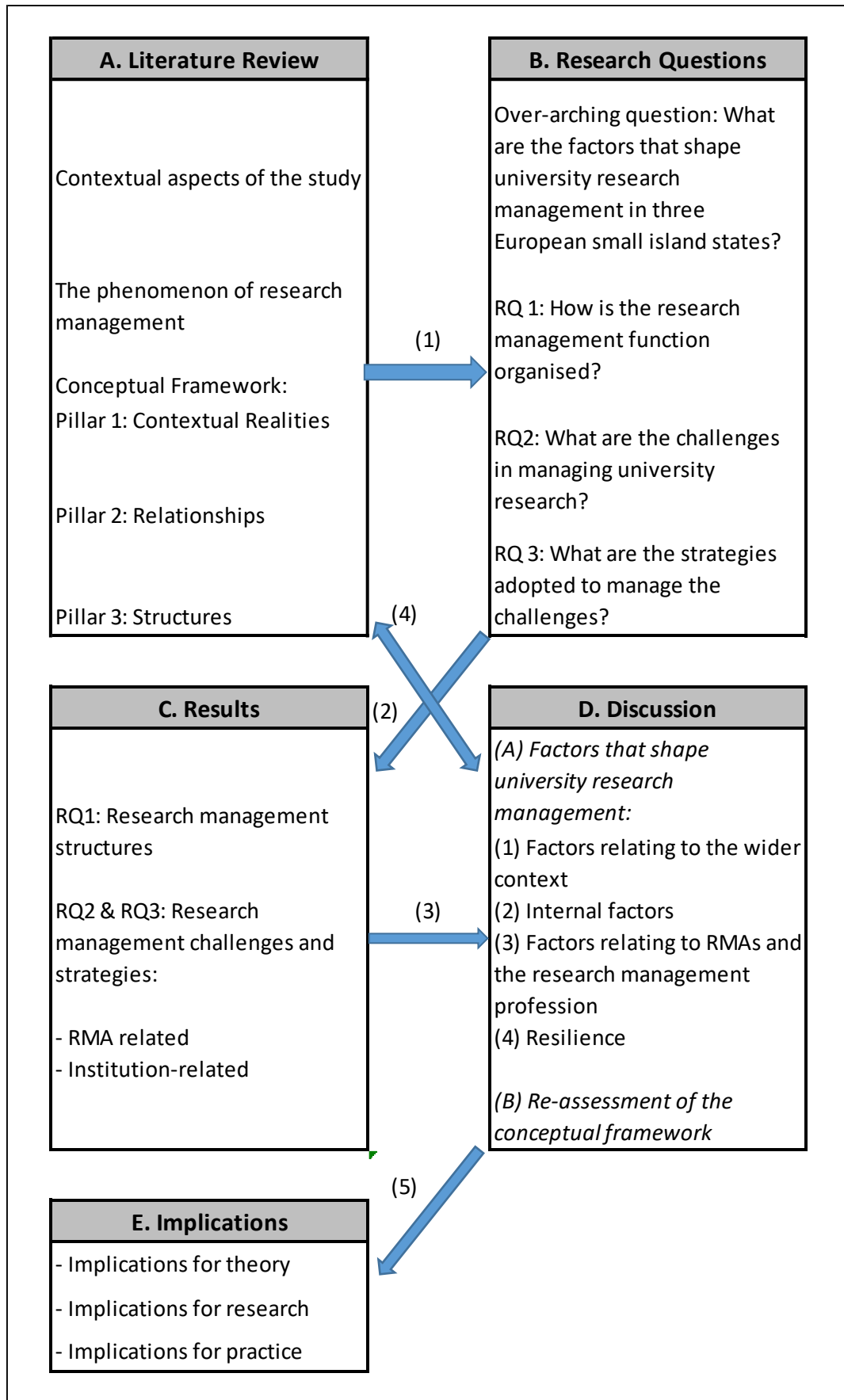


Figure 7.1: Five milestones of the research process

The first milestone was to undertake a thorough review of the literature on the two underlying aspects: the small island states context and the phenomenon of research management. In the absence of literature linking the two aspects together, a conceptual framework was formulated, borrowing on the relevant literature on universities, research management and small contexts. The conceptual framework was built on three pillars, namely: contextual realities, relationships and structures. On the basis of this conceptual framework, an over-arching question for this study was formulated with the aim of identifying the factors that shape university research management in three European small island states. This was investigated through three research questions with three main targets: first to explore the *organisation* of the research management function in the three universities; second to discover the *challenges* faced by these universities in managing their research; and third to identify any *strategies* adopted by these universities in managing the challenges. The three research questions produced a number of results, which were presented in the previous chapter (as summarised in Table 6.1).

A number of factors shaping research management within the three universities were identified based on: (1) the findings and results in relation to the research questions; (2) a re-visit of the literature review; and (3) insights generated from the expert focus group which met towards the end of this study. These factors were classified in four primary categories, namely: (a) factors relating to the external context; (b) factors that are peculiar to the internal university environment; (c) factors that surround RMAs and the research management profession; and (d) factors that emanate from the resilience characteristics of both universities and RMAs. The discussion in this

chapter is organised along these four categories. It concludes with a re-assessment of the baseline conceptual framework (as presented in Chapter Four) to determine the extent to which the factors identified in this study shape university research management in the three small island states. The fifth milestone is the identification of a number of implications from this study, which will be presented in the concluding chapter of this thesis.

7.3 Interpretation of results and findings

This study identified eight primary factors that shape research management in the participant universities. These are presented along four categories in

| Category | Factors shaping university research management |
|--|--|
| 1. Factors relating to the external context | Embeddedness of research in the people's mindset |
| | Status of a national, publicly funded, flagship university |
| | Research funding |
| 2. University internal factors | University strategies and performance evaluation |
| | Research support structures |
| 3. Research management and RMA-related factors | Nature of the job |
| | Trust building |
| 4. Resilience factors | University resilience |
| | RMA resilience |

Table 7.1: Factors shaping university research management in the three universities

7.3.1 Factors relating to the external context

In Chapter Four the context was presented as one of the three pillars of the conceptual framework and it was argued that a distinction needs to be made between the external national context and the internal organisational context. In this section, a number of factors emanating from the external national context in which the three universities operate are discussed. According to Hofstede (1993), values at the national level are ingrained in a wider culture and take long to change. They are therefore outside the control of the individual universities (and organisations in general) and tend to have an inherent effect independently of the organisational policies and strategies. The factors relating to the external, uncontrollable context in this study are split in three, namely: (1) the embeddedness of research in the people's mindset; (2) the status of the three universities as national, publicly-funded, flagship universities; and (3) the modes and extent of research funding. These are each discussed in turn below.

7.3.1.1 The embeddedness of research in the people's mindset

One specific contextual factor that shapes research management is the extent to which research is ingrained in the people's mindset. In Chapter Four, it was argued that, while constituting a profession of service, research management operates within the culture of research (Gabriele and Caines, 2014). Hence, if the people's mindset does not favour research, the roles and scope for research management would be highly jeopardised or non-existent. But what influences the extent of embeddedness of research in the people's mindset? There is probably no concrete measure to gauge this factor. However, this study identified a number of aspects reflecting the wider

mindset towards research, which provide plausible explanations for the differences and similarities between the three universities.

One pertinent aspect is the *historical development* of universities over time. While the UoI and the UCY were set up in 1911 and 1989 respectively, the UoM traces its origins to 1592. Hence, while a local home-grown university has existed in the Maltese and Icelandic societies for quite a number of years (centuries in the case of Malta), a local home-grown university has not existed in Cyprus until the 1990s. The reality of a small island state not having its own university is not uncommon, in view of the significant resources required compared to the relative low demand for its services (Bray, 1992). This reluctance and/or inability to set up a university on home soil can be partially justified since most small island states have, until recently, been colonies of larger states (Bray and Packer, 1993). Thus, they have traditionally relied on establishing strong links with patron countries (Bertram, 2004) in order to provide compensatory factors that ease the implications of smallness and islandness (Baldacchino, 1993).

This reliance on patron countries to satisfy the higher education requirements exposes small island states not only to unavoidable brain drain (Christensen and Mertz, 2010), but also to possible deficiency in the people's mindset towards research. Within their respective context, each of the three national universities are nowadays considered as leaders in the higher education sector, including the conduct of research. Hence the absence of a local national university in a small island state can jeopardise significantly the mindset of people towards research.

However, the presence of a university in a small island state neither eliminates the reliance on patron countries nor makes research automatically ingrained in the people's mindset. There can be two reasons for this which emanate from this study. First, research itself has to infiltrate through the other missions that are often entrusted to universities, primarily the teaching mission. For example, the UoM has traditionally been perceived as a 'producer' of professionals (teachers, doctors, lawyers, clerics and accountants) rather than as a 'producer' of knowledge through research. Hence, embedding research in the people's mindset (both within and outside the UoM) requires a change in mentality that developed over many generations and which is not easy to displace.

The second reason is that *tradition* may encroach the mindset toward research. As former colonies of larger states, small island states may be fraught with the concept of neo-colonialism, such that the local communities may place greater dependence on ideas, products and projects that originate from abroad (Farrugia, 2002). A case in point is the heavy reliance on FDI that has prevailed for many years and still persists, particularly in Malta and in Cyprus, which gives the impression that whatever is great happens abroad, while small island states are simply there to extract any residual benefits, if at all.

The nurturing of strong links by small island states with patron countries brings into light the relevance of the *geographical location*, since the progress or otherwise of small island states may become significantly linked to the performance of their neighbouring countries (Thorhallsson, 2006). For example the higher than EU

average performance of Iceland on the EIS 2016 (discussed in Chapter Two) is comparable to that of the other Scandinavian countries. In contrast, the performance of Cyprus and Malta on the EIS 2016 is lower than EU average, mirroring the performances of their respective close neighbours Greece and Italy, whose performances are weaker than those of the Scandinavian countries.

The *attitudes and perceptions* of external stakeholders towards the university may also serve as a gauge for the embeddedness of research in the people's mindset. For example, at the UoM, respondents indicated that the university is very often perceived as an extension of the civil service, because it is publicly-funded and has until recently been the only university in the country. Hence, it constantly strives to attain a degree of autonomy from significant political influence (Nkrumah-Young *et al.*, 2008). In contrast, the UoI, which has operated in a multi-university environment for a longer time, seems to have been more successful in convincing governments on the unique role of the national university. In 2006 the UoI managed to secure the support of the government and other stakeholders to embark on a strategy that would transform it into a world class research university. In 2011, the Icelandic government allocated a Centennial Fund to the UoI in recognition of its one hundred years of service. Moreover, in Iceland, a number of premises situated close to the UoI that were vacated during the economic crisis of 2008-2011, were eventually used to foster new entrepreneurial activity involving the UoI and the life sciences park, in view of their close physical proximity. These examples indicate that the attitudes towards a university impinge significantly on the extent of support provided enabling it to sustain and extend its activities.

Equally relevant are the attitudes towards universities and research of other stakeholders (besides the government), including the public. These may be gauged through the extent and type of donations made to the universities by the public and private enterprises. At the UCY, the Leventis Foundation finances a number of research projects that contribute towards the understanding and development of the Cypriot society. Similarly, at the UoM, the RIDT has slowly ingrained a positive public attitude towards research intended for social well-being. While representing a positive attitude towards research on a national level, these donations underline a salient aspect: that research and its value is not uniformly understood among different types of stakeholders. On one hand the university may be perceived as an extension of the civil service, in which research funding struggles to infiltrate and gain recognition on the government's agenda. On the other hand, donating money to a university trust fund to enable the conduct of specific research has been more rapidly assimilated by the public. Such contrast implies that managing research in a small island state requires detecting and understanding the messages relayed back by society in order to develop appropriate strategies and to capitalise on them.

7.3.1.2 Status of a national, publicly-funded, flagship university

The status of the UoI, the UoM and the UCY as national, publicly-funded, flagship universities derives from the fact that they have the largest share of the higher education sector in their respective countries; are largely publicly-funded; and they serve as a constant reference point to society and to the government (Nkrumah-Young *et al.*, 2008). The data collected in this study indicates that such status impinges on university research management in small island states due to four primary factors.

First is the need for *transparency and public scrutiny* of the operations of a national, publicly-funded, flagship university. As a university becomes increasingly financed through taxpayers' money, the greater is the right of the public to scrutinise the university's strategies, operations and decisions (Reichert, 2006). However, the reality of the universities in the three small island states is somewhat more complex, since public scrutiny may lead to a continuous struggle for autonomy. One example of this struggle is manifested in the challenges faced by universities in terms of priority-setting and selectivity. The status of a national flagship university brings with it expectations that the national university is there to serve all areas of society, since if one area is not served, there is the risk that society will develop a deficiency. These expectations may put pressure on the national university to engage in certain activities (such as running academic courses and supporting research) even if they are not financially sustainable.

Second is the *balance in pursuing the various university missions*, particularly teaching and research. The need for achieving an optimal balance is not unique to small island state universities. Rather, such balance became necessary since the first 'academic revolution' of the nineteenth century, which has started integrating research into the realms of universities to complement the more traditional teaching mission (Rodrigues, 2011). Such revolution did not see its origins in small island states. To the contrary, the latter have followed what has been happening in larger contexts. As argued earlier, this is a rather natural process for small island states whose development trajectory, very often, follows that of larger and more prosperous states with whom they establish close linkages (Baldacchino, 1993). In addition, in

Chapter Four it was argued that PUIs also face challenges emanating from heavy teaching loads (Cuhel-Schuckers *et al.*, 2017). However, unlike PUIs, the challenge for universities in small island states takes more of a national dimension since any balance, or the lack of it, may have significant impact on the teaching and research for the entire country. This study highlights the fact that the drive to achieve such balance is not uniformly addressed in the three universities. On the one hand, respondents from the UoM emphasised the difficulty for the university to strike a balance between teaching and research because the teaching demands are significant and resources limited. On the other hand, formal metrics are used at the UoI to legitimise those academics who would like to buy themselves out of teaching in order to dedicate more time for research or vice versa.

The challenge to strike a balance between university missions may be symptomatic of a third factor deriving from the status of a national university that impinges on research management. This is the element of *cosiness and comfort* emanating from the prospects of life-time employment and stability (Sultana, 2006). This factor has two dimensions. On the one hand, this element of comfort may create legacies to long ingrained structures, processes and procedures which may take very long to change. Some examples include: resistance to upgrade the research support structures at the UCY and the resistance to change the method of allocating the internal research funds at the UoM to enhance efficiency. On the other hand, *cosiness and comfort* can be the result of academic tenure which is a central part of the *collegium* perspective in the conceptual framework. Although, academic tenure is not pertinent only in small island states, the methods in which it is granted, particularly the timing, may make a

whole difference in the extent of motivation for academics to embark on new ventures. For many years academic tenure at the UoM was granted at the very early stages of an academic career. However, nowadays the UoM requires a longer term of probation (four years) for any academic joining the university at any grade. At the UoI, academic tenure is linked to research output (through metrics), while at the UCY a regular assessment of performance is implemented every three years before academic tenure is granted. While these measures for obtaining tenure challenge the cosiness and comfort at the early stages of a university academic employment, there are limited incentives for tenured academics at the UoM and the UCY to engage in new endeavours. In contrast, the UoI's metric system can be considered essential in this regard to encourage tenured academics to keep striving to reach new heights or to gain access to additional resources.

The fourth factor impinging on research management emanates from *personal grudges*. When discussing relationships under Pillar Two of the conceptual framework, it was argued that the small island state context can favour the concept of servant-leadership because smallness in size and population often lead to the creation of closely-knit and integrated societies with highly personalised relationships (Baldacchino, 2002). However, in Chapter Two it was also argued that once social unity is distorted it may take many years to be rectified (Farrugia, 2002), thus making the servant-leadership role of RMAs quite complex. Grudges can see their origin both externally and internally to the university and may be more common in small contexts because of the limited alternative opportunities that may exist. In a restricted market the national university is often perceived as an institution for the

elite, such that only the selected few make it within its ranks, thus giving rise to grudges. Moreover, grudges may also arise from within the university, especially due to differences that may exist in salary structures, failed promotions, and share of research funding. Without being intimidated by these internal and external grudges, RMAs need to be prepared for their role in mediating and managing conflicts. These are some of the soft skills, which, according to Kerridge and Scott (2017), are of significant importance for RMAs in leadership and managerial positions, more than any other hard skills required at the operational level.

7.3.1.3 Research funding

The discussion on the context-related factors that impinge on research management would not be complete without evaluating the research funding mechanisms. Funding was identified as the primary limiting factor in conducting research within the three small island state universities. The evaluation is built around a critical aspect highlighted in this study, which is the high reliance of the three universities on external funding for research (see Figure 6.1 to

Figure 6.6).

It is evident that such external grants generate a number of *benefits* for universities in small island states. First, they represent an essential source of funding for research which otherwise would not have been available. Second, they enable researchers to build wider European and international networks, to become known in the international spheres and to team up with more resourceful foreign research teams to

counter the lack of critical mass that is often prevalent at the local level (Brandi, 2004). Third, there seems to be a better reputation and hence a better incentive to anyone who is successful in attracting external funds. This can be primarily attributed to the greater competition that there is at supra-national level and therefore the challenges to succeed are considered to be higher. Fourth, external funds may also be used by the three universities to build research infrastructures, which would otherwise have been very difficult to build through local sources alone.

However, a number of challenges identified in this study warrant some reflections on the *risks* that excessive reliance on external funding may generate. First, external research funds are very often quite competitive and are not guaranteed. Success in one application does not give automatic right to further rounds of funding. Small island states have to develop contingency plans for situations where external funding stops or becomes inaccessible, for whatever reason.

Second, the inability to build critical mass and the limited supply of resources make it difficult for small island state universities to lead large scale multi-national research projects, such that they risk getting only a very small share of the cake. Moreover, such share may be for activities that are peripheral to research, such as co-ordination of consortia and organisation of dissemination events and not the research activity *per se*. A peripheral involvement is of little added value in building research capacity and profile. It can only allow universities in a small island state to join the circuit of international players but it does not automatically allow them to make the leap in research to act as front runners.

Third, reliance on external funding for research exposes the three universities to an externally-driven agenda, which is very often not targeting the interests of small island states (Darmanin, 2009). Respondents argued that in its last two research framework programmes, the EU (as a primary external funder for the three universities) has started directing more funding for close-to-market research (i.e. innovation) instead of basic research. The former type of research may be very challenging for small island state universities since it requires certain specialised knowledge (such as on Intellectual Property Rights) which may not be readily available. Therefore, both basic research and innovation can prove inaccessible for small island state universities where resources and infrastructures are lacking. In such scenario, basic research can be financed through specific programmes, such as those funded by the European Research Council (ERC grants) or by having local programmes that fund basic research. However, ERC grants are often very competitive, such that small island states with limited resources are often competing with larger states with significantly higher resources (human talent, critical mass, infrastructures). Moreover, research funding programmes at local level may also end up being indirectly ‘hijacked’ by the agenda of funders at the supra-national level. For example, the EU tends to benchmark its members against standards set at the supra-national level, which the local level ends up following instinctively, but which may not be congruent with the real needs of the small island states.

Linked to external agenda-setting is the fourth risk connected to excessive reliance on external funding, which relates to research infrastructures. In targeting external funds, universities in small countries are not operating on a level playing field with

larger countries. While larger countries often have already an advanced research landscape, small island states may still be building their infrastructure and research networks. There is a common understanding among respondents that EU structural funds are essential for building capacity. However, small island states face a major challenge with these EU structural funds. Since resources in small island states are generally scarce, there is a significant demand for these funds on a national level, not only for research infrastructures. Thus, the demands of a national university for EU structural funds often end up in competition with other state demands, such as those for building transport infrastructures, ensuring a good supply of energy resources and building communication networks, among others. While these infrastructures contribute indirectly to support research activity, priority needs to be given to investments in dedicated research infrastructures, including research laboratories, sophisticated equipment, physical space and science parks.

Finally, since external grants are also funded from public sources, they are often accompanied by bureaucratic structures, audits and compliance requirements. While not questioning the legitimacy of these requirements, they may exacerbate the problems faced by small island state universities, especially due to limited human and financial resources. Adherence to the bureaucratic procedures of funders is necessary irrespective of the administrative capacity of a university or the size of the country (Cuhel-Schuckers *et al.*, 2017). Thus, universities require teams of highly specialised staff to deal with the requirements that accompany externally funded grants and which require time and resources to build. For example, at the UoM, the team of RMAs was built mostly to support the post-award phase of research projects. But this

came at a cost: the inability to concurrently build strong support structures at a decentralised level, which could provide stronger support at the prospecting and the pre-award phase. The exact opposite development has happened at the UoI, whereby a greater investment was made in building capacity at a decentralised level at the expense of limited support at the post-award phase. These two opposing circumstances highlight a common element, which is also congruent to that of PUIs, namely that the building of adequate research support structures is often viewed as a luxury in small contexts, since it is costly, requires significant resources and takes time to build (Alenzi and Salem, 2007).

The role of RMAs in external funding is rather legitimate. One can even argue that the scope for RMAs would be heavily reduced from an operational point of view, had external research funding not existed. Therefore, RMAs need to strike a balance between structures that facilitate the access and successful utilisation of external grants and the freedom and flexibility required by researchers to conduct and exploit the research opportunities created by these grants.

7.3.2 Factors relating to the internal university context

The following discussion on internal university factors, as distinct from the external factors, is deemed necessary because this study demonstrates that the internal context within the three universities can be relatively unique. Hence, RMAs operating within a small island state university may be shaped by what happens within the internal boundaries. The factors relating to the internal university context are discussed in two

parts, namely: (1) the university strategies and performance evaluation; and (2) research support structures.

7.3.2.1 University strategies and performance evaluation

Three dimensions to strategy and performance evaluation emanating from this study warrant further reflection. First is the extent of *formality*. On the one hand, the UoI adopts a formal, university-wide, strategy with clear targets and key performance indicators. This strategy is accompanied by a fully-fledged metric system which assigns points to monitor and evaluate outputs. On the other hand, the UCY and the UoM have no formal strategy document, although both have published the university vision and mission. They both have a relatively less formal process of evaluation in which academics/researchers are evaluated by an independent body of external evaluators.

The approach adopted by the UoI appears as more tailored and formal while the approach at the other two universities is less defined and more informal. Formality can be closely associated with the principles of managerialism (StClair and Belzer, 2007), which, according to the conceptual framework presented in Chapter Four, plays a central part in the relationships that occur within an internal university context. Managerialism within universities is said to address tensions, restore order and achieve control of the irrational processes that characterise the academic endeavour (Mauthner and Edwards, 2010), but it also fosters formality as purported by the bureaucracy perspective of organisational theory (Manning, 2012). As the

principles of managerialism started permeating the UoI through the formulation of clear, written down strategies, formality became a natural process. This formality is evident in more reporting, submission of annual returns for performance evaluation and greater scrutiny by management of academics and researchers.

However, despite this formality in terms of strategy formulation and performance evaluation at the UoI, it is not correct to conclude that the UoI's processes are built entirely on strict formal and bureaucratic principles. This is because the responses from the UoI revealed that the strategy formulation process is rather informal and bottom-up, involving significant consultation with every department, faculty and school. It therefore embraces the principles of both the *collegium* and the bureaucratic perspective through an in-built consultative process which is less formal than it appears. This approach is not so distant from the ad-hoc and informal approach that prevails at the UoM and the UCY. In this regard, an external quality assurance review report about the UoM published in 2016 (documented in: 'External Quality Assurance report - UoM - Carried out between the 20th and 24th April 2015) highlighted that most mechanisms at the university are rather informal and not written-down, but are nonetheless relatively effective.

This mix of formal and informal approaches demonstrates that the small island state university context is not entirely characterised by the bureaucratic perspective or by the *collegium* perspective. A combination of both perspectives seems to be prevalent. Indeed the combination of formality and informality promotes the relevance of the political perspective within the three universities. On the one hand, formality,

scrutiny and accountability become necessary by virtue of the fact that the universities are publicly-funded and therefore need to be accountable to the public. On the other hand, these universities follow the tendency of institutions in small island states, that of not formalising procedures, in view of their size (Sultana, 2006), thus increasing the potential for political behaviour. Such behaviour relies mostly on informal means of information that provides an understanding of the conflicts and co-operations and their impact on the employees' performance (Vigoda-Gadot and Drory, 2006).

Because of its reliance on informality, the extent of political behaviour is not easily gauged. The extent of its presence could possibly be better understood by looking at its effects. For example, to counter against the conflict that may possibly arise from the limited resources, universities in small island states may opt for a 'keep everybody happy' approach, as opposed to 'leverage' or 'selectivity' strategies. The first approach prevails at the UoM in terms of allocating local research funding with the aim of minimising conflict and speculation. On the other hand, the UoI adopts a leverage strategy since it uses local research funding to reward academics/researchers who are successful in attracting external funding. Therefore, these two universities are dealing with a common problem in a different manner.

The allocation of limited resources sheds light on the second dimension of strategies and performance evaluation, that of *selectivity*. The results of this study indicate that top-down selectivity of one discipline over another is impractical as it could entail significant resistance from academics/researchers and from external stakeholders.

RMAAs in the three universities argued that almost all research proposals are supported, irrespective of the discipline. On one hand, this lack of selectivity in the three universities is attuned to the literature on PUI's, whose research mindset should be as inclusive as possible, so that all disciplines share a sense of collective purpose (Miceli and Albarado, 2015). On the other hand, such an approach may be dysfunctional because some form of top-down direction may be necessary to make more efficient and effective use of the limited resources. The decision-making model combining top-down with bottom-up processes as proposed by Hazelkorn (2005), could possibly be the best option for managing research within small island state universities, since academic freedom and bottom-up initiative are not suppressed but steered by top-down direction.

The third dimension to strategy and performance evaluation is the extent of *pro-activeness or reactiveness* in the approach to strategy. The 'revolution' in 2006 to transform the UoI into a research university, supported by a formal university-wide strategy, are the result of a conscious, pro-active initiative instigated by the UoI. Such a 'local' strategy then feeds into, but runs autonomously from, the other strategies at the national level. On the other hand, the UoM and the UCY tend to rely more on direction provided by the national R&I strategy and the smart specialisation strategy. In the formulation of these strategies, universities merely provide their input but they are not acting as drivers of change. Such a process is normally instigated by national or supra-national bodies (such as the EU) who may make the formulation of such strategies a standard obligation for the member states. The risk with having such national strategies that address the demands of supra-national bodies is that the

strategy document may become generic and superficial to the needs of the university. Contributing to such strategies may become another ‘compliance’ obligation for the university, unlike the more flexible, tailored and proactive approach of the UoI. Moreover, small island states are automatically submitting themselves to an external agenda, thus entering into a vicious circle that makes them victims of their own doings.

7.3.2.2 Research support structures

The second major internal university factor that warrants specific focus apart from university strategies and performance evaluation is the research support structures. Unlike other factors discussed thus far, research support structures can both shape research management and in turn be shaped by research management. On the one hand, the role of the RMA can be influenced by the structures (or the lack of them) at any particular point in time. On the other hand, RMAs are also in a position to influence the structures and possibly upgrade or change the dimension of the support provided to address better the needs of the researchers. This is evident in the forthcoming plans at the UoM and the UCY to consolidate research support structures at a decentralised level and at the UoI to enhance the centralised post-award support. This principle of mutual causation reflects the arguments of the theory of loose coupling (Weick, 1976; Perrow, 1984; Orton and Weick, 1990), which purports that university research management may itself be moulded according to how university systems are loosely coupled but also may itself influence the way the various systems interact together through policies, strategies and structures (see Chapter Four).

It can therefore be argued that research support structures may have both direct implications on RMAs and also indirect effects. The direct implications can best be understood with reference to the P-E/P-O fit theories (Dawis, 1992; Edward *et al.*, 1998; Muchinsky and Monahan, 1987; Schneider *et al.*, 1997) contemplated under Pillar One of the conceptual framework. According to these theories, an RMA would 'fit' within the university either because his/her needs match with those of the job and of the organisation (rational fit) or because his/her personality matches with that of other members of the group and of the supervisors (relational fit). Hence, stress caused by role overload or the challenges caused by lack of communication are two examples that may cause rational and/or relational misfits for the RMAs, owing to inadequate research support structures.

Apart from the direct effects, research support structures can also shape university research management indirectly through a number of factors. First is the *availability of resources*. Respondents from all three universities remarked that the limited resources compel universities to build research support structures in small steps, sometimes in an ad-hoc fashion, depending on which sources of funding becomes available. This incremental and potentially fragmented approach to building research support structures underlines the pertinent challenge noted by some RMAs that very often they have no time to think strategically. Consequently, developments tend to occur in a reactionary fashion, are often short-sighted and may inadvertently be creating rigid structures which would be impossible to change in the future.

Research support structures need to be adequately resourced because, according to Sharrock (2012), RMAs need to strike a balance between various priority zones, ranging from the professional community, creative engagement, system integrity and sustainability. The combination of limited resources and the need for a balance brings into limelight the aspects of multi-functionalism and specialisation. Both aspects have been largely considered as mutually exclusive to both the small island states context (Farrugia and Attard, 1989) and to the PUI context (Cuhel-Schuckers *et al.*, 2017), since multi-functionalism may make specialisation rather impossible. However, this study demonstrated that the three universities have different responses to this restriction caused by limited resources. For example, at the UoI and the UCY, departmental RMAs felt that they were playing multi-functional and not very specialised roles, since they had to deal with a whole range of research management tasks (both pre-award and post-award) and other activities unrelated to research management. In contrast, at the UoM, where research support structures are largely centralised, a level of specialisation is possible as RMAs either work on pre-award activities or post-award activities but not both. The multi-functionalism required from these RMAs was more related to doing various aspects of the same type of activity rather than doing both activities. Hence, the same limitation, that of limited resources, has different implications for research management in different contexts because of the differing research support structures.

The differences between the contexts shed light on a second indirect factor that determines research support structures, namely *specific events*. There was a general agreement between the respondents from the UCY and the UoM that EU membership

in 2004 provided both universities with new and unprecedented opportunities to conduct research. Such a ‘disruptive event’ can be considered as a wake-up call, highlighting the need for research support structures, especially since EU-funded research projects warrant collaborative and trans-national approaches, with significant compliance requirements. With respect to the UoI, a major national ‘event’ was the decision not to join the EU and the recognition that a healthy relationship with the other Scandinavian countries, with the US and the EU (not as a member state) was more beneficial for the country. This decision has brought the UoI closer to Scandinavian and US counterparts, hence most ideas and structures adopted by the UoI were compared by respondents to those of the Nordic and US universities.

Research support structures are also determined by the extent to which decision-makers (both within and outside the universities) understand (or otherwise) that *investing in research also requires investing in research support structures*. This link is not always very clear, especially since research and research support structures may end up competing for the same limited resources. This situation is peculiar to the university context and derives mainly from the distinction between the academic heartland and managerialism that traditionally has prevailed within universities. While research is considered one of the main missions for universities and their academics, the research support structures may be perceived as yet another administrative unit within the university bureaucratic structures (Bess and Dee, 2012). This distinction between specific research support structures and other general administrative units is not easy to conceptualise. As argued in Chapter Four, research management borrows skills and capacity from other administrative functions within

a university that contribute indirectly to support research (Derrick and Nickson, 2014). Hence, the setup and clarity of the research support structures may play an important role in the recognition (or otherwise) of research management to the research process. Moreover, the extent of recognition that research support structures contribute to the research process depends on their level of ‘maturity’ (Cuhel-Schuckers *et al.*, 2017). As research support structures move through different phases, from start-up to development, transitional, maturity and restructuring phases, the greater is the possibility to develop an understanding among stakeholders that the resources dedicated to research support structures will ultimately benefit research in the form of better support mechanisms.

7.3.3 Research management and RMA-related factors

Besides the external and internal contexts, the role of the RMA in a small island state university is also influenced by the nature of the profession itself. The factors relating to the nature of the profession and the RMAs are split in two, namely: (1) the nature of the job and recognition; and (2) trust building. They are discussed in turn below.

7.3.3.1 Nature of the job and recognition

One main deduction that can be made from this study is that the RMA job within the small island state universities is a rather complex one. A number of factors that derive from the nature of the job itself contribute to this complexity. First is the *need for experience*. While this need is not limited to small island state contexts, it takes a

specific dimension in such contexts. On the one hand, RMAs face the challenge that the research landscape in a small island state may be restricted, hence research itself can be a challenge. On the other hand the RMA's need to understand this context and work within it. RMAs need to be aware of the effects of closely-knit personalised relationships, the feelings of cosiness and comfort, the limited job opportunities and the risks from distortion of social unity, among other aspects. Personal biases and conflicts of interest are very possible in closely-knit communities where people know each other professionally and may meet each other regularly even outside the work context. These are the invisible pressures which respondents have referred to, and which RMAs need to be aware of, in exercising their role. One can therefore argue that experience in the same place is essential for RMAs in a small island state university, especially since the possibilities for gaining similar experience within the same country may be very rare.

However, universities need to make the best possible use of their 'experienced' and 'trained' RMAs. In a restricted environment, there is the risk that RMAs may become over-qualified or under-utilised if they are merely handling mundane tasks and ad-hoc chores. Some RMAs at decentralised level at the UCY have expressed their frustration over the fact that the fragmented structure is leading to misuse of resources. On the one hand, an RMA may become highly specialised through years of experience gained within the same context, but on the other hand the benefits of such experience may be lost if no opportunities for advancement exist or if new positions are non-existent or are given to foreigners (Farrugia, 2002).

Experience is closely linked to the second factor that makes the life of RMAs rather complex, which is *training*. None of the interviewed RMAs had actually been trained as research managers through a formally recognised qualification in research management. This finding is not limited to the small island state context, since the profession is largely characterised by different points of entry and the absence of specific training that prepares RMAs academically right from the beginning (Katsapis, 2012). However, this fact may have an amplified effect in a small context, where, it was argued, that the profession is not always widely recognised. For instance, at the UoI and the UoM, RMAs have kept themselves up to date through the regular support provided by their institutions to participate in conferences organised by the professional associations. On the other hand, at the UCY, RMAs sought such training out of their own personal initiative and resources. This initiative was not always possible to sustain, especially during the economic crisis. In these circumstances, the support for continuous training to RMAs may become determinant in the extent of development of their role and the attractiveness of the job.

The third aspect that characterises the RMA job within the three universities is the lack of opportunities for *job mobility*. This is the concept of career entrenchment which arises when employees experience feelings of immobility despite substantial economic and psychological investment (Carson *et al.*, 1996). This restriction has two dimensions within small island states. On one hand, an external dimension of job immobility arises since the extent of RMA jobs in the three small island states is rather restricted, especially in Malta where the UoM is one of the few research performers (including universities) on the island. On the other hand, an internal

dimension of job immobility arises since positions may become quite fixed in a publicly-funded, national university, such that moving from one job to another within the same university may prove equally hard to achieve. Thus opportunities for advancement of RMAs are like ships at 'ports of call' that come to harbour from time to time and do not stay long (Baldacchino cited in Sultana 2006). The institutional role becomes very important here. The wider the understanding of the need for research management, the greater is the possibility of investing in internal structures that widen the range of services provided. The wider the research management function, the greater are the possibilities for RMAs to benefit from horizontal career mobility. One can argue that in these circumstances, RMAs become masters of their own destiny, since further investment by the university in the profession is also dependent on the effectiveness (or otherwise) of the existing research support structures.

However, the extent of research support structures also depends on the extent to which there is awareness of the need for such structures in the first place (as argued earlier under Section 7.3.2.2). Thus, the fourth complexity emanating from the nature of the RMA job is one of *recognition and perception*. This is reflected in the way in which the profession is perceived from outside. The problem of recognition is far from unique to the three small island states. Rather, it is one of the flagship characteristics of research management, as RMAs constantly strive hard to gain recognition from their non-administrative colleagues within universities (Shambrook and Roberts, 2011). However, the small island state university context is rather peculiar in this regard. All three universities employ a number of RMAs and have in

place a range of research support structures. Yet, the job market for RMAs is so restricted within these contexts that any lack of recognition or incorrect perception may become intrinsic and rather legitimate.

A number of other factors were identified which impinge on the extent of recognition of the role of research management and of RMAs. The first factor relates to professional associations. RMAs at the UCY remarked that any training they receive is more job-related than profession-oriented. In contrast, respondents from the UoI and the UoM were satisfied with the opportunity for participation in professional associations of research management, which boosts the recognition of RMAs as separate professionals. One major strength of the UoI, which the UoM lacks, is its central role in the local association of RMAs. IceARMA provides a stronger identity to RMAs in a local and global context since it portrays RMAs as professionals in their own right and as leaders in the field, within the Icelandic context.

A second factor linked to recognition and perception is related to the academic background of RMAs. An analysis of the RMA demographics, presented in Appendix 7, demonstrates that the majority of RMAs interviewed have a finance, management or an accounting background. While these are specialised fields in their own right, they may be disconnected from the scientific disciplines that RMAs may need to support. These backgrounds prepare RMAs for only one aspect of their job, namely the managerial/administrative side. Multi-functional RMAs in a small island state university would be better prepared and more positively perceived if they combine a

scientific and managerial/administrative background with continuous professional training throughout their career.

Two other factors impinging on recognition and perceptions are job titles and career structures. Results from this study suggest that the job titles for RMAs used at the UCY are not sufficiently clear in linking the job title to the role. In contrast, the job titles at the UoI, especially those at decentralised level, indicate a close connection between the role played by these RMAs within their respective Schools and the profession. As a third variant, the job titles of RMAs at the UoM reflect the career structure that has been created specifically for them, which in itself sends a clear message of the degree of recognition that the university management has for the role of RMAs.

Job titles and career paths may have an important influence on the perceptions of academics and other stakeholders regarding the role of RMAs. Respondents argued that their role is often characterised by incorrect perceptions and ambiguity. While this finding is congruent with the lack of recognition that is similarly experienced by RMAs in other contexts (see Green and Langley, 2009), it also sheds light on certain aspects that are unique to small contexts. In these contexts where resources are limited, the extent of specialisation is restricted and where RMAs are largely multi-functional, incorrect perceptions about the job may become rather natural. For example, at the UCY some faculties have an RMA at a decentralised level to act as an interface between researchers and central administration, whereas others do not. This inconsistency may create incorrect perceptions among researchers, since the role

of RMAs and the channels to follow may become blurred, especially where interdisciplinary research is concerned. In contrast, the UoI's structures are based on the concept that the decentralised RMAs are the first point of contact for researchers in every School as they handle most of the interface with the central administration. The UoM offers a completely different scenario, since the centralised dimension of its research support structures may lead researchers to perceive research support mechanisms as yet another bureaucratic structure at the university instead of one that aims to bridge the gap with researchers.

Recognition and perceptions about RMAs in small island states becomes even more complex when it is compared to the PUI context. The three universities in this study seem to be better geared than PUIs where capacity is concerned, since the research support structures in PUIs are very often centrally-focused due to lack of monetary resources to support a decentralised function (Temples *et al.*, 2012). However, PUIs are operating within a larger environment than that of a small island state and which involves bigger players. Thus, perceptions about RMAs from stakeholders might be more congruent with the true nature of the RMA job. In contrast, any perceptions about RMAs within the three small island states is likely to be limited to what happens within the national universities, thus augmenting the challenge to portray a correct and wide-reaching perspective of the RMA job.

7.3.3.2 Trust building

In Chapter Three it was argued that trust between RMAs and those whom they serve is one of the four fundamental principles of research management (Rodman and Dingerson, 1979). Trust building has also emerged as a prevalent theme in this study. In view of the sensitivity of the small island context, including the limited resources, restricted job mobility and closely-knit relationships, gaining and maintaining trust can be a delicate matter. This process of trust-building has various dimensions which are discussed in turn below.

First, the level of trust is determined by the extent to which the *RMAs and the researchers speak the same language*. This means that the relationship is built on an understanding of each other's needs to achieve common goals. On the part of RMAs, they need to understand the nature of research *per se*. Research can be a very individualistic endeavour, built around a single researcher, or it can be multi-disciplinary and/or trans-national (Harman, 2010). In some disciplines, such as natural and life sciences, investments in research can prove more substantial than in humanities and social sciences. RMAs need to be sensitive to the different profiles of researchers, their preferences and needs. For example, researchers who have traditionally worked in an individualistic environment, focused around their niche area and contributed to knowledge from their own personal setting may view RMAs as a hurdle, especially if the researcher has an incomplete or inaccurate perception of the role of the RMA.

The second dimension to trust building relates to the need for RMAs to have *skills, qualifications and experience* that are unique to their job. According to Whitchurch (2012), RMAs need to present themselves as well-prepared and the PhD could be regarded as the ‘magic dust’ that provides a turnkey in offering credibility, gaining entry to academic networks and developing the RMA career. Although still at its early stages, this principle of having doctorate RMAs is already being assimilated within the three small island states universities, as a number of RMAs are either already in possession or are in the process of obtaining a doctorate degree. This situation demonstrates that RMAs within the three small island state universities are aware of the benefits of a PhD in bridging the gap between the academic/researcher and managerial/administrative domains.

According to Whitchurch (2008a), the *third space* is where academics and professionals move laterally across functional and organisational boundaries to create new professional spaces and roles. Therefore, RMAs may originate from both the academics/researchers end and/or from the managerial/administrative end. However, the analysis of the demographic characteristics of the RMAs interviewed in this study (summarised in Appendix 7) demonstrates that this is the case only at the UoI, among the decentralised RMAs, whose discipline or background is either Anthropology, Computer Science, Earth Science or Molecular Biology. All other RMAs across the three universities originate from an administrative background. This could be interpreted in three ways.

First, academics in a small island state university may be unwilling to relinquish their academic post in favour of an RMA job, because they might perceive that such academic posts, once relinquished, might not be available again in the future. Alternatively, it could be related to the challenge identified by doctorate RMAs from the UoI, that such a step entails compromising their own personal research in favour of supporting the research of others. If being a doctorate RMA within a small island states means having to relinquish personal research endeavours, then PhD holders might not be willing to shift to an RMA career. Finally, it could possibly be attributed to the cosiness and comfort that the national, publicly-funded, flagship university may offer to those who already have a job within it (discussed earlier). In the absence of specific incentives to engage in new initiatives (possibly in research management), academics may be reluctant to involve themselves in additional activities which may only add further to their workload.

A third dimension which complements this discussion is *communication between RMAs and researchers*. Whereas the possession of a PhD gives RMAs psychological proximity to researchers, the location of research support structures can improve physical proximity to researchers. The analysis of the research support structures has shown that the decentralised structures at the UoI and the UCY (where applicable) create more physical proximity of RMAs to researchers in contrast to the more centralised and distant support at the UoM. Physical proximity contributes towards trust building and facilitates communication. In addition, RMAs need to keep in constant contact with the researchers, so that the informal procedures are also well transmitted.

A fourth dimension of the trust relationship between RMAs and researchers is that of *servant-leadership*. This concept was discussed from a theoretical standpoint in Chapter Four and it purports that RMAs lead after earning the trust of those they serve (i.e. researchers) (Krauser, 2003; Vargas and Hanlon, 2007). The relevance of this concept to this study lies in a number of dimensions that are evident in a small island state university context.

First, there may be two contrasting views on the concept of servant-leadership in small island state universities. On the one hand, servant-leadership may be *fostered* by the context of universities in small island states. This is because the context increases the possibilities to build close personal connections between RMAs and researchers, since they are more likely to have regular contact with each other. On the other hand, the context of small island state universities may pose a *barrier* to the concept of servant-leadership if the social cohesion between RMAs and researchers is distorted due to personal grudges and antagonism.

Second, the concept of servant-leadership in small island state universities may exacerbate even further the notion of a multi-functional administrator. As discussed earlier, servant-leadership implies that RMAs have both a serving role and a leading role when working with researchers. However, in practice, RMAs often risk an imbalance in either direction. For example, tight deadlines and limited resources highlighted by several respondents, may reduce the role of RMAs to that of compliance officers who tick the boxes when rules are adhered to and who become show-stoppers when the rules prohibit the researcher from following a certain route.

Third, the small context also enhances the need for RMAs to act as mediators and at times face undesirable circumstances. A case in point is a situation explained by one RMA at the UoM in which two academics, who were facing each other in court, were also working on the same research project 'together'. These peculiar situations may arise in small contexts because researchers may have much to lose if they let go off certain opportunities, which may be available only once. In these circumstances, the RMA's role may become largely characterised by mediation and conflict management in the best interest of research. In addition, RMAs may need to reach a compromise between addressing individual circumstances and safeguarding the overall common good of the university. This situation may arise from the possible close and excellent relationships that the RMA may develop with researchers, especially if they have been collaborating with each other for a long period of time. RMAs need to be aware that while this close collaboration can be healthy for trust building, it may also create problems if the common good makes way for individual benefit.

Finally, the servant-leadership role increases the need for RMAs to alleviate academics from excessive administrative burden. Academics may be more willing to embark on ambitious, large scale research projects, if the RMAs are there to provide adequate support and peace of mind. This is the concept of co-dependence in research between RMAs and researchers as they both work together to achieve common aims. Since research is usually very close to the heart of researchers because of its potential unique contribution to knowledge, the building of trust on such a delicate matter can have long lasting positive effects, which RMAs need to handle with great care.

7.3.4 Resilience factors

Despite the various challenges identified in this study, the three universities and their RMAs have developed in-built mechanisms that enable them to overcome their limitations in conducting and managing research. This positive aspect can be attributed to the concept of resilience, which, as argued in Chapter Two, is a principal characteristic of small states, and which seems to have verified itself also through the research management profession. Before discussing the concept of resilience as an outcome of this study, it is worth highlighting that probably the best example of resilience in research and in its management is reflected in the high rank obtained by Malta and Iceland (and Cyprus but to a lesser extent) in the Efficiency Ratio of the GII 2016 (see section 2.6.3.2). This ratio indicates that the outputs of small island states are significant despite their limited inputs. Although this index measures performances on a national level, the main research performers in small island states are their national, publicly-funded, flagship universities. Hence any inferences at a national level reflect well on the performance of these universities and vice-versa. Two dimensions of resilience are discussed, one concerning university resilience and one concerning RMA resilience.

7.3.4.1 University resilience

The data in this study shows that universities are not passive in the face of limitations influencing research and its management. An example of this resilience is shown by the UoI and the UCY since, in the face of the economic crisis, they sought actively to keep doing research and to support it. Another example is reflected at the UoM by

the fact that, despite not having decentralised research support structures, both the researchers and the centralised RMAs have found effective ways of collaborating and submitting successful proposals, as shown by the ever increasing number of research grants in Figure 6.1 and Figure 6.2 (See Chapter Six).

Among the factors identified in this study which contribute to university resilience are the *policies and procedures* adopted by the universities. All three universities have adopted bottom-up policies and procedures in the allocation of internal research funds or in the tapping of external funds. Any selectivity of one proposal over another or one discipline over another is only done by independent evaluators, whether internally or externally. This approach preserves university autonomy and academic freedom, while allowing individual sparks to flourish, without killing any initiative. The use of metrics and the strategy to climb world university rankings at the UoI, as well as the support to encourage more ERC grants at the UCY are other examples of how universities can overcome their inherent limitations through their policies and procedures. At the UoM, the decision to facilitate the setting up of an institute of digital gaming in 2011, as a move to develop a completely new area of research for Malta back then, proved successful in building a solid base for the more recent blockchain and bitcoin initiatives. In these initiatives Malta is a forerunner, particularly in issuing notarised certificates for professional and informal education, in what can be considered as another example of how a small island state can build resilience by exploiting areas in which it has a comparative advantage.

The second factor that fosters university resilience is *brain circulation*. This was particularly effective at the UCY. RMAs have realised that while an element of brain drain among researchers was inevitable because of the absence of a local university until 1989, by being pro-active they are now attempting to turn brain drain into brain circulation. This is being done by adopting measures that bring back to the UCY academics and researchers who have emigrated earlier in their careers. Brain circulation means that these emigrant academics/researchers form part of strong networks that have the potential to relay back the benefits of their position and experience to the country of origin (Crossley and Holmes, 2001), even if their physical presence is outside the country of origin (Saxenian, 2005). This strategy seems to be bearing fruit. One example is the success in attracting a Cypriot professor who had earlier emigrated to the UK to build new ties with the UCY. Few months after this relationship was established, the professor won a Nobel Prize for economic sciences, which proved to be a significant boost for the UCY in its mission to generate brain circulation and to attract back other similar highfliers.

In addition to brain circulation, university resilience within the three universities is also built around *research collaborations and benchmarking with strong partners* that serve as pull-factors to overcome the limitations imposed by the small context (Thorhallsson, 2011a). Research collaborations are mostly done through externally funded projects which enable the universities to address the lack of critical mass. With respect to benchmarking, this study revealed two main purposes for benchmarking at university level: strategic and operational. Strategic benchmarking at the UoI is rather formal, primarily aimed at monitoring the performance of the

university on the world university rankings and vis-à-vis its own ambitions. On the other hand, benchmarking at the UCY and the UoM takes a less formal dimension, and is used to compare performance with neighbouring or patron countries. Benchmarking for operational purposes mainly involves comparing research support structures in similar universities to identify similarities, differences and best practices. This type of benchmarking is more common and less formal within the three universities and occurs mainly during conferences (e.g. by EARMA) or through collaborative networks (e.g. BESTPRAC). The engagement of universities in collaborations and benchmarking activity confirms that one of the major characteristics of small states purported in the literature, that of keeping a life-line to a patron, is also relevant to research management, which, if exploited well, can actually become a critical source of resilience for universities.

Finally, another aspect linked to benchmarking and which emerged from the analysis of performance and evaluation is the *setting of ambitious targets*. An analysis of the UoI strategy reveals that the university sets itself a number of ambitious targets, including advancing significantly in the world university rankings and attracting high quality researchers from around the world. At the UCY, post-economic crisis, a major (but rather informal) target is for the university to become completely financially sustainable, thus reducing drastically its dependence on government funding. This highlights the fact that small island states universities do not shy away from setting ambitious targets for themselves, as this is probably a critical step towards keeping up the pace with other, more resourceful and larger counterparts.

7.3.4.2 RMA resilience

University resilience in research and its management influences but is also largely influenced by individual RMA resilience. This study has revealed that RMAs face several challenges in a small island state university. These range from challenges relating to workload, role ambiguity and stress, to issues of recognition, qualifications, keeping up to date and reaching career compromises. These same challenges seem to foster resilience in RMAs, who similarly to universities, are not passive in the face of limitations. RMA resilience can be attributed to three main factors.

The first factor depends on two dimensions of the work environment: the *rational* element (i.e. the organisation and the job) and the *relational* element (the group and the superiors) (Oh *et al.*, 2014). These are elements borrowed from the P-O/P-E fit theory discussed under Pillar One of the conceptual framework. Applied to university research management, this theory means that university RMAs' motivation to keep going and to take new initiatives depends on the extent to which they fit within the university or the job (rational fit) and within the group or the superior with whom they work (relational fit). An example of rational fit mentioned by some RMAs is when their personal needs deriving from family commitments are accommodated by the university through working flexible hours. An example of relational fit mentioned by some RMAs is the strength of working in a team of RMAs and in keeping constant communication with the members. Other RMAs have mentioned some dysfunctional aspects that cause misfits within the work environment and the group, such as the lack of communication and fragmentation. Similarly, some RMAs mentioned that,

very often, their superiors are not aware of the challenges that they may be facing. However, the point here is that resilience is what keeps RMAs going and to seek ways of overcoming the challenges imposed by the work environment and the relationships with their colleagues.

The second and third factors of RMA resilience are best explained by career adaptability theory (Savickas, 1997, 2002, 2005; Savickas and Porfeli, 2012) discussed under Pillar One of the conceptual framework. One factor is the ability of RMAs for *personal self-regulation* to constantly seek ways, using their own initiative, to overcome the inherent challenges that they face. This personal adaptability takes various forms within the three universities, including RMA qualifications. Six of the RMAs interviewed (four from the UoI, and two each from the UCY and the UoM) are either in possession of or are currently reading for a PhD. In this regard, a legitimate question may arise: Why does an RMA need a PhD if the job market is restricted and possibly the RMA may already have a very good job (relative to others) at the national university? The answer to this question must be related to motivation and resilience. A PhD can be considered as a tool in the hand of RMAs to combat the possible inferiority complex that may encumber the RMA career in a small context, especially when dealing with demanding academics/researchers.

Other forms of adaptation by RMAs which were already mentioned earlier are multi-functionalism, going the extra mile and breadth specialisation. These examples show the level of trust and the calibre of the role of RMAs, who, according to Shelley (2010), gain a university-wide reputation as being knowledgeable and someone to go

to for advice and information. However, this study indicated that such adaptation is not without challenges. It may be accompanied by role overload and possibly role ambiguity. These can be the cause of misfits between individuals and organisations, which may contribute towards job stress and dissatisfaction (McGrath, 1970; McGrath, 1976; French and Kahn, 1962; French *et al.*, 1974).

Universities need to be on the alert for these misfits and may need to ‘intervene’ in order to address them. This aspect underlines the third factor that shapes RMA resilience and corresponds to the concept of *institutional intervention* proposed by career adaptability theory. According to this theory, institutions and individuals engage in activities, such as training, coaching and counseling through which adaptability resources can be developed (Johnston *et al.*, 2013; Potgieter, 2012; Savickas, 2005). These institutional interventions may be undertaken to provide employees with career growth opportunities, despite the fact that RMAs may experience career entrenchment due to a restricted labour market. The career path for RMAs established by the UoM is one example of how the university can foster career growth despite the limitations for job mobility imposed by the context. Similarly, the combination of centralised and decentralised support creates opportunities for horizontal mobility within the same university. Finally, continuous investment in training opportunities (e.g. through work resources funds at the UoM) coupled with facilitating attendance to professional conferences (e.g. IceARMA) can be considered as institutional interventions that contribute towards RMA resilience building.

This section on resilience completes the interpretation of the results of this thesis, which was built around the factors that are deemed to shape university research management within the three small island states. In the next section, a number of personal reflections by the author are presented to wrap up the overall discussion of this study.

7.4 Personal reflections

The previous sections have presented plausible interpretations of the results. These interpretations were based on a thorough literature review, the researcher's personal perspectives and the insights gained from the independent expert focus group. This combination contributed towards a better understanding of the data patterns and the phenomenon under study. The aim of this section is twofold: first, to revisit the conceptual framework in the light of the interpretation of the results; and second to postulate a number of reflections to provoke further discussion on the insights generated from the study.

7.4.1 Revisiting the conceptual framework

In Chapter Four it was argued that in the absence of specific literature on university research management in small island states, it was deemed necessary to build a conceptual framework specifically for this study, by borrowing from other relevant literature. This baseline conceptual framework was built on three pillars, namely: contextual realities, relationships and structural aspects. To this one must add the

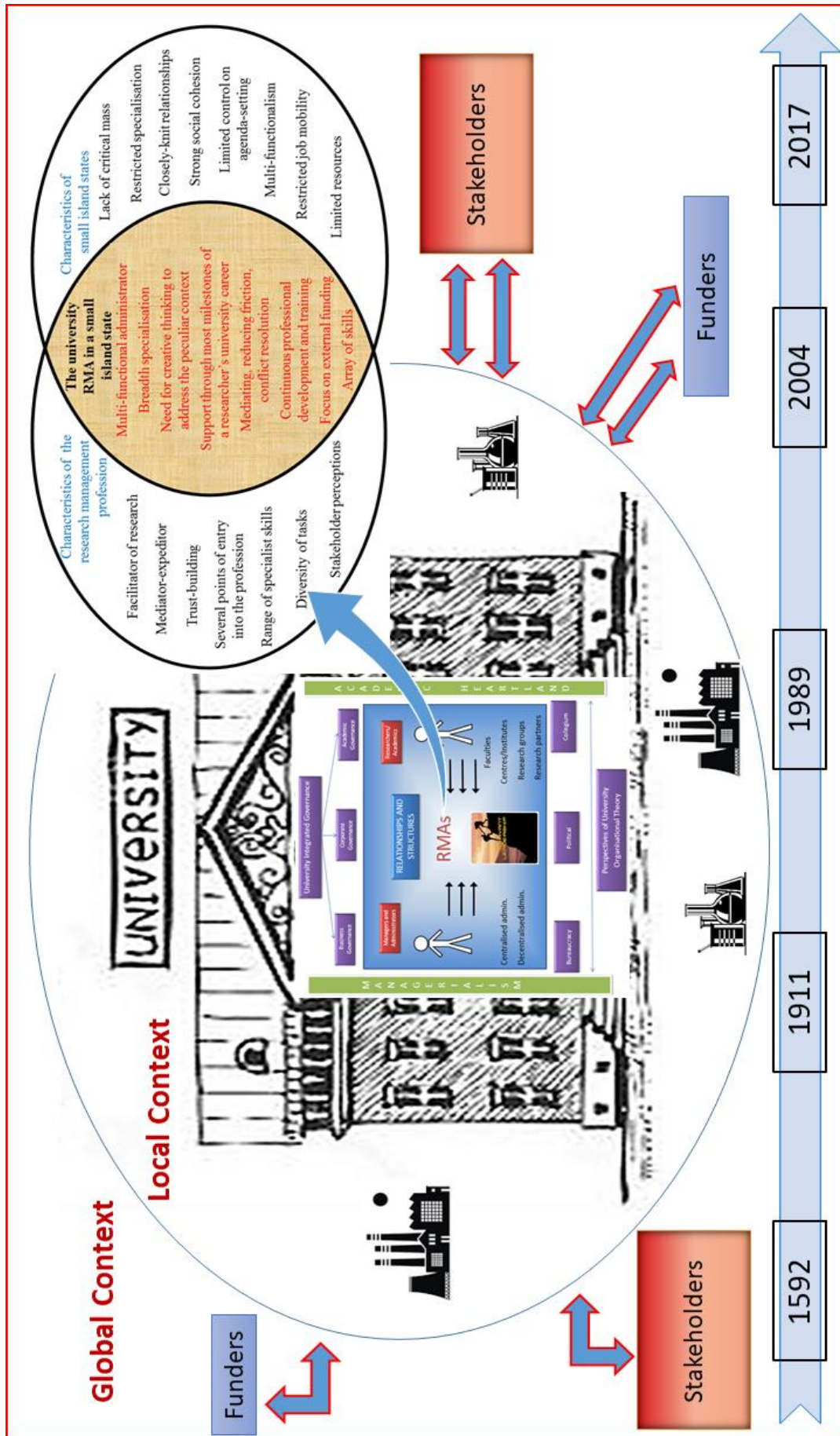


Figure 7.2: An updated illustration of the conceptual framework

external university context (presented in Chapter Two) and the phenomenon of research management (presented in Chapter Three). This collated review of the literature is now being re-assessed to determine whether, how and to what extent it is modified as a result of the research process and its findings. A revised conceptual framework is presented in Figure 7.2. The three pillars of the original conceptual framework remain present as they continue to form the basis of university research management in small island states. However, prominence is given to the salient characteristics that have distinguished themselves in this study and which are reflected in this revised model.

A number of external dimensions can be observed. First is the importance of the *general context*. While still locating the university at the centre of all relationships and structures, this revised model puts emphasis on the wider context, which incorporates the national and the supra-national dimensions. In this study it was argued that a number of factors that shape university research management in the three small island states are beyond the control of RMAs as they derive from the external, wider context.

The second observation in the revised model is on the *national context*. While the small island state context may include other players and stakeholders in research and research management, the national, publicly-funded, flagship university takes significant prominence and is unmatched by the other players. Its role in such a context is unique and puts it at the centre of all research and research management aspects in a small island state.

A third dimension that is specifically related to the national university is the *timeline* that was introduced to this revised model, which is represented by the horizontal arrow moving from left to right and the calendar years that are presented along it. These calendar years are symbolically referring to some of the major milestones that the three universities have achieved to date, ranging from their formative years (UoM in 1592; UoI in 1911; and UCY in 1989), the year in which Malta and Cyprus joined the EU (in 2004) and the year of completion of this study (in 2017). The essence of this timeline lies in the fact that, as stated in the discussion, the path that the universities have taken and the specific events that happened during their life-time play a significant role on the way the universities are shaped today and on their approach and performance.

The fourth dimension of the revised model is that it includes two-way arrows pointing to and from *the external funders and stakeholders*. The reliance on external funding and the perceptions of stakeholders were two other aspects that received prominence in this study. The two-way arrows indicate that universities both influence and are influenced by these external players.

The external dimensions interact with a number of internal university dimensions represented in this revised model. The first concerns the entire illustration of the *original model*, representing the managerial/administrative realm on the left hand side, the academic/researcher realm on the right hand side and the *third space* in the middle. This illustration is now collocated within the university structure. This in order to give prominence to the internal context, which, despite being influenced by

the external context, shapes research management within the small island states in a unique manner.

The second dimension is represented by the arrows pointing from the managerial/administrative realm and the political perspective towards the *core of the internal context*. Without relegating the importance of the other elements, (e.g. bureaucracy and *collegium* perspectives) these arrows put greater emphasis on the managerial/administrative realm and the political perspective as they are deemed to have a greater role to play in the shaping of university research management within the three small island states than any other internal factors.

The third dimension is the *third space*, which, similar to the baseline model, is placed at the core of the revised model as it represents the space where research management takes place. However, in this revised model a Venn diagram is added at the very core of the model to represent how the university RMAs are shaped within small island states. On one side, this Venn diagram identifies the salient characteristics of the small island states context while on the other side it lists the salient characteristics of the research management profession. In the overlapping space in the middle are the factors that characterise the university RMAs within the small island state context. This core of the revised model is intended to represent the uniqueness of the RMAs identity in a small island state as well as the resilience of RMAs to the elements that shape their identity.

In its totality, this revised model presents a combination of internal and external factors that shape university research management. It also gives prominence to specific dimensions of RMAs within small island states that are believed to contribute towards the understanding and further advancement of the research management profession. In the next section such a contribution is made more evident by provoking further thinking based on the outcomes of this study.

7.4.1.1 Further thinking

While this study has hopefully provided answers to the underlying research questions, it has probably raised many others. A number of observations emanating from this study and its outcomes are addressed below with the hope of provoking further thinking.

The first observation relates to the *third space*, as the core ‘space’ in which relationships in research management occur. Earlier it was argued that, with the exception of the decentralised RMAs at the UoI, RMAs within the three universities have a managerial/administrative background. Hence, there is the risk that the role of RMAs is likely to be largely perceived as a purely administrative job. This contrasts sharply with Whitchurch’s original idea of a ‘third space’ where academics and professionals inter-mingle in new career roles. Alternatively, one can argue that RMAs in a small island state university might face a greater challenge to win the trust of academics when compared to other contexts, since the *third space* may be perceived as another ‘space’ for managers and administrators and one which is

hampered with bureaucratic ideologies. Nonetheless, this dimension may not be completely true. The profiles of doctorate RMAs with a scientific background who are engaged at a decentralised level at the UoI are actually closer to the profiles of RMAs purported by Whitchurch (2004). Moreover, the planned investments in decentralised support structures by the UoM and the UCY to possibly involve the recruitment of doctorate RMAs, could challenge this interpretation even further and bring the profile of RMAs in small island states closer to those proposed in the concept of *third space*.

The second observation is equally linked to the core of research management, relating to its *fundamental principles*. In Chapter Three, it was argued that research management is built around four fundamental principles, namely that of reducing friction and keeping the process moving; that RMAs should serve as mediators-expeditors; that RMAs are facilitators of research; and that RMAs must have the trust of those who they serve. At this stage it becomes legitimate to ask: are these principles upon which the research management profession is built restricted or reinforced in small island state universities? The results and the discussion have demonstrated that each of these principles has been reinforced within the three universities, especially since these universities are characterised by certain unavoidable frictions that put the mediator role at the centre of the RMA's work. This argument is further strengthened if one looks at the four themes along which the profession has developed as purported by the literature, namely that: the profession is based on the principles of servant-leadership; that it is a reactionary developed profession; that policy follows process; and that it is more example-based than theory based. As with the fundamental

principles, this study has mostly confirmed the relevance of these themes to the small island state context, therefore this context has an important role to play in the research management profession.

The third observation is linked to the contribution of the small island state context to the research management profession and concerns the *identity of RMAs*. A legitimate question may be: does the small island state context impinge on the identity of RMAs? In this study it was argued that the RMA in a small island state university is typically multi-functional, a strong mediator, a creative individual with an array of skills and qualifications, who may enjoy more breadth specialisation and who can support the researcher throughout his/her entire research career. Therefore, the small island state university context contributes also to shape the identity of RMAs rather uniquely.

A fourth observation is derived from the *research support structures*. One may ask: Is there a correct over-arching structure? A 'no' answer to this question is probably one of the few certainties that come out of this study. After all, there is no one size fits all in research support, and structures are only effective or otherwise within their particular contexts (Kerridge, 2011). Such structures are moulded by the idiosyncratic and changing circumstances of the specific context. Hence, the element of fragmentation, the building of structures in small steps and the prioritisation between one aspect and another (e.g. centralisation over decentralisation or pre-award over post-award) that were observed in the three universities are all the result of a continuously changing environment. In this regard, benchmarking and sharing of best

practices between similarly-sized universities, countries and other specific contexts is useful in the quest to ameliorate the services provided by RMOs and RMAs in general.

The fifth observation relates specifically to the *context*. This study has discovered a number of contrasts between the three contexts. For example, the higher degree of formality in the strategies and performance evaluation at the UoI contrasts with the informal counterpart processes at the UCY and the UoM. Moreover, some universities have unique characteristics which the others have not. For example the research support structures at the UCY proved to be very resistant to change. Similarly, the UoM is subject to the legacy of old ingrained mindsets which, at times, condition significantly the operations of the university and the perceptions towards it. Therefore, due attention needs to be given to the contextual realities of the small island states. Knowledge gained from larger contexts cannot be transferred to smaller contexts blindly. Furthermore, knowledge gained from one small context needs to be interpreted with caution even in other similar contexts. Therefore, despite a number of similar characteristics shared between them, the three universities have their own idiosyncratic elements which make them quite distinct from each other.

The due attention to the contextual characteristics needs to be made very clear at the end of this study. In this regard further thinking can be provoked by raising further questions relating to the context: What if the contexts studied were different? What if the universities were private universities instead of national, publicly-funded, flagship universities? What if there were other public universities which were equal

in social standing and in scope to the universities studied? Would the results change? And what if the study was not limited to islands or to Europe? These and other '*what if*' questions will probably continue to be raised. However, the essence in making this point is that the context needs to be a central element in the thinking process and in the interpretation of the outcomes.

In this regard, a critical observation needs to be made concerning the applicability and scope of the findings. As argued in Chapter Two, 'islandness' and 'smallness' are two separate but intertwined concepts in this study. However, with hindsight, one can argue that the results that emerged from this study can be mostly attributed to the small scale factor more than to the islandness factor. Except for the two instances discussed in the next two paragraphs, the results of this study reflect mostly the general characteristics of small states that are found in the literature (presented in Chapter Two) as well as the characteristics of PUIs (presented in Chapter Four), which both go beyond the island context.

Two instances could be identified in which the islandness factor has emerged as more prominent than the small scale factor in this study. One such instance can be linked to the physical detachment of small islands from the mainland and is reflected in the *type of relationships* involved in research management. Since the three small island states are physically detached from the mainland, research management relationships in each of the three small island state universities were often moulded around the same groups of people, within the same settings and for a long period of time, if not indefinitely. Some examples of how these close relationships influenced research

management positively include: RMA resilience; trust building; and the recognition of the profession to build long-term healthy relationships. Other examples of how these close relationships influenced research management negatively include: resistance to change outdated and inefficient structures; research which is not widely embedded in the people's mindsets; intense public scrutiny; and personal grudges that may take long to heal. These factors, though not limited to islands, are likely to have long lasting effects within an island context since the physical distance from other countries makes alternatives outside the island periphery practically non-existent, especially in the short-run.

The second instance where the islandness dimension is deemed to have prevailed over the smallness dimension in this study is related to the *engagement of RMAs with wider professional networks*. Although the RMAs interviewed in this study are all carrying their duties within an island context, their level of engagement with wider professional networks of RMAs varies significantly. At the UoI, RMAs are members of a local association of RMAs (IceARMA) which in turn is connected to a Scandinavian network of research management associations. In addition, members of IceARMA participate regularly to conferences of other international associations, such as EARMA, SRAI and INORMS. Hence, the close and regular connection of RMAs at the UoI to the wider networks of RMAs limit the effect of the islandness factor since these networks provide the possibility for RMAs to stay connected and up to date, despite the physical geographical detachment of their country. Similarly, the UoM has addressed the islandness limitation by also ensuring regular engagement of its RMAs in wider network of professional associations, though such engagement

is not reflected in an association at a local level. In contrast to the UoM and the UoI, the UCY has so far restricted the engagement of its RMAs in the wider professional networks. This has created a psychological detachment (or islandness) of university RMAs from the rest of the world. Any developments in research management at the UCY so far can be considered as unilateral and bounded to the Cypriot context.

Finally, further thinking can be linked to the scope of university research management within small contexts. The extent to which university research management can survive and be effective depends on one fundamental condition: the need to have at least one home-grown (national) university which has a research mission ingrained in its overall vision. As already argued in Chapter Two the presence of universities in small island states cannot be taken for granted because sometimes it may not be feasible to operate universities in these contexts at all. This characteristic is not solely related to small island states but to most small states in general. The European context alone, presents a mix of scenarios.

Table 7.2 lists a number of European small states and dependencies (with a population of less than 1.5 million inhabitants) and identifies them by: type; population size; presence of a national university; the name of the national university (where applicable); the number of students; and the existence of research management structures or otherwise.

| Country | Type (Sovereign/Dependency) | Population (World Bank, 2015) | National university Y/N | National university name | Number of students | Source of information for student population | Existence of Research Management structures |
|-------------------------|-----------------------------|-------------------------------|-------------------------|--|--------------------|---|---|
| Vatican City | Sovereign | 1,000 | Y | Various pontifical universities in Rome | N/A | N/A | N |
| Svalbard (Norway) | Dependency | 2,000 | Y | The University Centre in Svalbard | 353 (2015) | http://www.unis.no | N |
| Åland (Finland) | Dependency | 28,007 | Y | Åland University of Applied Sciences | 600 (2017) | http://www.ha.ax/en | N |
| San Marino | Sovereign | 32,000 | Y | University of the Republic of San Marino | N/A | http://www.unirmsm.sm | N |
| Gibraltar (UK) | Dependency | 32,000 | Y | University of Gibraltar | N/A | http://www.unigib.edu.gi/ | N |
| Monaco | Sovereign | 38,000 | Y | International University of Monaco | 550 (2016) | https://www.monaco.edu/ | N |
| Liechtenstein | Sovereign | 38,000 | Y | University of Liechtenstein | 800 (2016) | https://www.uni.li | N |
| Faroe Islands (Denmark) | Dependency | 48,000 | Y | University of the Faroe Islands | 651 (2010) | https://www.setur.fo/ | N |
| Greenland (Denmark) | Dependency | 56,000 | Y | University of Greenland | 234 (2016) | http://uk.uni.gl/ | L |
| Guernsey (UK) | Dependency | 62,000 | N | N/A | N/A | N/A | N/A |
| Andorra | Sovereign | 70,000 | Y | University of Andorra | 1,309 (2016) | http://www.uda.ad/en | L |
| Isle of Man (UK) | Dependency | 88,000 | N | N/A | N/A | N/A | N/A |
| Jersey (UK) | Dependency | 102,000 | N | N/A | N/A | N/A | N/A |
| Iceland | Sovereign | 323,000 | Y | University of Iceland | 13,307 (2016) | http://english.hi.is/ | Y |
| Malta | Sovereign | 423,000 | Y | University of Malta | 11,500 (2016) | http://www.um.edu.mt | Y |
| Luxembourg | Sovereign | 570,000 | Y | University of Luxembourg | 6,200 (2017) | https://www.uni.lu/ | Y |
| Montenegro | Sovereign | 622,000 | Y | University of Montenegro | 20,475 (2017) | http://old.ucg.ac.me/eng/ | Y |
| Cyprus (excl TRNC) | Sovereign | 866,000 | Y | University of Cyprus | 6,500 (2016) | www.ucy.ac.cy | Y |
| Estonia | Sovereign | 1,315,000 | Y | University of Tartu | 13,400 (2017) | https://www.ut.ee/en | Y |

Key: Y = Yes; N = No; L = Limited
N/A = Not applicable

Table 7.2: List of European small states and dependencies classified by the existence or otherwise of a national university and research management structures

This analysis demonstrates that a national university exists in all the eleven sovereign small states, including islands, whose population does not exceed the threshold established for this thesis (namely less than 1.5 million inhabitants). In addition, there are a number of other dependent small territories that, despite not being independent sovereign states, have their own university. This shows that universities exist in the

smallest states in Europe. However, the mere existence of a university does not automatically translate itself into a scope for research management.

A quick analysis of the structures of these universities from their respective websites provides a number of insights. First, universities with no reference to research management structures (RMO or project support staff) are situated in countries with a population of less than fifty thousand inhabitants and a student population of less than 1,000 (with the exception of the University of Greenland). On their respective websites, they make reference to research conducted as part of an undergraduate, master's or a doctorate degree but make no reference to project-based research. One can therefore argue that currently, the scope for university research management (as defined in this thesis) is practically non-existent in these universities. The University of Greenland and the University of Andorra both have a small project support office which is intended to support a limited number of research projects. However, the scope for the research management profession in these states remains rather restricted.

As the states start to grow beyond the threshold of three hundred thousand inhabitants, the presence of research management structures starts to become more prominent on university websites. However, there seems to be no clear link between the number of students and the research management structures, since these structures exist even in the smallest of universities based on student population. The University of Luxembourg, the national University of Montenegro and the University of Tartu in Estonia all have in place research management structures that are similar or

possibly more elaborate than those at the three universities covered in this study. This implies that the presence of research management structures within small [island] states in Europe are more closely linked to the size of the state and less to size of the university (in terms of students). The reasons behind this relationship still need to be investigated. However, it reinforces the idea that the national context plays an important part in shaping the role of RMAs. In addition, the survival and effectiveness of the research management profession in small contexts is shaped by a number of factors that are context-specific.

Overall, this study has shown that research management is a dynamic, multi-faceted concept, which is still in evolution and very sensitive to the surrounding environment. It was therefore plausible to explore the concept from a fresh perspective, by investigating university research management within a specific context, that of small island states. As a novel literature contribution that has brought together the world of islandness/smallness and that of research management, this study can hopefully inspire further research on the observations raised. This section has specifically provided a number of insights from the author to encourage further thinking and to demonstrate that research has no boundaries but can be expanded to new horizons by building on previous research.

7.5 Summary

The three main aims of this chapter were: (1) to re-visit the thinking process of this study and to provide a concise summary of the results; (2) to present an informed

interpretation of the results, based on the main factors that shape university research management in small island states; and (3) to generate a number of reflections about the research management phenomenon.

These objectives were reached gradually by first presenting an integrated thinking process of the study. Subsequently, an interpretation of the results was presented. Finally, the section on personal reflections focused on two aspects: a re-assessment of the baseline conceptual framework in the light of the results of this study; and a number of observations intended to generate further thinking beyond the results of this study. The next chapter builds on the insights generated in this and the previous chapters and presents the concluding chapter of this study.

CHAPTER 8

CONCLUSIONS, IMPLICATIONS, AND FUTURE RESEARCH

CHAPTER 8 – CONCLUSIONS, IMPLICATIONS AND FUTURE RESEARCH

8.1 Introduction

The *general* aims of this study were twofold. The first one was of an exploratory nature, to instigate a discussion that brings together two seemingly unrelated concepts, that of smallness (within islands) and that of university research management. The second aim was of a comparative nature, to compare the research management structures, challenges and strategies of three European small island state universities. The *specific* aim of the study was to ascertain in detail a number of factors that shape university research management in the national, publicly-funded, flagship universities in three European small island states. This study is the first of its kind to explore research management from the perspective of small island states and hopefully it will generate interest in further research in the area.

This final chapter presents an overall conclusion to this study. It first discusses a number of implications for research, theory and practice. It then recommends future studies on aspects that were either not possible to tackle in this doctoral study or that are possibly worth exploring further in separate studies.

8.2 Implications from the study

8.2.1 Implications for research

A number of implications for research emerge from this study as presented below. First, this study acknowledges the importance of the individual country contexts, such that any data collected or interpretations made thereupon cannot be generalised on to other contexts not covered by this study. Nonetheless, the study includes an element of comparison between three small island state universities, through which converging and diverging aspects were identified. In addition, the qualitative approach provided diverse richness and a level of detail in the data which could not have been possible using a quantitative approach. Therefore, the approach adopted in this study is deemed appropriate to explore a relatively new field of research and to make recommendations for further studies that build on the current one.

Second, the involvement of the researcher in one of the universities covered by this study implies that the risk of bias is unavoidable. While this risk can never be eliminated completely in research, a number of measures have been taken by the researcher to enhance validity and reliability and to mitigate the risk of bias. These were summarised in

Table 5.6 in Chapter Five. Out of the different measures listed therein, the expert focus group was probably the best source of independent insight and criticism on the research process, the research outcomes and conclusions.

Third, this research included two countries outside the country of residence of the researcher. While this strategy has potential added value owing to its comparative nature, it carries some major challenges, including: gaining access to key documents and individuals; the need to collect data in short periods of time; gaining the trust of participants; and understanding the context. In these circumstances it is recommended that the researcher visits the foreign countries (and the entities covered by the research) personally, if possible, more than once, in order to increase familiarity with the context. Having collected the relevant data and information, it is also recommended to maintain a healthy relationship with the respondents in order to facilitate any follow-ups, especially in a rapidly changing environment, such as that of university research management. The respect towards, and of, the participants takes an added dimension in a situation where the area of research is the same as the area in which the researcher is working on a daily basis. This is because, as a result of the work relationships, the paths of the respondents and the researcher might cross each other again, such as for example on a project involving all three universities together. Hence, maintaining healthy relationships should take a long-term perspective rather than a temporary one, beyond just the period of research.

8.2.2 Implications for theory

In identifying implications for theory, perhaps it is best to refer to the revised model of the conceptual framework presented in section 7.4.1. This revised model is built around the most salient aspect of this study, namely the importance of the context. Whether the context refers to the institutional (national, public universities in this case) or the national level (small island states) or the global level (European and

beyond), this study suggests that due credit needs to be given to the contextual realities that influence any study. Therefore, the development and assessment of theories need to be undertaken while keeping the context in mind. What applies in one context is not automatically generalisable to another context. Sensitivity to the contextual details of small island states, albeit being possibly insignificant to other different contexts, can actually pull researchers back to the drawing board of the underlying concepts that they are attempting to study.

Implications for theory in this regard can be split along the three pillars of the framework. The first pillar concerns specifically the contextual realities and discusses the idiosyncratic nature of universities, university research management and university RMAs in a small context. From a (national, publicly-funded, flagship) university perspective, sensitivity to the context means addressing specific institutional realities, such as the arduous balance between teaching and research, the continuous struggle for autonomy and the intense public scrutiny. From a research management perspective, sensitivity to the context means dealing with limited resources, being creative to establish motivation mechanisms for academics and researchers in what is generally a depleted environment for research, with limited resources and lack of critical mass. From an RMA perspective, contextual sensitivity takes the form of RMA resilience to the contextual restrictions and to the factors that make them keep going despite the inherent limitations.

The second pillar of the conceptual framework concerns relationships. University research management is based on various relationships. Theories discussed under this

pillar include: the theory of servant-leadership, motivational theories and the concept of *third space*. In addition to these, university organisational theory was discussed from the three perspectives, namely the bureaucratic and the *collegium* perspectives, while the third one, the political perspective, was presented as an alternative but a prevalent perspective in small island state contexts. The main implication of these theories is that relationships within small island states can become complex due to the nature of these contexts, especially due to: closely-knit relationships, where people live in face-to-face societies with back-to-back relations; possible tensions and compromises required due to the limited resources and restricted job opportunities; and differences in recognition and perceptions, visible mostly in the RMA-academic/researcher relationships. Therefore, theoretical development about relationships cannot simply focus on the intra-personal or inter-personal factors that condition relationships but also on contextual factors that shape the relationships and their adaptability.

The third pillar of the conceptual framework focuses on structural aspects of research management. Prior to this study, the research management models and strategies purported in the literature have not taken into consideration the combination of size and contextual dimensions. Although proposing new models of research management was not within the scope of this study, it has shown that the development of structures and models within small island state universities is influenced by the factors that characterise these contexts. These include mindset, tradition, geographical location, specific events, resource availability and perceptions, among others, such that any

new theoretical development requires sensitivity to the context where structural and strategic aspects are concerned.

8.2.3 Implications for practice

Apart from the implications for research and for theory, a number of implications for practice can be identified from this study, including implications for universities, RMAs and the research management profession. These are discussed briefly in turn below.

8.2.3.1 Universities

As a result of this study, a number of implications for universities can be identified. First, the context moulds national universities uniquely. They may have to struggle against internal hurdles, imposed by their history, traditions, location, the partners with whom they collaborate and the society they serve, among others. These factors determine the internal context within which university research management occurs, thus impinging on the roles of RMAs. This implies that models of university research management imported from abroad may not necessarily fit within a small island context or else they would require adaptation in a unique fashion.

In terms of research support structures, all three universities have their own structures, which developed according to the path that each university has followed

over the time. Judging one structure as more appropriate over another would be imprudent given that all structures developed in different contextual realities. For example, the UCY is the youngest of all three universities and was established in a completely different context than that of the UoI which is just over one hundred years old and that of the UoM, which was established late in the sixteenth century. The pace at which the research support structures developed at the UCY was more rapid and in line with the progress experienced by modern universities. This contrasts with the UoM, whose development over the years took varying dimensions, including the fact that the university was exposed to different cultures owing to the different regimes that have governed Malta since the establishment of the university.

In the discussion of the results (see Chapter Seven), it was argued that the university structures have an important role to play in building trust between RMAs and researchers. Since trust is difficult to build and easy to lose, designing the appropriate structures within the contextual realities of the individual university may be crucial in building strong and healthy relationships. Location decisions for RMOs and the extent of decentralisation may also play a critical role in reaching out to those academics who may be outside the circuit of Mode Two research or are reluctant to embark on certain activities with added responsibilities. Yet, once again, such decisions are very idiosyncratic reflecting the context. For example, since embarking on its strategic path in 2006, the UoI has been organised around five Schools, each of which incorporate a number of faculties and research centres. Building research support structures at a decentralised level was probably the appropriate decision since all academic, administrative and support structures were already geared towards a

decentralised mindset. On the other hand, the UoM is organised around fourteen faculties and numerous independent institutes, thus making it rather impractical to develop research support structures on a decentralised level. Such development would probably become smoother once expertise and familiarity with the context has been gained by centralised RMAs. In fact, the forthcoming plans at the UoM are to focus on more decentralised support.

These implications about the university structures are also linked to the role that universities play in the development of their RMAs. Universities in small island states are not passive in the face of contextual restrictions but rather ready to ‘intervene’ in order to equip their RMAs with coping mechanisms. Fostering participation in decision-making, providing career support, revising job descriptions and engaging RMAs in lifelong learning activities are among the interventions that universities are employing in order to nurture career adaptability in their RMAs to weather the challenges imposed by the context.

Finally, national, flagship universities play an important role in influencing and possibly changing the mindset within the contexts they operate in. Such universities not only act as drivers to other universities and to the entire research landscape of a small country, but can also influence policy-making and policy direction. The UoI presents a good example in this regard, as it managed to convince the government about its intentions to embark on a strategic plan to be transformed into a research university. This bottom-up drive adds significant responsibilities for the national, publicly-funded, flagship university, whose accountability towards society is

measured both in terms of its satisfaction of society's demands and in its capability to drive change.

In this regard, having one or multiple universities in a small island state represents an intricate dilemma. On the one hand, rather than having resources fragmented in different universities, the existence of one national university in a small island state could be beneficial for building critical mass and exploiting economies of scale. However, having one university in a small island state can also be dysfunctional, due to the perceptions of cosiness, lack of motivation to strive harder (especially if academics get early tenure), significant public scrutiny and a constant struggle for autonomy, among other factors.

The context plays a critical role in the decisions concerning the number and type of universities in a small island state. As argued in Chapter Two, some small island states have determined that it is impractical to have their own universities and are constantly dependent on other neighbouring or metropolitan countries in addressing the higher education needs of their citizens. Therefore, although the existence of universities in small contexts cannot be taken for granted, where they exist, research management is significantly shaped by the context in which the university operates.

8.2.3.2 RMAs

Apart from implications for universities, a number of implications for RMAs can be identified from this study. First, RMAs in a small island state are masters of their own destiny, because the extent to which they are able to cope with the various challenges depends on their ability to understand the small island context and to be creative in order to overcome inherent limitations. For example, they need to have a very clear understanding of the way relationships work in small communities and be ready to focus more on conflict resolution in order to reduce friction and to keep the ball rolling. In the absence of sufficient resources, they need to be multi-functional and work under stressful conditions in order to address the wide needs of university researchers. They may also need to sacrifice their specialisation, including conducting their own research, in favour of a more generic and supporting role in university-wide research management. These stances may eventually build trust and strong relationships between researchers and RMAs in the long-term, since RMAs may be involved in many of the milestones in a researcher's career in a small island state university.

The contextual adaptation of RMAs implies that they may develop specific profiles which are moulded and are possibly more suited for a specific context. While serving as mediators, facilitators and expeditors of the research process is key to the research management profession in general, the RMA in a small context could be more specialised in conflict management, persuasion, patience and empathy with academics/researchers who may feel frustrated in the light of the contextual restrictions. The profile of an RMA in a small context may also change when RMAs

are willing to go the extra mile and engage in sub-roles that, although not falling within the scope of research management, play a crucial role in trust building.

Finally, RMAs in a small context should open their horizons to interactions with other RMAs within the research management profession, including participation in conferences and activities organised by professional associations of RMAs. Besides gaining exposure to the wider environment of research management beyond their restricted contexts, participation in relevant conferences is a regular source of training for RMAs and a means to share and learn from best practices. This wider perspective to research management in a small context equips the RMAs with adaptability resources that may provide motivation and career development prospects despite the inherent limitations.

8.2.3.3 Research management profession

A number of practical implications for the research management profession are also warranted. First, in view of the circumstances faced by university RMAs in small island contexts, it may be wise for professional associations of RMAs to adopt more tailored approaches in the preparation of RMAs within restricted contexts. This preparation can take the shape of tailored curricula and training activities that are applicable to restricted contexts in order to equip RMAs with adaptability resources while maintaining their relevance to the profession.

Second, the profession needs to reach out to RMAs in a small context. It needs to strive in order to minimise misconceptions, by possibly making itself more and better visible in those remote contexts and by creating local associations linked to wider networks of professional associations. On the one hand, these wider networks may act as drivers for local associations towards a common denomination and way of thinking. On the other hand, the formal establishment of local associations of RMAs in small contexts could enhance the profile of research management, since the profession would be embracing other facets that go beyond what is bestowed by larger contexts (as is common in most professions).

Third is the issue of transferability of knowledge. As already argued, transfer of knowledge from one context to another cannot be undertaken blindly, especially if the contexts are largely diversified from each other. Like many other professions, the research management profession originated from a wider context, whose characteristics are far more different than those of a small island state context. Therefore, the profession needs to adapt itself to the developments experienced over time and to keep itself updated by embracing new challenges derived from the widening of its scope to more diverse, peculiar and smaller contexts.

8.3 Future research

This study will hopefully be the first of a series of studies intended to enhance the literature on research management within small contexts. A number of other possible

avenues emerged throughout this investigation and that may warrant further research in the future.

The first area for future research in small contexts is *research management in general*. This study has focused on research management within universities in three European small island states. Further research could be carried out on the scope of research management in other small contexts, not necessarily islands or limited to Europe. Empirical studies could be carried out on the relevance of research management and the profession on the population of small states listed in Table 7.2, which were beyond the scope of this study. Comparisons could be drawn between them as well as with other universities in small jurisdictions, such as those in dependent countries or regions. Sultana (2006) argues that “recently, small state studies have expanded to also focus on exploring the development strategies and policies in those jurisdictions, such as small provinces (often island) of larger states, which share the features associated with small scale” (p. 8). Therefore, the scope of small state studies has become wider and may offer relevant alternative scenarios that contribute further towards the literature on research management in small contexts.

The second area for further research concerns *RMA*s. It is probably worth conducting further studies on the identity of *RMA*s in small contexts and to explore whether there are different profiles of *RMA*s in different contexts. Further investigations could also focus on the type and extent of academic and professional preparation (if any) received by *RMA*s to face the contextual realities. Since this study also generated insights on the careers of *RMA*s, further studies could be conducted on the

motivations and career development prospects of RMAs in small contexts, whether within universities or not, and how they cope in entrenched careers. The career perspective could also include studies on the role of specific interventions, such as the provision of training by their institutions or by supporting career counselling around the careers of RMAs.

A third area for further research concerns the views on *research management from the perspective of researchers*. Further studies could include the perceptions of researchers about the extent of recognition of research management as a separate profession. Moreover, further investigations could be carried out on the challenges to conduct research from a researchers' perspective, including the motivations behind conducting research, despite the limitations faced in a small context. Finally, further studies could be conducted on the employment mobility decisions by researchers in small states. It would be worth investigating the implications for research management of such decisions and what goes on in the minds of researchers when they decide whether to conduct research in a small [island] state university or otherwise. For example, can the national universities of Monaco, San Marino and Liechtenstein ever face a surge in the demand for collaborative research projects that would warrant them investing in building research support structures such as those found at the UoM, the UCY and the UoI? What would be the conditions required for such a step to be made, if at all possible?

Finally, some recommendations for further studies can be undertaken through a mix of *methodological approaches*. For example, Miles *et al.*, (2014) argue in favour of

testing a hypothesis by replicating a finding in a brand new case, to see if the hypothesis is correct and whether it repeats itself. Alternatively, the same hypothesis could be tested longitudinally to see whether the findings still hold over time. If new perspectives emerge, then one could investigate the factors that could have led to the new developments. Further studies could also put to test the sustainability of the revised conceptual framework in different scenarios and contextual realities. Finally, further studies could be conducted using quantitative techniques to reach wider contexts and possibly enable some generalisations, which were not possible through this study, since it was very focused and qualitative in nature. In view of the level of detail of the investigation, this study will hopefully provide a good basis upon which quantitative studies or studies adopting mixed approaches could be developed in order to enhance the knowledge about research management in small island states even further.

8.4 Summary

This final chapter wrapped up the overall results of this study and presented a number of implications from the findings, which relate to research, theory and practice. The latter distinguished between implications for universities, RMAs and the research management profession. Subsequently, a number of areas for further research were identified. An overall conclusion for this study presented in the next section completes this chapter.

8.5 Conclusion

At the beginning of this thesis it has been claimed that studies combining the smallness and islandness factors with that of research management were non-existent. In order to address this lacuna in the literature, this study has done a number of things. First, it has explored in detail both the context of small island states as well as the phenomenon of research management. Subsequently, it has systematically built a conceptual framework relevant for this study, in the absence of any literature directly addressing the subject under investigation. Through a qualitative approach, it has then proceeded to investigate in detail three aspects of university research management, namely structures, challenges and strategies. This investigation was conducted using a case study strategy of inquiry within the national, publicly-funded, flagship universities in three European small island states. A number of factors that shape university research management were identified and evaluated. At the end of this process the researcher re-visited the baseline model of the conceptual framework and adapted it to reflect the salient aspects derived from this study. This re-assessment produced a revised model for university research management in small island states and generated a number of reflections intended to provoke further thinking and research.

It is by building on small contributions to knowledge, such as this study, and in tailoring approaches to take into account the specificity of small contexts, that research management can be better understood and be more relevant to the needs of those it is intended to serve. Clearly, more work remains to be done to provide a comprehensive view of the factors that shape research management within small

contexts and in articulating appropriate approaches. The author's hope is that this study has made a start in the right direction and that it will serve to stimulate further research and policy debate in the coming years.

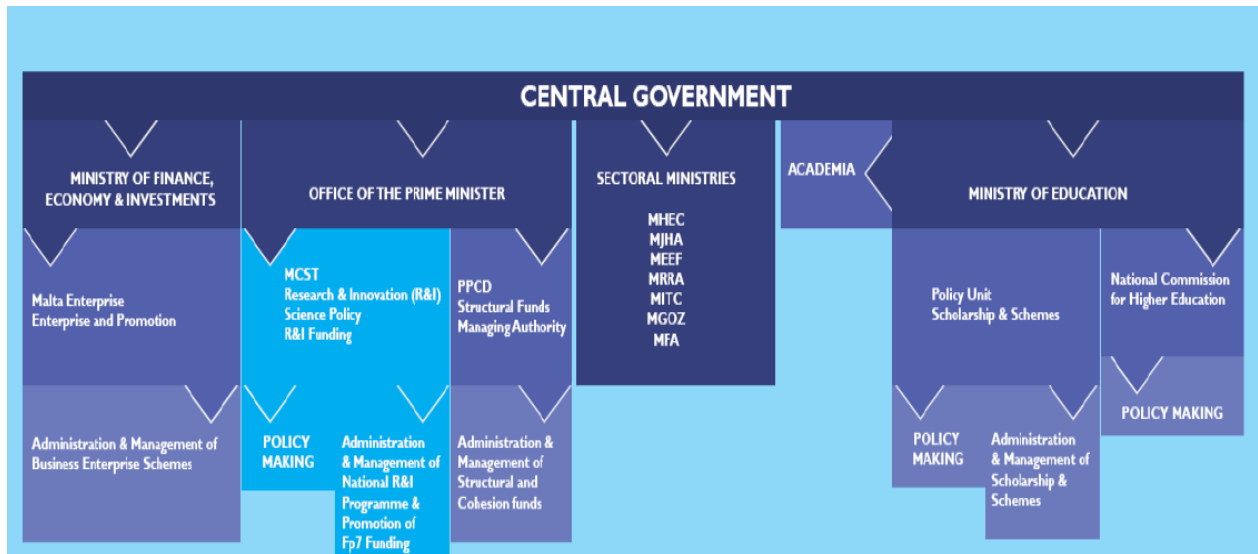
APPENDICES

APPENDIX 1

NATIONAL R&I SYSTEMS

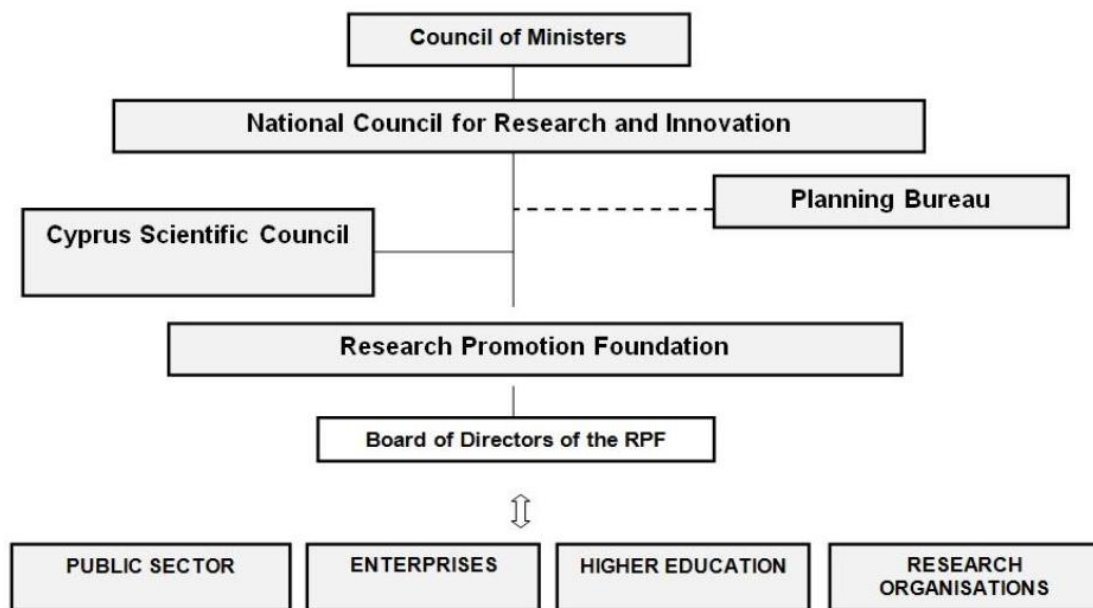
Appendix 1: National R&I systems of Malta, Cyprus and Iceland

Appendix 1a: Malta's R&I system



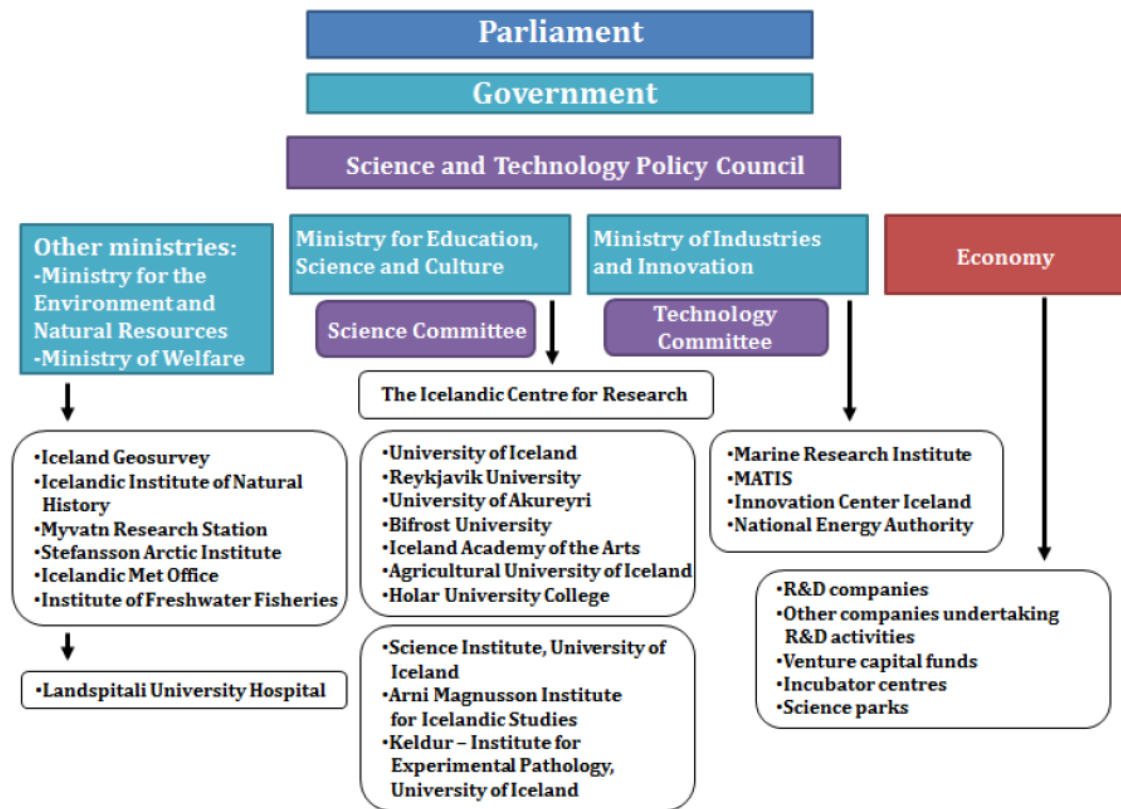
Source: Warrington (2013)

Appendix 1b: Cyprus's R&I system



Source: Tsipouri and Athanassopoulou (2013)

Appendix 1c: Iceland's R&I system



Source: Sigurðsson (2013)

APPENDIX 2

2016 GII RANKINGS

Appendix 2: Extracts from the 2016 Global Innovation Index (GII) - Rankings

- > **2a. The Global Innovation Index rankings**
- > **2b. The Innovation Input Sub-Index rankings**
- > **2c. The Innovation Output Sub-Index rankings**

Appendix 2a: The 2016 Global Innovation Index rankings

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Efficiency Ratio | Rank | Median: 0.65 |
|--------------------------|---------------|------|--------|------|--------|------|------------------|------|--------------|
| Switzerland | 66.28 | 1 | HI | 1 | EUR | 1 | 0.94 | 5 | |
| Sweden | 63.57 | 2 | HI | 2 | EUR | 2 | 0.86 | 10 | |
| United Kingdom | 61.93 | 3 | HI | 3 | EUR | 3 | 0.83 | 14 | |
| United States of America | 61.40 | 4 | HI | 4 | NAC | 1 | 0.79 | 25 | |
| Finland | 59.90 | 5 | HI | 5 | EUR | 4 | 0.75 | 32 | |
| Singapore | 59.16 | 6 | HI | 6 | SEAO | 1 | 0.62 | 78 | |
| Ireland | 59.03 | 7 | HI | 7 | EUR | 5 | 0.89 | 8 | |
| Denmark | 58.45 | 8 | HI | 8 | EUR | 6 | 0.74 | 34 | |
| Netherlands | 58.29 | 9 | HI | 9 | EUR | 7 | 0.82 | 20 | |
| Germany | 57.94 | 10 | HI | 10 | EUR | 8 | 0.87 | 9 | |
| Korea, Rep. | 57.15 | 11 | HI | 11 | SEAO | 2 | 0.80 | 24 | |
| Luxembourg | 57.11 | 12 | HI | 12 | EUR | 9 | 1.02 | 1 | |
| Iceland | 55.99 | 13 | HI | 13 | EUR | 10 | 0.98 | 3 | |
| Hong Kong (China) | 55.69 | 14 | HI | 14 | SEAO | 3 | 0.61 | 83 | |
| Canada | 54.71 | 15 | HI | 15 | NAC | 2 | 0.67 | 57 | |
| Japan | 54.52 | 16 | HI | 16 | SEAO | 4 | 0.65 | 65 | |
| New Zealand | 54.23 | 17 | HI | 17 | SEAO | 5 | 0.73 | 40 | |
| France | 54.04 | 18 | HI | 18 | EUR | 11 | 0.73 | 44 | |
| Australia | 53.07 | 19 | HI | 19 | SEAO | 6 | 0.64 | 73 | |
| Austria | 52.65 | 20 | HI | 20 | EUR | 12 | 0.73 | 43 | |
| Israel | 52.28 | 21 | HI | 21 | NAWA | 1 | 0.81 | 23 | |
| Norway | 52.01 | 22 | HI | 22 | EUR | 13 | 0.68 | 55 | |
| Belgium | 51.97 | 23 | HI | 23 | EUR | 14 | 0.78 | 27 | |
| Estonia | 51.73 | 24 | HI | 24 | EUR | 15 | 0.91 | 6 | |
| China | 50.57 | 25 | UM | 1 | SEAO | 7 | 0.90 | 7 | |
| Malta | 50.44 | 26 | HI | 25 | EUR | 16 | 0.98 | 2 | |
| Czech Republic | 49.40 | 27 | HI | 26 | EUR | 17 | 0.82 | 21 | |
| Spain | 49.19 | 28 | HI | 27 | EUR | 18 | 0.72 | 48 | |
| Italy | 47.17 | 29 | HI | 28 | EUR | 19 | 0.74 | 33 | |
| Portugal | 46.45 | 30 | HI | 29 | EUR | 20 | 0.75 | 31 | |
| Cyprus | 46.34 | 31 | HI | 30 | NAWA | 2 | 0.79 | 26 | |
| Slovenia | 45.97 | 32 | HI | 31 | EUR | 21 | 0.74 | 39 | |
| Hungary | 44.71 | 33 | HI | 32 | EUR | 22 | 0.83 | 17 | |
| Latvia | 44.33 | 34 | HI | 33 | EUR | 23 | 0.78 | 28 | |
| Malaysia | 43.36 | 35 | UM | 2 | SEAO | 8 | 0.67 | 59 | |
| Lithuania | 41.76 | 36 | HI | 34 | EUR | 24 | 0.63 | 75 | |
| Slovakia | 41.70 | 37 | HI | 35 | EUR | 25 | 0.74 | 36 | |
| Bulgaria | 41.42 | 38 | UM | 3 | EUR | 26 | 0.83 | 16 | |
| Poland | 40.22 | 39 | HI | 36 | EUR | 27 | 0.65 | 66 | |
| Greece | 39.75 | 40 | HI | 37 | EUR | 28 | 0.61 | 84 | |
| United Arab Emirates | 39.35 | 41 | HI | 38 | NAWA | 3 | 0.44 | 117 | |
| Turkey | 39.03 | 42 | UM | 4 | NAWA | 4 | 0.84 | 13 | |
| Russian Federation | 38.50 | 43 | HI | 39 | EUR | 29 | 0.65 | 69 | |
| Chile | 38.41 | 44 | HI | 40 | LCN | 1 | 0.59 | 91 | |
| Costa Rica | 38.40 | 45 | UM | 5 | LCN | 2 | 0.71 | 50 | |
| Moldova, Rep. | 38.39 | 46 | LM | 1 | EUR | 30 | 0.94 | 4 | |
| Croatia | 38.29 | 47 | HI | 41 | EUR | 31 | 0.65 | 68 | |
| Romania | 37.90 | 48 | UM | 6 | EUR | 32 | 0.72 | 46 | |
| Saudi Arabia | 37.75 | 49 | HI | 42 | NAWA | 5 | 0.61 | 85 | |
| Qatar | 37.47 | 50 | HI | 43 | NAWA | 6 | 0.56 | 97 | |
| Montenegro | 37.36 | 51 | UM | 7 | EUR | 33 | 0.62 | 80 | |
| Thailand | 36.51 | 52 | UM | 8 | SEAO | 9 | 0.70 | 53 | |
| Mauritius | 35.86 | 53 | UM | 9 | SSF | 1 | 0.57 | 95 | |
| South Africa | 35.85 | 54 | UM | 10 | SSF | 2 | 0.55 | 99 | |
| Mongolia | 35.74 | 55 | UM | 11 | SEAO | 10 | 0.72 | 47 | |
| Ukraine | 35.72 | 56 | LM | 2 | EUR | 34 | 0.84 | 12 | |
| Bahrain | 35.48 | 57 | HI | 44 | NAWA | 7 | 0.58 | 92 | |
| TFYR of Macedonia | 35.40 | 58 | UM | 12 | EUR | 35 | 0.67 | 56 | |
| Viet Nam | 35.37 | 59 | LM | 3 | SEAO | 11 | 0.84 | 11 | |
| Armenia | 35.14 | 60 | LM | 4 | NAWA | 8 | 0.83 | 15 | |
| Mexico | 34.56 | 61 | UM | 13 | LCN | 3 | 0.63 | 76 | |
| Uruguay | 34.28 | 62 | HI | 45 | LCN | 4 | 0.62 | 81 | |
| Colombia | 34.16 | 63 | UM | 14 | LCN | 5 | 0.56 | 96 | |
| Georgia | 33.86 | 64 | LM | 5 | NAWA | 9 | 0.65 | 67 | |

Appendix 2a: The 2016 Global Innovation Index rankings (continued)

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Efficiency Ratio | Rank | Median: 0.65 |
|----------------------------|---------------|------|--------|------|--------|------|------------------|------|--------------|
| Serbia | 33.75 | 65 | UM | 15 | EUR | 36 | 0.65 | 70 | |
| India | 33.61 | 66 | LM | 6 | CSA | 1 | 0.66 | 63 | |
| Kuwait | 33.61 | 67 | HI | 46 | NAWA | 10 | 0.73 | 42 | |
| Panama | 33.49 | 68 | UM | 16 | LCN | 6 | 0.66 | 61 | |
| Brazil | 33.19 | 69 | UM | 17 | LCN | 7 | 0.55 | 100 | |
| Lebanon | 32.70 | 70 | UM | 18 | NAWA | 11 | 0.73 | 41 | |
| Peru | 32.51 | 71 | UM | 19 | LCN | 8 | 0.51 | 109 | |
| Morocco | 32.26 | 72 | LM | 7 | NAWA | 12 | 0.66 | 64 | |
| Oman | 32.21 | 73 | HI | 47 | NAWA | 13 | 0.53 | 103 | |
| Philippines | 31.83 | 74 | LM | 8 | SEAO | 12 | 0.71 | 49 | |
| Kazakhstan | 31.51 | 75 | UM | 20 | CSA | 2 | 0.51 | 108 | |
| Dominican Republic | 30.55 | 76 | UM | 21 | LCN | 9 | 0.62 | 82 | |
| Tunisia | 30.55 | 77 | UM | 22 | NAWA | 14 | 0.60 | 86 | |
| Iran, Islamic Rep. | 30.52 | 78 | UM | 23 | CSA | 3 | 0.71 | 51 | |
| Belarus | 30.39 | 79 | UM | 24 | EUR | 37 | 0.45 | 116 | |
| Kenya | 30.36 | 80 | LM | 9 | SSF | 3 | 0.76 | 30 | |
| Argentina | 30.24 | 81 | HI | 48 | LCN | 10 | 0.56 | 98 | |
| Jordan | 30.04 | 82 | UM | 25 | NAWA | 15 | 0.67 | 58 | |
| Rwanda | 29.96 | 83 | LI | 1 | SSF | 4 | 0.38 | 123 | |
| Mozambique | 29.84 | 84 | LI | 2 | SSF | 5 | 0.73 | 45 | |
| Azerbaijan | 29.64 | 85 | UM | 26 | NAWA | 16 | 0.54 | 101 | |
| Tajikistan | 29.62 | 86 | LM | 10 | CSA | 4 | 0.77 | 29 | |
| Bosnia and Herzegovina | 29.62 | 87 | UM | 27 | EUR | 38 | 0.46 | 115 | |
| Indonesia | 29.07 | 88 | LM | 11 | SEAO | 13 | 0.71 | 52 | |
| Jamaica | 28.97 | 89 | UM | 28 | LCN | 11 | 0.53 | 104 | |
| Botswana | 28.96 | 90 | UM | 29 | SSF | 6 | 0.42 | 119 | |
| Sri Lanka | 28.92 | 91 | LM | 12 | CSA | 5 | 0.70 | 54 | |
| Albania | 28.38 | 92 | UM | 30 | EUR | 39 | 0.40 | 121 | |
| Namibia | 28.24 | 93 | UM | 31 | SSF | 7 | 0.54 | 102 | |
| Paraguay | 28.20 | 94 | UM | 32 | LCN | 12 | 0.62 | 77 | |
| Cambodia | 27.94 | 95 | LI | 3 | SEAO | 14 | 0.59 | 90 | |
| Bhutan | 27.88 | 96 | LM | 13 | CSA | 6 | 0.28 | 128 | |
| Guatemala | 27.30 | 97 | LM | 14 | LCN | 13 | 0.62 | 79 | |
| Malawi | 27.26 | 98 | LI | 4 | SSF | 8 | 0.74 | 38 | |
| Uganda | 27.14 | 99 | LI | 5 | SSF | 9 | 0.52 | 106 | |
| Ecuador | 27.11 | 100 | UM | 33 | LCN | 14 | 0.60 | 87 | |
| Honduras | 26.94 | 101 | LM | 15 | LCN | 15 | 0.53 | 105 | |
| Ghana | 26.66 | 102 | LM | 16 | SSF | 10 | 0.60 | 88 | |
| Kyrgyzstan | 26.62 | 103 | LM | 17 | CSA | 7 | 0.50 | 110 | |
| El Salvador | 26.56 | 104 | LM | 18 | LCN | 16 | 0.48 | 113 | |
| Tanzania, United Rep. | 26.35 | 105 | LI | 6 | SSF | 11 | 0.81 | 22 | |
| Senegal | 26.14 | 106 | LM | 19 | SSF | 12 | 0.66 | 62 | |
| Egypt | 25.96 | 107 | LM | 20 | NAWA | 17 | 0.63 | 74 | |
| Côte d'Ivoire | 25.80 | 108 | LM | 21 | SSF | 13 | 0.82 | 19 | |
| Bolivia, Plurinational St. | 25.24 | 109 | LM | 22 | LCN | 17 | 0.59 | 89 | |
| Ethiopia | 24.83 | 110 | LI | 7 | SSF | 14 | 0.83 | 18 | |
| Madagascar | 24.79 | 111 | LI | 8 | SSF | 15 | 0.74 | 35 | |
| Mali | 24.77 | 112 | LI | 9 | SSF | 16 | 0.74 | 37 | |
| Algeria | 24.46 | 113 | UM | 34 | NAWA | 18 | 0.49 | 111 | |
| Nigeria | 23.15 | 114 | LM | 23 | SSF | 17 | 0.67 | 60 | |
| Nepal | 23.13 | 115 | LI | 10 | CSA | 8 | 0.58 | 94 | |
| Nicaragua | 23.06 | 116 | LM | 24 | LCN | 18 | 0.41 | 120 | |
| Bangladesh | 22.86 | 117 | LM | 25 | CSA | 9 | 0.52 | 107 | |
| Cameroon | 22.82 | 118 | LM | 26 | SSF | 18 | 0.58 | 93 | |
| Pakistan | 22.63 | 119 | LM | 27 | CSA | 10 | 0.64 | 71 | |
| Venezuela, Bolivarian Rep. | 22.32 | 120 | HI | 49 | LCN | 19 | 0.46 | 114 | |
| Benin | 22.25 | 121 | LI | 11 | SSF | 19 | 0.43 | 118 | |
| Burkina Faso | 21.05 | 122 | LI | 12 | SSF | 20 | 0.28 | 127 | |
| Burundi | 20.93 | 123 | LI | 13 | SSF | 21 | 0.39 | 122 | |
| Niger | 20.44 | 124 | LI | 14 | SSF | 22 | 0.36 | 125 | |
| Zambia | 19.92 | 125 | LM | 28 | SSF | 23 | 0.64 | 72 | |
| Togo | 18.42 | 126 | LI | 15 | SSF | 24 | 0.36 | 124 | |
| Guinea | 17.24 | 127 | LI | 16 | SSF | 25 | 0.49 | 112 | |
| Yemen | 14.55 | 128 | LM | 29 | NAWA | 19 | 0.34 | 126 | |

Note: World Bank Income Group Classification (July 2015): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia, East Asia, and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

Appendix 2b: The 2016 Innovation Input Sub-Index rankings

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median: 41.87 |
|--------------------------|---------------|------|--------|------|--------|------|---------------|
| Singapore | 72.94 | 1 | HI | 1 | SEAO | 1 | |
| Hong Kong (China) | 69.15 | 2 | HI | 2 | SEAO | 2 | |
| United States of America | 68.71 | 3 | HI | 3 | NAC | 1 | |
| Finland | 68.49 | 4 | HI | 4 | EUR | 1 | |
| Sweden | 68.48 | 5 | HI | 5 | EUR | 2 | |
| Switzerland | 68.38 | 6 | HI | 6 | EUR | 3 | |
| United Kingdom | 67.50 | 7 | HI | 7 | EUR | 4 | |
| Denmark | 67.06 | 8 | HI | 8 | EUR | 5 | |
| Japan | 66.00 | 9 | HI | 9 | SEAO | 3 | |
| Canada | 65.41 | 10 | HI | 10 | NAC | 2 | |
| Australia | 64.85 | 11 | HI | 11 | SEAO | 4 | |
| Netherlands | 64.03 | 12 | HI | 12 | EUR | 6 | |
| Korea, Rep. | 63.54 | 13 | HI | 13 | SEAO | 5 | |
| New Zealand | 62.64 | 14 | HI | 14 | SEAO | 6 | |
| France | 62.56 | 15 | HI | 15 | EUR | 7 | |
| Ireland | 62.44 | 16 | HI | 16 | EUR | 8 | |
| Norway | 61.98 | 17 | HI | 17 | EUR | 9 | |
| Germany | 61.91 | 18 | HI | 18 | EUR | 10 | |
| Austria | 60.86 | 19 | HI | 19 | EUR | 11 | |
| Belgium | 58.23 | 20 | HI | 20 | EUR | 12 | |
| Israel | 57.78 | 21 | HI | 21 | NAWA | 1 | |
| Spain | 57.26 | 22 | HI | 22 | EUR | 13 | |
| Luxembourg | 56.64 | 23 | HI | 23 | EUR | 14 | |
| Iceland | 56.64 | 24 | HI | 24 | EUR | 15 | |
| United Arab Emirates | 54.53 | 25 | HI | 25 | NAWA | 2 | |
| Czech Republic | 54.28 | 26 | HI | 26 | EUR | 16 | |
| Estonia | 54.15 | 27 | HI | 27 | EUR | 17 | |
| Italy | 54.07 | 28 | HI | 28 | EUR | 18 | |
| China | 53.12 | 29 | UM | 1 | SEAO | 7 | |
| Portugal | 53.05 | 30 | HI | 29 | EUR | 19 | |
| Slovenia | 52.99 | 31 | HI | 30 | EUR | 20 | |
| Malaysia | 52.05 | 32 | UM | 2 | SEAO | 8 | |
| Cyprus | 51.88 | 33 | HI | 31 | NAWA | 3 | |
| Lithuania | 51.18 | 34 | HI | 32 | EUR | 21 | |
| Malta | 51.01 | 35 | HI | 33 | EUR | 22 | |
| Latvia | 49.73 | 36 | HI | 34 | EUR | 23 | |
| Greece | 49.42 | 37 | HI | 35 | EUR | 24 | |
| Hungary | 48.94 | 38 | HI | 36 | EUR | 25 | |
| Poland | 48.71 | 39 | HI | 37 | EUR | 26 | |
| Chile | 48.25 | 40 | HI | 38 | LCN | 1 | |
| Qatar | 48.05 | 41 | HI | 39 | NAWA | 4 | |
| Slovakia | 47.96 | 42 | HI | 40 | EUR | 27 | |
| Saudi Arabia | 46.99 | 43 | HI | 41 | NAWA | 5 | |
| Russian Federation | 46.69 | 44 | HI | 42 | EUR | 28 | |
| Croatia | 46.38 | 45 | HI | 43 | EUR | 29 | |
| Montenegro | 46.13 | 46 | UM | 3 | EUR | 30 | |
| South Africa | 46.12 | 47 | UM | 4 | SSF | 1 | |
| Mauritius | 45.75 | 48 | UM | 5 | SSF | 2 | |
| Bulgaria | 45.30 | 49 | UM | 6 | EUR | 31 | |
| Costa Rica | 44.94 | 50 | UM | 7 | LCN | 2 | |
| Bahrain | 44.79 | 51 | HI | 44 | NAWA | 6 | |
| Romania | 43.99 | 52 | UM | 8 | EUR | 32 | |
| Colombia | 43.78 | 53 | UM | 9 | LCN | 3 | |
| Bhutan | 43.46 | 54 | LM | 1 | CSA | 1 | |
| Rwanda | 43.40 | 55 | LI | 1 | SSF | 3 | |
| Peru | 43.18 | 56 | UM | 10 | LCN | 4 | |
| Thailand | 42.98 | 57 | UM | 11 | SEAO | 9 | |
| Brazil | 42.73 | 58 | UM | 12 | LCN | 5 | |
| Turkey | 42.54 | 59 | UM | 13 | NAWA | 7 | |
| Mexico | 42.52 | 60 | UM | 14 | LCN | 6 | |
| Uruguay | 42.33 | 61 | HI | 45 | LCN | 7 | |
| TFYR of Macedonia | 42.31 | 62 | UM | 15 | EUR | 33 | |
| Oman | 42.10 | 63 | HI | 46 | NAWA | 8 | |
| Belarus | 41.99 | 64 | UM | 16 | EUR | 34 | |

Appendix 2b: The 2016 Innovation Input Sub-Index rankings (continued)

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median |
|----------------------------|---------------|------|--------|------|--------|------|--------|
| Kazakhstan | 41.75 | 65 | UM | 17 | CSA | 2 | |
| Mongolia | 41.56 | 66 | UM | 18 | SEAO | 10 | |
| Georgia | 41.02 | 67 | LM | 2 | NAWA | 9 | |
| Serbia | 40.94 | 68 | UM | 19 | EUR | 35 | |
| Botswana | 40.93 | 69 | UM | 20 | SSF | 4 | |
| Bosnia and Herzegovina | 40.54 | 70 | UM | 21 | EUR | 36 | |
| Albania | 40.53 | 71 | UM | 22 | EUR | 37 | |
| India | 40.49 | 72 | LM | 3 | CSA | 3 | |
| Panama | 40.31 | 73 | UM | 23 | LCN | 8 | |
| Moldova, Rep. | 39.57 | 74 | LM | 4 | EUR | 38 | |
| Morocco | 38.93 | 75 | LM | 5 | NAWA | 10 | |
| Ukraine | 38.91 | 76 | LM | 6 | EUR | 39 | |
| Argentina | 38.86 | 77 | HI | 47 | LCN | 9 | |
| Kuwait | 38.84 | 78 | HI | 48 | NAWA | 11 | |
| Viet Nam | 38.45 | 79 | LM | 7 | SEAO | 11 | |
| Armenia | 38.40 | 80 | LM | 8 | NAWA | 12 | |
| Azerbaijan | 38.39 | 81 | UM | 24 | NAWA | 13 | |
| Tunisia | 38.10 | 82 | UM | 25 | NAWA | 14 | |
| Jamaica | 37.96 | 83 | UM | 26 | LCN | 10 | |
| Dominican Republic | 37.80 | 84 | UM | 27 | LCN | 11 | |
| Lebanon | 37.78 | 85 | UM | 28 | NAWA | 15 | |
| Philippines | 37.23 | 86 | LM | 9 | SEAO | 12 | |
| Namibia | 36.66 | 87 | UM | 29 | SSF | 5 | |
| Jordan | 36.01 | 88 | UM | 30 | NAWA | 16 | |
| El Salvador | 35.92 | 89 | LM | 10 | LCN | 12 | |
| Iran, Islamic Rep. | 35.72 | 90 | UM | 31 | CSA | 4 | |
| Uganda | 35.63 | 91 | LI | 2 | SSF | 6 | |
| Kyrgyzstan | 35.61 | 92 | LM | 11 | CSA | 5 | |
| Honduras | 35.33 | 93 | LM | 12 | LCN | 13 | |
| Cambodia | 35.06 | 94 | LI | 3 | SEAO | 13 | |
| Paraguay | 34.75 | 95 | UM | 32 | LCN | 14 | |
| Mozambique | 34.55 | 96 | LI | 4 | SSF | 7 | |
| Kenya | 34.44 | 97 | LM | 13 | SSF | 8 | |
| Sri Lanka | 34.08 | 98 | LM | 14 | CSA | 6 | |
| Indonesia | 34.04 | 99 | LM | 15 | SEAO | 14 | |
| Ecuador | 33.92 | 100 | UM | 33 | LCN | 15 | |
| Guatemala | 33.69 | 101 | LM | 16 | LCN | 16 | |
| Tajikistan | 33.51 | 102 | LM | 17 | CSA | 7 | |
| Ghana | 33.37 | 103 | LM | 18 | SSF | 9 | |
| Algeria | 32.80 | 104 | UM | 34 | NAWA | 17 | |
| Burkina Faso | 32.78 | 105 | LI | 5 | SSF | 10 | |
| Nicaragua | 32.78 | 106 | LM | 19 | LCN | 17 | |
| Egypt | 31.76 | 107 | LM | 20 | NAWA | 18 | |
| Bolivia, Plurinational St. | 31.66 | 108 | LM | 21 | LCN | 18 | |
| Senegal | 31.47 | 109 | LM | 22 | SSF | 11 | |
| Malawi | 31.41 | 110 | LI | 6 | SSF | 12 | |
| Benin | 31.16 | 111 | LI | 7 | SSF | 13 | |
| Venezuela, Bolivarian Rep. | 30.52 | 112 | HI | 49 | LCN | 19 | |
| Niger | 30.08 | 113 | LI | 8 | SSF | 14 | |
| Burundi | 30.04 | 114 | LI | 9 | SSF | 15 | |
| Bangladesh | 30.02 | 115 | LM | 23 | CSA | 8 | |
| Nepal | 29.31 | 116 | LI | 10 | CSA | 9 | |
| Tanzania, United Rep. | 29.05 | 117 | LI | 11 | SSF | 16 | |
| Cameroon | 28.88 | 118 | LM | 24 | SSF | 17 | |
| Mali | 28.53 | 119 | LI | 12 | SSF | 18 | |
| Madagascar | 28.45 | 120 | LI | 13 | SSF | 19 | |
| Côte d'Ivoire | 28.29 | 121 | LM | 25 | SSF | 20 | |
| Nigeria | 27.80 | 122 | LM | 26 | SSF | 21 | |
| Pakistan | 27.51 | 123 | LM | 27 | CSA | 10 | |
| Ethiopia | 27.19 | 124 | LI | 14 | SSF | 22 | |
| Togo | 27.11 | 125 | LI | 15 | SSF | 23 | |
| Zambia | 24.25 | 126 | LM | 28 | SSF | 24 | |
| Guinea | 23.18 | 127 | LI | 16 | SSF | 25 | |
| Yemen | 21.67 | 128 | LM | 29 | NAWA | 19 | |

Note: World Bank Income Group Classification (July 2015): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification: EUR = Europe; N = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia, East Asia, and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

Appendix 2c: The Innovation Output Sub-Index rankings

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median: 26.35 |
|--------------------------|---------------|------|--------|------|--------|------|---------------|
| Switzerland | 64.19 | 1 | HI | 1 | EUR | 1 | |
| Sweden | 58.66 | 2 | HI | 2 | EUR | 2 | |
| Luxembourg | 57.57 | 3 | HI | 3 | EUR | 3 | |
| United Kingdom | 56.35 | 4 | HI | 4 | EUR | 4 | |
| Ireland | 55.63 | 5 | HI | 5 | EUR | 5 | |
| Iceland | 55.35 | 6 | HI | 6 | EUR | 6 | |
| United States of America | 54.08 | 7 | HI | 7 | NAC | 1 | |
| Germany | 53.97 | 8 | HI | 8 | EUR | 7 | |
| Netherlands | 52.54 | 9 | HI | 9 | EUR | 8 | |
| Finland | 51.32 | 10 | HI | 10 | EUR | 9 | |
| Korea, Rep. | 50.75 | 11 | HI | 11 | SEAO | 1 | |
| Malta | 49.86 | 12 | HI | 12 | EUR | 10 | |
| Denmark | 49.84 | 13 | HI | 13 | EUR | 11 | |
| Estonia | 49.31 | 14 | HI | 14 | EUR | 12 | |
| China | 48.02 | 15 | UM | 1 | SEAO | 2 | |
| Israel | 46.77 | 16 | HI | 15 | NAWA | 1 | |
| New Zealand | 45.82 | 17 | HI | 16 | SEAO | 3 | |
| Belgium | 45.71 | 18 | HI | 17 | EUR | 13 | |
| France | 45.51 | 19 | HI | 18 | EUR | 14 | |
| Singapore | 45.38 | 20 | HI | 19 | SEAO | 4 | |
| Czech Republic | 44.53 | 21 | HI | 20 | EUR | 15 | |
| Austria | 44.44 | 22 | HI | 21 | EUR | 16 | |
| Canada | 44.00 | 23 | HI | 22 | NAC | 2 | |
| Japan | 43.04 | 24 | HI | 23 | SEAO | 5 | |
| Hong Kong (China) | 42.22 | 25 | HI | 24 | SEAO | 6 | |
| Norway | 42.04 | 26 | HI | 25 | EUR | 17 | |
| Australia | 41.28 | 27 | HI | 26 | SEAO | 7 | |
| Spain | 41.11 | 28 | HI | 27 | EUR | 18 | |
| Cyprus | 40.80 | 29 | HI | 28 | NAWA | 2 | |
| Hungary | 40.47 | 30 | HI | 29 | EUR | 19 | |
| Italy | 40.28 | 31 | HI | 30 | EUR | 20 | |
| Portugal | 39.85 | 32 | HI | 31 | EUR | 21 | |
| Slovenia | 38.95 | 33 | HI | 32 | EUR | 22 | |
| Latvia | 38.92 | 34 | HI | 33 | EUR | 23 | |
| Bulgaria | 37.53 | 35 | UM | 2 | EUR | 24 | |
| Moldova, Rep. | 37.21 | 36 | LM | 1 | EUR | 25 | |
| Turkey | 35.52 | 37 | UM | 3 | NAWA | 3 | |
| Slovakia | 35.43 | 38 | HI | 34 | EUR | 26 | |
| Malaysia | 34.66 | 39 | UM | 4 | SEAO | 8 | |
| Ukraine | 32.53 | 40 | LM | 2 | EUR | 27 | |
| Lithuania | 32.34 | 41 | HI | 35 | EUR | 28 | |
| Viet Nam | 32.29 | 42 | LM | 3 | SEAO | 9 | |
| Armenia | 31.89 | 43 | LM | 4 | NAWA | 4 | |
| Costa Rica | 31.87 | 44 | UM | 5 | LCN | 1 | |
| Romania | 31.81 | 45 | UM | 6 | EUR | 29 | |
| Poland | 31.73 | 46 | HI | 36 | EUR | 30 | |
| Russian Federation | 30.31 | 47 | HI | 37 | EUR | 31 | |
| Croatia | 30.19 | 48 | HI | 38 | EUR | 32 | |
| Greece | 30.09 | 49 | HI | 39 | EUR | 33 | |
| Thailand | 30.04 | 50 | UM | 7 | SEAO | 10 | |
| Mongolia | 29.93 | 51 | UM | 8 | SEAO | 11 | |
| Montenegro | 28.59 | 52 | UM | 9 | EUR | 34 | |
| Chile | 28.57 | 53 | HI | 40 | LCN | 2 | |
| Saudi Arabia | 28.51 | 54 | HI | 41 | NAWA | 5 | |
| TFYR of Macedonia | 28.49 | 55 | UM | 10 | EUR | 35 | |
| Kuwait | 28.37 | 56 | HI | 42 | NAWA | 6 | |
| Lebanon | 27.62 | 57 | UM | 11 | NAWA | 7 | |
| Qatar | 26.88 | 58 | HI | 43 | NAWA | 8 | |
| India | 26.73 | 59 | LM | 5 | CSA | 1 | |
| Georgia | 26.71 | 60 | LM | 6 | NAWA | 9 | |
| Panama | 26.67 | 61 | UM | 12 | LCN | 3 | |
| Mexico | 26.60 | 62 | UM | 13 | LCN | 4 | |
| Serbia | 26.57 | 63 | UM | 14 | EUR | 36 | |
| Philippines | 26.43 | 64 | LM | 7 | SEAO | 12 | |

Appendix 2c: The Innovation Output Sub-Index rankings (continued)

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median: |
|----------------------------|---------------|------|--------|------|--------|------|---------|
| Kenya | 26.28 | 65 | LM | 8 | SSF | 1 | ■ |
| Uruguay | 26.22 | 66 | HI | 44 | LCN | 5 | ■ |
| Bahrain | 26.17 | 67 | HI | 45 | NAWA | 10 | ■ |
| Mauritius | 25.97 | 68 | UM | 15 | SSF | 2 | ■ |
| Tajikistan | 25.74 | 69 | LM | 9 | CSA | 2 | ■ |
| Morocco | 25.58 | 70 | LM | 10 | NAWA | 11 | ■ |
| South Africa | 25.58 | 71 | UM | 16 | SSF | 3 | ■ |
| Iran, Islamic Rep. | 25.33 | 72 | UM | 17 | CSA | 3 | ■ |
| Mozambique | 25.13 | 73 | LI | 1 | SSF | 4 | ■ |
| Colombia | 24.55 | 74 | UM | 18 | LCN | 6 | ■ |
| United Arab Emirates | 24.18 | 75 | HI | 46 | NAWA | 12 | ■ |
| Indonesia | 24.10 | 76 | LM | 11 | SEAO | 13 | ■ |
| Jordan | 24.06 | 77 | UM | 19 | NAWA | 13 | ■ |
| Sri Lanka | 23.77 | 78 | LM | 12 | CSA | 4 | ■ |
| Brazil | 23.65 | 79 | UM | 20 | LCN | 7 | ■ |
| Tanzania, United Rep. | 23.65 | 80 | LI | 2 | SSF | 5 | ■ |
| Côte d'Ivoire | 23.31 | 81 | LM | 13 | SSF | 6 | ■ |
| Dominican Republic | 23.31 | 82 | UM | 21 | LCN | 8 | ■ |
| Malawi | 23.11 | 83 | LI | 3 | SSF | 7 | ■ |
| Tunisia | 23.00 | 84 | UM | 22 | NAWA | 14 | ■ |
| Ethiopia | 22.48 | 85 | LI | 4 | SSF | 8 | ■ |
| Oman | 22.32 | 86 | HI | 47 | NAWA | 15 | ■ |
| Peru | 21.84 | 87 | UM | 23 | LCN | 9 | ■ |
| Paraguay | 21.64 | 88 | UM | 24 | LCN | 10 | ■ |
| Argentina | 21.62 | 89 | HI | 48 | LCN | 11 | ■ |
| Kazakhstan | 21.27 | 90 | UM | 25 | CSA | 5 | ■ |
| Madagascar | 21.13 | 91 | LI | 5 | SSF | 9 | ■ |
| Mali | 21.02 | 92 | LI | 6 | SSF | 10 | ■ |
| Guatemala | 20.91 | 93 | LM | 14 | LCN | 12 | ■ |
| Azerbaijan | 20.88 | 94 | UM | 26 | NAWA | 16 | ■ |
| Cambodia | 20.82 | 95 | LI | 7 | SEAO | 14 | ■ |
| Senegal | 20.81 | 96 | LM | 15 | SSF | 11 | ■ |
| Ecuador | 20.30 | 97 | UM | 27 | LCN | 13 | ■ |
| Egypt | 20.16 | 98 | LM | 16 | NAWA | 17 | ■ |
| Jamaica | 19.98 | 99 | UM | 28 | LCN | 14 | ■ |
| Ghana | 19.94 | 100 | LM | 17 | SSF | 12 | ■ |
| Namibia | 19.83 | 101 | UM | 29 | SSF | 13 | ■ |
| Bolivia, Plurinational St. | 18.83 | 102 | LM | 18 | LCN | 15 | ■ |
| Belarus | 18.79 | 103 | UM | 30 | EUR | 37 | ■ |
| Bosnia and Herzegovina | 18.70 | 104 | UM | 31 | EUR | 38 | ■ |
| Uganda | 18.65 | 105 | LI | 8 | SSF | 14 | ■ |
| Honduras | 18.56 | 106 | LM | 19 | LCN | 16 | ■ |
| Nigeria | 18.50 | 107 | LM | 20 | SSF | 15 | ■ |
| Pakistan | 17.75 | 108 | LM | 21 | CSA | 6 | ■ |
| Kyrgyzstan | 17.63 | 109 | LM | 22 | CSA | 7 | ■ |
| El Salvador | 17.19 | 110 | LM | 23 | LCN | 17 | ■ |
| Botswana | 16.99 | 111 | UM | 32 | SSF | 16 | ■ |
| Nepal | 16.94 | 112 | LI | 9 | CSA | 8 | ■ |
| Cameroon | 16.76 | 113 | LM | 24 | SSF | 17 | ■ |
| Rwanda | 16.53 | 114 | LI | 10 | SSF | 18 | ■ |
| Albania | 16.24 | 115 | UM | 33 | EUR | 39 | ■ |
| Algeria | 16.13 | 116 | UM | 34 | NAWA | 18 | ■ |
| Bangladesh | 15.71 | 117 | LM | 25 | CSA | 9 | ■ |
| Zambia | 15.58 | 118 | LM | 26 | SSF | 19 | ■ |
| Venezuela, Bolivarian Rep. | 14.12 | 119 | HI | 49 | LCN | 18 | ■ |
| Nicaragua | 13.35 | 120 | LM | 27 | LCN | 19 | ■ |
| Benin | 13.33 | 121 | LI | 11 | SSF | 20 | ■ |
| Bhutan | 12.30 | 122 | LM | 28 | CSA | 10 | ■ |
| Burundi | 11.82 | 123 | LI | 12 | SSF | 21 | ■ |
| Guinea | 11.30 | 124 | LI | 13 | SSF | 22 | ■ |
| Niger | 10.80 | 125 | LI | 14 | SSF | 23 | ■ |
| Togo | 9.73 | 126 | LI | 15 | SSF | 24 | ■ |
| Burkina Faso | 9.31 | 127 | LI | 16 | SSF | 25 | ■ |
| Yemen | 7.43 | 128 | LM | 29 | NAWA | 19 | ■ |

Note: World Bank Income Group Classification (July 2015): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia, East Asia, and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

APPENDIX 3

CONSENT FORMS

Appendix 3a: General information sheet**Ph.D. Research Study Information Sheet*****University of Malta*****Title of study: University-based Research Management in European Small Island States – the case of Malta, Iceland and Cyprus****Researcher: Mr Christian Bonnici**

B.Com.(Melit.), B.Accountancy(Hons.)(Melit.), MIA, CPA
Deputy Director - Externally Funded Projects

Project Support Office - University of Malta
Regional Business Centre, Achille Ferris Street
Msida MSD 1751, Malta

Skype: cbon029

E-mail: christian.bonnici@um.edu.mt

Web: <http://www.um.edu.mt>

Invitation

You are hereby kindly being invited to participate in this research on behalf of the University of Iceland (UoI). Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read this information sheet carefully and feel free to contact me if you would like more information or if there is anything that you would like to clarify. Please also feel free to discuss this with other members of UoI if you deem appropriate.

Permission to conduct this research has been obtained from the University of Malta Research Ethics Committee (UREC) (<http://www.um.edu.mt/urec>)

Your participation in the study

You are kindly being invited to participate in this study in view of your involvement in the Research Management process at the UoI.

Your participation in this study is voluntary and your consent is being sought through a separate Informed Consent Form for your consideration. I shall bring a copy of the Consent Form with me at the interview for your signature.

Besides your kind-self, other persons involved in the Research Management process at the UoI shall also be interviewed as part of this study.

Information on the Study

Research has increasingly become a key driver for economic growth, competitiveness and prosperity in today's economies. Knowledge-based societies depend on their ability to acquire, absorb and produce new knowledge, contributing to a continuous learning process for further innovation. Universities have a crucial role to play in this process, particularly in small island states, in view of certain inherent limitations pertaining to their size. The purpose of this study is to explore the Research Management strategies that are being adopted by national, publicly-funded universities in European small island states, namely Iceland, Cyprus and Malta.

The purpose of our interview is to discuss:

- (1) the structures, processes and set-ups adopted by the UoI in managing its research activities;
- (2) the challenges faced by the UoI in managing the research activities; and
- (3) the strategies that the UoI has in place to address these challenges.

The Research Strategy

In this qualitative study, data shall be collected primarily through semi-structured, on-to-one interviews and document analysis.

A case study strategy of inquiry shall be adopted with the intention to deliver a comparative analysis between the three national publicly-funded universities in Iceland, Cyprus and Malta

Duration of the study

The research visit will be held at the UoI from Monday 12th October 2015 to Friday 16th October 2015. Each one-to-one interview is expected to span approximately one hour. Audio recordings of each interview are being requested (with informed consent) in order to maximise on time management during the interviews and minimise on the inconvenience to the interviewee.

The Researcher

The research shall be carried out by myself, as a Ph.D. student at the University of Malta (UoM). I am also Deputy Director on externally funded projects at the University of Malta, responsible for a team of research managers and administrators that handles most of the daily managerial and administrative aspects of externally funded research projects awarded to the UoM.

Contact details have been provided at the beginning of this information sheet. Do not hesitate to contact me should you require any clarification.

Confidentiality

Confidentiality shall be respected in all cases throughout and after the conclusion of the study:

- data extracted from the research for use in reports or published findings will not, under any circumstances, contain names or identifying characteristics without your signed consent;
- no information that could lead to the identification of any other individual will be disclosed in any reports on the project, or to any other party, unless consent is provided from each respective individual;
- data from the research will be kept in secure storage and accessible only to the researcher; and
- under the Data Protection Act, you may at any time ask for access to the information you provide and you may also request the destruction of that information if you wish.

Appendix 3b: Informed consent form**Informed Consent Form***University of Malta*

Title of study: **University-based Research Management in European Small Island States – the case of Malta, Iceland and Cyprus**

Researcher: Mr Christian Bonnici

B.Com.(Melit.), B.Accountancy(Hons.)(Melit.), MIA, CPA
Deputy Director - Externally Funded Projects

Project Support Office - University of Malta
Regional Business Centre, Achille Ferris Street
Msida MSD 1751, Malta
Skype: cbon029
E-mail: christian.bonnici@um.edu.mt
Web: <http://www.um.edu.mt>

Note: This consent form will remain with the Researcher's records of the research study

I understand I have been invited to take part in the research project specified above. I have had the project explained to me, and I have read the Information sheet, which I may keep for my records.

| I understand that: | YES | NO |
|--|--------------------------|--------------------------|
| - I will be asked to be interviewed by the researcher | <input type="checkbox"/> | <input type="checkbox"/> |
| - unless I otherwise inform the researcher before the interview I agree to allow the interview to be audio-recorded | <input type="checkbox"/> | <input type="checkbox"/> |
| - I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way | <input type="checkbox"/> | <input type="checkbox"/> |
| - I understand that any data that the researcher extracts from the interview / observation for use in reports or published findings will not, under any circumstances, contain names | <input type="checkbox"/> | <input type="checkbox"/> |

| | | |
|---|--------------------------|--------------------------|
| or identifying characteristics without my signed consent below | | |
| - I understand that, should I specifically request, I will be given a transcript of data concerning me, for my approval before it is included in the write up of the research. | <input type="checkbox"/> | <input type="checkbox"/> |
| - I understand that no information I have provided that could lead to the identification of any other individual will be disclosed in any reports on the project, or to any other party | <input type="checkbox"/> | <input type="checkbox"/> |
| - I understand that data from the interview / audio recording will be kept in secure storage and accessible only to the researcher | <input type="checkbox"/> | <input type="checkbox"/> |
| - I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish | <input type="checkbox"/> | <input type="checkbox"/> |
| - I agree that there is no objection to the researcher making use of my official designation in his research | <input type="checkbox"/> | <input type="checkbox"/> |
| - I agree to take part in the above study | <input type="checkbox"/> | <input type="checkbox"/> |

Participant's name:

Signature: _____ **Date:** _____

Researcher's name: Mr. Christian Bonnici

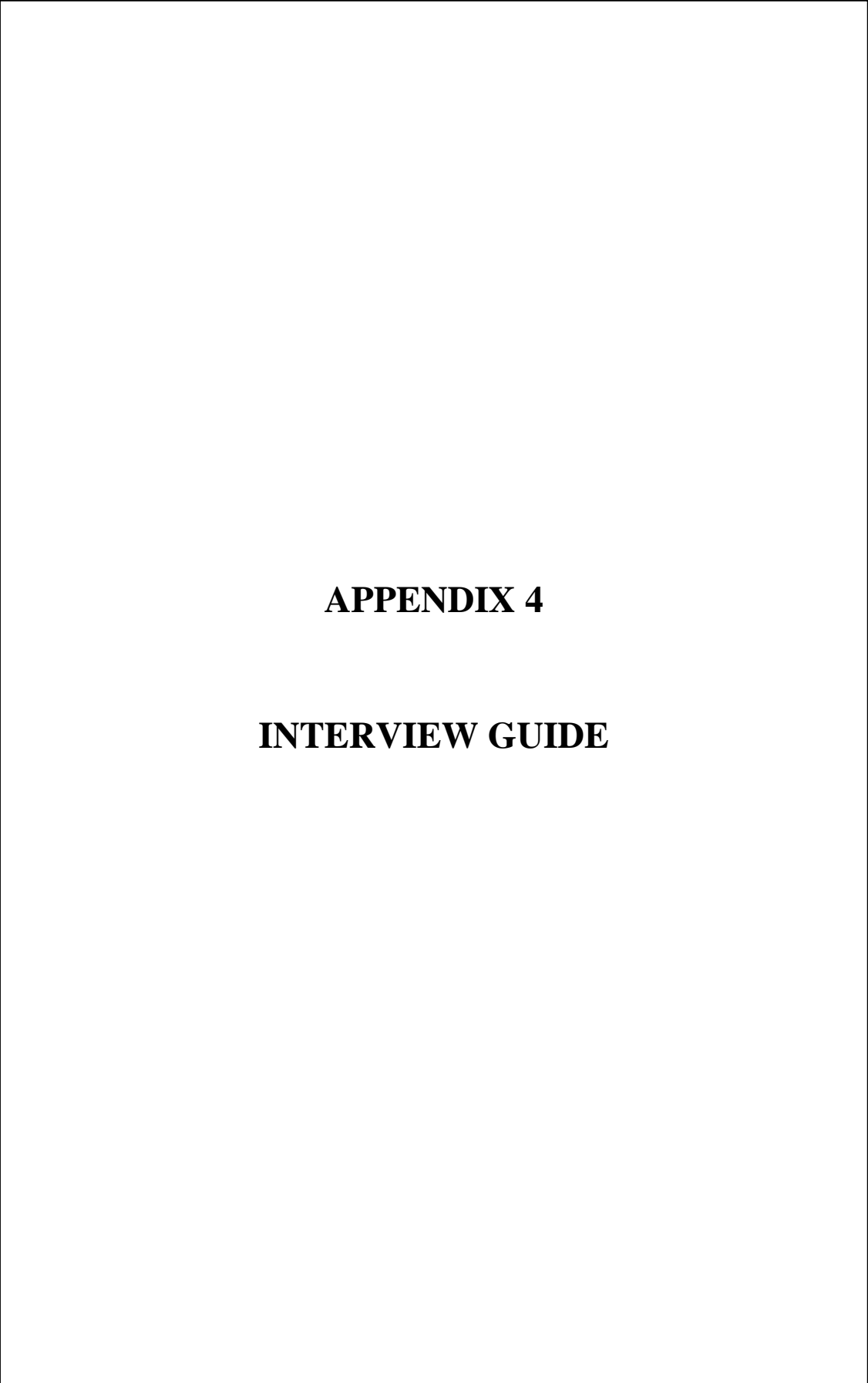
Signature: _____ **Date:** _____

Supervisor's name: Dr. Vince Cassar

Signature: _____ **Date:** _____

Co-Supervisor's name: Prof. Christopher Bezzina

Signature: _____ **Date:** _____



APPENDIX 4

INTERVIEW GUIDE

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 | |
|---|----|----------------|------------------------------------|--|--|--|-------|-------|---------------|----------------------------|--|
| <p>Primary What are the factors that shape research management in national, publicly funded universities in European small island states?</p> <p>Sub How is the research management function organised in national publicly funded universities in European small island states?</p> <p>Sub What are the key challenges faced by these universities in managing their research?</p> <p>Sub How are the research management challenges strategically managed within the selected universities?</p> | | | | | | | | | | | |
| | A | I | 1 | general introductory understanding the RM function and the RMA individual challenges faced in RM institutional challenges faced in RM Managing Strategically small states challenges and impact on RM general concluding | How long have you been at the university | key persons: K1 rector K2 pro-rector K3 top RMA | | | RMA1 RMA 2 | more senior less senior | |
| | A | I | 2 | questions about the interviewee | What is your role? And for how many years have you occupied such role? | | | | | | |
| | A | I | 3 | questions about the interviewee | Your academic background? What are the circumstances that induced you to take this position? | | | | | | |
| | B | RQ1 | 1 | conceptualisation of RM Profession, the RMA and the RM function | Could you tell me more about what you UNDERSTAND BY RESEARCH MANAGEMENT Do you consider Research Management as a PROFESSION in its own right? | | | | | | |
| | B | RQ1 | 1 | conceptualisation of RM Profession, the RMA and the RM function | <<< <probe for personal PERCEPTIONS, IDEAS, distinction between different ASPECTS of the Profession: STAGES vs PROCESSES; SETTING; TERMINOLOGY; interaction with OTHER SETTINGS> <explore AWARENESS OF THE PROFESSION; sense of BELONGING; personal MEMBERSHIP> <after listening to what the respondent has to say about his view of RM, explain and engage in a discussion about the possible distinction between DIRECT and INDIRECT roles and that this study concerns the INSTITUTIONAL management and administration of the research process (in its entirety) and not the TECHNICAL management of the research project/activity> <<< | | | | | | |

| Order Class | RQ | Order sequence | Question /Probe/integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|--|--|---|-----------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|
| B | RQ1 | 2 | <p>conceptualisation of RM Profession, the RMA and the RM function; set-up, activities, stages, processes, tasks</p> <p><input type="checkbox"/> Q</p> | <p>conceptualisation of RM Profession, the RMA and the RM function; set-up, activities, stages, processes, tasks</p> <p><input type="checkbox"/> the RM function; set-up, activities, stages, processes, tasks</p> | <p>Do you consider that this university has A SEPARATE RESEARCH MANAGEMENT FUNCTION to support and incentivise r research undertaken by its academics/researchers?</p> <p>If YES: - for how long has the RESEARCH MANAGEMENT FUNCTION EXISTED? - what were the main MILESTONES until it reached the current structure and service? - What are the FUTURE prospects? - How do you describe your EXPERIENCE of the Research Management function and of its developments so far? - can you explain how the university supports the research (if any)?</p> <p><input type="checkbox"/> Y1</p> <p>FOR RMA2 ASK ONLY THE FOLLOWING: Do you consider the Profession to be FORMALLY RECOGNISED at the university? WHO in your opinion may be considered an RMA? Who is INVOLVED in Research Management? Do you consider YOURSELF as an RMA?</p> <p><<<</p> | <input type="checkbox"/> Y1 | <input type="checkbox"/> Y2 | <input type="checkbox"/> Y3 | <input type="checkbox"/> Y | <input type="checkbox"/> Y |
| B | RQ1 | 2 | <p>conceptualisation of RM Profession, the RMA and the RM function; set-up, activities, stages, processes, tasks</p> <p><input type="checkbox"/> P</p> | <p>conceptualisation of RM Profession, the RMA and the RM function; set-up, activities, stages, processes, tasks</p> | <p><enquire about the RATIONALE for providing this SERVICE and whether emphasis is more on the management for research (PASSIVE) vs management of research (ACTIVE); support by DOCUMENTATION, evaluation reports, strategies></p> <p><explain what it means by FORMALLY RECOGNISED (formal TITLES, formal PROCEDURES, specific CALLS for recruitment, clear LINES OF REPORTING; FORMAL MEETINGS); probe for university AFFILIATIONS; formal STRUCTURE; awareness to THIRD SPACE concept; ORIGINS and ACADEMIC BACKGROUNDS of RMAs; enquire about LEADING ROLES and how individuals INFLUENCE EACH OTHER, whether there are FORMAL AND INFORMAL ways of interacting - what comes out of an informal relationship may be as significant as what comes out of a formal relationship></p> <p><probe for DIRECT and INDIRECT roles; consideration for other roles such as rector; pro-rector who are neither direct nor indirect but influence Research Management; overall set up of the Research Management function></p> <p><<<</p> | <input type="checkbox"/> Y1 | <input type="checkbox"/> Y2 | <input type="checkbox"/> Y3 | <input type="checkbox"/> Y | <input type="checkbox"/> Y |

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|--|--|---------|---------|-------|-------|-------|
| B | RQ1 | 3 | Q | roles and skills of RMA | <p>What in your opinion are the QUALIFICATIONS, ABILITIES AND SKILLS that the RMA has to master in his/her job?</p> <p>How can these skills be OBTAINED/LEARNED?</p> <p><<<</p> <p><probe for PROFESSIONAL QUALIFICATIONS in Research Management, TRAINING provided to RMAs; academic/ managerial/ administrative/ professional/ interpersonal SKILLS required></p> <p><<<</p> | Y1 | Y2 | Y3 | Y | Y |
| B | RQ1 | 3 | P | roles and skills of RMA | <p><probe for PROFESSIONAL QUALIFICATIONS in Research Management, TRAINING provided to RMAs; academic/ managerial/ administrative/ professional/ interpersonal SKILLS required></p> <p><<<</p> | | | | | |
| B | RQ1 | 4 | Q | roles and skills of RMA | <p>Can you describe the PRINCIPAL TASKS that you undertake as RMA at the university? Describe a TYPICAL DAY of an RMA at work</p> <p><<<</p> <p><explore more whether the tasks are ADMINISTRATIVE, MANAGERIAL or BOTH></p> | (blank) | (blank) | Y3 | Y | Y |
| B | RQ1 | 4 | P | roles and skills of RMA | <p><Probe for RELATIONSHIPS (with academics/other RMA's /departments); COMMUNICATION CHANNELS; COMPLIANCE requirements; PAPERWORK></p> <p><<<</p> | (blank) | (blank) | Y3 | Y | Y |
| B | RQ1 | 5 | Q | set-up; activities; stages; processes; tasks | <p>A research project may have various STAGES: (1) pre-award - from conception of the idea to proposal writing and submission, proposal evaluation, proposal acceptance to grant negotiation, grant award; (2) post-award - from project acceptance, project implementation, progress reporting, milestone achievement, project closure, post closure and audits (3) strategy, engagement with society and others.</p> <p>Does this or a similar distinction exist at this university? At what LEVELS are you involved in the running of the project or the preparation of a proposal? In what ROLE?</p> <p><<<</p> | (blank) | (blank) | Y3 | Y | Y |

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|---|--|----------|----------|-------|----------|----------|
| B | RQ1 | 5 | ⊖P | set-up; activities; stages; processes; tasks | <p><explain the DIFFERENCE and ascertain whether the same distinction or any other distinction exists></p> <p><probe about the individual's involvement; any decision-making and on the way the two functions are set up and handled - centralised / decentralised></p> <p><<<</p> | ⊖(blank) | ⊖(blank) | ⊖Y3 | ⊖Y | ⊖Y |
| B | RQ1 | ⊖6 | ⊖Q | set-up, activities, stages, processes, tasks; strategic dimension | <p>How is the Research Management function ORGANISED (OPERATIONALLY and PHYSICALLY)?</p> <p>Does a HIERARCHY exist within the RM function? Can you DESCRIBE it briefly? Where do YOU fit in?</p> <p>Do you consider that this set up is the MOST ADEQUATE for this university? Would you change anything? If yes why? If no, can you give examples of where this set-up proved superior to others?</p> <p><<<</p> | ⊖(blank) | ⊖Y2 | ⊖Y3 | ⊖(blank) | ⊖(blank) |
| B | RQ1 | 6 | ⊖P | set-up, activities, stages, processes, tasks; strategic dimension | <p><OPERATIONALLY- CENTRALISED/DECENTRALISED; refer to the models purported in literature (PORTFOLIO APPROACH; MEDIATOR/FACILITATOR; ONE-STOP-SHOP; DIRECTION PROVIDER) and assess whether any of them or others apply</p> <p>PHYSICALLY- a COMMON ROOM facility at the RMO; the way offices are STRUCTURED foster communication and informal; SUPERIORS' APPROACHABILITY, PHYSICAL LOCATION of the office, ONE-TO-ONE MEETINGS></p> <p><enquire about applicability to a SMALL ISLAND STATE UNIVERSITY, specific circumstances in which the approach proved ADVANTAGEOUS or DISADVANTAGEOUS; whether there is anything to do to CHANGE the course of action or whether the university management is tied with UNCONTROLLABLE FACTORS></p> <p><<<</p> | ⊖(blank) | ⊖Y2 | ⊖Y3 | ⊖(blank) | ⊖(blank) |

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|--|---|---------|---------|-------|-------|-------|
| C | RQ2 | 1 | Q | perceptions, principles and themes; challenges of RM | <p>Do you consider this job to be SELF-FULFILLING and one that gives you SATISFACTION? what are the elements that give you this satisfaction?</p> <p>What are the DIFFICULTIES/CHALLENGES you encounter?</p> <p>What are the elements/aspects, within and outside your control that you would CHANGE FROM YOUR CURRENT JOB?</p> <p><<<</p> <p><step by step WALK THROUGH the processes and what are the most challenging aspects; probe for possible MULTI-TASKING; challenges in RELATIONSHIPS; meeting DEADLINES; sense of BELONGING/IDENTIFICATION of the ACADEMIC with a proposal/money; ATTITUDE TOWARDS UNIVERSITY, the way ACADEMICS/RESEARCHERS look at this role; STRESS associated with this job and what contributes to it - refer to the STRESSORS identified by katsapis (2012) - role OVERLOAD, role AMBIGUITY, role INSUFFICIENCY, role BOUNDARY, RESPONSIBILITY; REWARDS of this job, CAREER PROGRESSION; probe for FREQUENCY of these CHALLENGES></p> <p>Probe about the AWARENESS OF THE SUPERIORS about your job satisfaction or otherwise. Link to the question on OVERCOMING/ADDRESSING the CHALLENGES to explore how the INSTITUTION is helping or otherwise in OVERCOMING any difficulties ></p> <p><<<</p> | (blank) | (blank) | (Y3) | (Y) | (Y) |
| C | RQ2 | 1 | P | perceptions, principles and themes; challenges of RM | <p>What type of TRAINING/ACADEMIC PREPARATION have you been / are you being provided with by the university to carry out this job? Does the organisation have INTERNAL RESOURCES, expertise and abilities to provide training on Research Management?</p> <p><<<</p> <p><explore how RMAs get their PREPARATION FOR THE JOB and for the CONTINUOUS DEVELOPMENT (with top RMA probe about what he/she thinks about giving training to his/her staff, academic qualifications and cv requirements)></p> <p><<<</p> | (blank) | (blank) | (Y3) | (Y) | (Y) |
| C | RQ2 | 2 | Q | roles and skills of RMA; entry to Profession | <p>What type of TRAINING/ACADEMIC PREPARATION have you been / are you being provided with by the university to carry out this job? Does the organisation have INTERNAL RESOURCES, expertise and abilities to provide training on Research Management?</p> <p><<<</p> <p><explore how RMAs get their PREPARATION FOR THE JOB and for the CONTINUOUS DEVELOPMENT (with top RMA probe about what he/she thinks about giving training to his/her staff, academic qualifications and cv requirements)></p> <p><<<</p> | (blank) | (blank) | (Y3) | (Y) | (Y) |
| C | RQ2 | 2 | P | roles and skills of RMA; entry to Profession | <p>What type of TRAINING/ACADEMIC PREPARATION have you been / are you being provided with by the university to carry out this job? Does the organisation have INTERNAL RESOURCES, expertise and abilities to provide training on Research Management?</p> <p><<<</p> <p><explore how RMAs get their PREPARATION FOR THE JOB and for the CONTINUOUS DEVELOPMENT (with top RMA probe about what he/she thinks about giving training to his/her staff, academic qualifications and cv requirements)></p> <p><<<</p> | (blank) | (blank) | (Y3) | (Y) | (Y) |

| Order Class | RQ | Order sequence | Question /Probe/integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|---|---|---|---|------------------------------------|---|---|---|
| C | RQ2 | 3 | <p>roles and skills of RMA; <input type="checkbox"/> direct and indirect; challenges of RM</p> | <p>How do you describe your EXPERIENCES at the university in working with: - ACADEMICS - Other DEPARTMENTS/UNITS within the university - ENTITIES outside the university? <input type="checkbox"/> What about relationships with OTHER RMAs? Support your experiences with PRACTICAL EXAMPLES please <<<</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> Y3</p> | <p><input type="checkbox"/> Y</p> | <p><input type="checkbox"/> Y</p> | <p><input type="checkbox"/> Y</p> |
| C | RQ2 | 3 | <p>roles and skills of RMA; <input type="checkbox"/> direct and indirect; challenges of RM</p> | <p><Probe for awareness to the SERVANT-LEADERSHIP role and DIFFICULTIES encountered; probe for DISCREPANCIES/CONGRUENCES between what academics expect from RMA's and what RMA's actually do; whether RESEARCHERS' NEEDS are identified and how; probe for any difficulties in OBTAINING INFORMATION/SERVICE from other departments (Finance/HR) or when elements of RM cannot be handled directly by the RMA because of the SPECIALISED SKILLS required; probe for CLOSE LINKS with regulators and auditors because of a small state> <input type="checkbox"/> Probe for INFORMAL INTERACTION between RMAs; means of SHARING their feelings, successes, frustrations - is it through FORMAL MEETINGS or through INFORMAL SET UPS - does the set up facilitate informal, deep interactions?> <<<</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> Y3</p> | <p><input type="checkbox"/> Y</p> | <p><input type="checkbox"/> Y</p> | <p><input type="checkbox"/> Y</p> |
| D | RQ2 | 1 | <p>what is being managed: research; demarcation between teaching and research; balance between missions; challenges to carry out research; limiting factors</p> | <p>RM depends on an underlying element: RESEARCH. What type of research is undertaken at the university? <input type="checkbox"/> What in your opinion are the biggest challenges to CARRY OUT RESEARCH in this university? **^*** <<<</p> | <p><input type="checkbox"/> Y1</p> | <p><input type="checkbox"/> Y2</p> | <p><input type="checkbox"/> Y3</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> (blank)</p> |
| D | RQ2 | 1 | <p>what is being managed: research; demarcation between teaching and research; balance between missions; challenges to carry out research; limiting factors</p> | <p><probe for ACADEMIC TIME DIVISION; personal/collaborative/contracted research, see what RESEARCH IS ALL ABOUT to the interviewee> <input type="checkbox"/> <probe for PERSONAL MOTIVATIONS; MARKET FOR RESEARCH and research results; HUMAN RESOURCES and BRAIN DRAIN; other LIMITING FACTORS such as PHYSICAL SPACE and MONEY> <<<</p> | <p><input type="checkbox"/> Y1</p> | <p><input type="checkbox"/> Y2</p> | <p><input type="checkbox"/> Y3</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> (blank)</p> | <p><input type="checkbox"/> (blank)</p> |

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|---|--|-------|-------|-------|---------|---------|
| D | RQ2 | 2 | Q | institutional challenges | <p>What in your opinion are the biggest challenges to MANAGE UNIVERSITY RESEARCH?</p> <p>How is research MEASURED AND EVALUATED at the university?</p> <p><<<</p> <p><focus here is not on conducting research but on MANAGING it from an INSTITUTIONAL PERSPECTIVE. Probe for choosing between GOOD/BAD PROJECTS; STRATEGIC AND NON-STRATEGIC projects; probe for issues of ACADEMIC FREEDOM; possible POLITICS involved; FACULTY GOVERNANCE ISSUES; being a STATE university></p> | Y1 | Y2 | Y3 | (blank) | (blank) |
| D | RQ2 | 2 | P | institutional challenges | <p><probe for any STANDARD EVALUATION SYSTEM, whether METRICS-BASED or PEER-REVIEW; the impact that this system has on research and research management></p> <p><<<</p> | Y1 | Y2 | Y3 | (blank) | (blank) |
| D | RQ2 | 3 | Q | strategic dimension; Sharrock; institutional challenges | <p>One model of universities management emphasises the need that universities have to be COLLEGIAL (professional community), be ENGAGED (creative engagement with society), be SYSTEMATIC (system integrity) and be STRATEGIC (sustainable enterprise) (Sharrock, 2012). <explain each of them> This seems to imply that an RMA needs to be many things at different points in time. What are your views on this statement?</p> <p>Is a BALANCE possible? required?</p> <p><<<</p> | Y1 | Y2 | Y3 | (blank) | (blank) |
| D | RQ2 | 3 | P | strategic dimension; Sharrock; institutional challenges | <p><probe for CHALLENGES in achieving a BALANCE; give some EXAMPLES of where this balance was achieved or where it was/could not be achieved and how the RMA can contribute; specific challenges to this university, being a SMALL STATE UNIVERSITY; discuss ENGAGEMENT WITH SOCIETY and addressing the needs of various STAKEHOLDERS></p> <p><enquire about different PERSPECTIVES (collegialism, bureaucracy, political perspectives); forms of UNIVERSITY GOVERNANCE (academic, business, corporate), their interaction and the challenge for RMAs to reach HARMONISATION between the three elements in a university></p> <p><<<</p> | Y1 | Y2 | Y3 | (blank) | (blank) |

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|--|---|---------|-------|-------|---------|---------|
| D | RQ2 | 4 | Q | set-up, activities, stages, processes, tasks; challenges of RM | How is DECISION-MAKING undertaken in Research within the university? - emphasis on Research. What in your opinion are the CHALLENGES of each and what are the factors that you consider instrumental for the university to decide on the approach to adopt? <<< <explore TOP-DOWN; BOTTOM-UP; COMBINATION> <explore the applicability and the relationship of the approach to the SMALL ISLAND STATE UNIVERSITY; what determines the APPROACH to adopt; how is the approach OPERATIONALISED in practice> <<< | Y1 | Y2 | Y3 | (blank) | (blank) |
| D | RQ2 | 4 | P | set-up, activities, stages, processes, tasks; challenges of RM | <explore the applicability and the relationship of the approach to the SMALL ISLAND STATE UNIVERSITY; what determines the APPROACH to adopt; how is the approach OPERATIONALISED in practice> <<< | Y1 | Y2 | Y3 | (blank) | (blank) |
| D | RQ2 | 5 | Q | institutional challenges; set-up, activities; stages; processes; tasks | What are your views about the RESEARCH MANAGEMENT STRUCTURES at the University? <<< | (blank) | Y2 | Y3 | Y | Y |
| D | RQ2 | 5 | P | institutional challenges; set-up, activities; stages; processes; tasks | <probe for EFFECTIVENESS of the structure; STAFFING REQUIREMENTS; INTERNAL and EXTERNAL DEMANDS; and the CONGRUENCE or otherwise between what the academics/researchers expect and the service that is actually provided; what is being done to BRING DIFFERENT PARTIES CLOSER to each other?> <<< | (blank) | Y2 | Y3 | Y | Y |
| E | RQ3 | 1 | Q | strategic dimension | Do you consider the research to be managed from a strategic (PROACTIVE) dimension or is it based on a REACTIONARY approach? <<< | Y1 | Y2 | Y3 | (blank) | (blank) |
| E | RQ3 | 1 | P | strategic dimension | If STRATEGIC, probe for the existence of a university LONG TERM (research) strategy; PERSONAL VIEWS about the objectives of having a (research) strategy; probe WHO IS RESPONSIBLE for the strategy and the academic backgrounds; refer to mission and vision If NOT STRATEGIC, probe about the PERSONAL VIEWS about adopting a REACTIONARY APPROACH, the pros and cons; the EFFECTS and what is the WAY FORWARD within the university <<< | Y1 | Y2 | Y3 | (blank) | (blank) |

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|------------------------------------|--|---------|-------|-------|-------|---------|
| E | RQ3 | 2 | Q | strategic dimension | What is the rationale for SELECTING RESEARCH PROJECTS in which the university gets engaged? <<< | Y1 | Y2 | Y3 | Y | (blank) |
| E | RQ3 | 2 | P | strategic dimension | <enquire what happens when some research projects may be MORE STRATEGIC THAN OTHERS; probe about the STEPS that are taken when a NEW RESEARCH PROJECT IS AWARDED in order to ensure adequate management; probe about PRFS and their applicability to the university> <<< | Y1 | Y2 | Y3 | Y | (blank) |
| E | RQ3 | 3 | Q | strategic dimension | Can you identify any PRACTICAL RESEARCH MANAGEMENT STRATEGIES that are adopted by this university to encourage research and provide adequate management and support (if any)? <<< | Y1 | Y2 | Y3 | Y | (blank) |
| E | RQ3 | 3 | P | strategic dimension | <probe for MACRO LEVEL STRATEGIES (university-wide, in terms of policies, strategies, organisational structure and incentives; docs and post-docs) and MICRO LEVEL STRATEGIES (at the level of RMAs, in terms of quality of RMAs, skills and qualifications) > <<< | Y1 | Y2 | Y3 | Y | (blank) |
| E | RQ3 | 4 | Q | challenges of RM | With reference to the CHALLENGES identified earlier regarding the ROLE OF AN RMA, how are these challenges usually managed within the university? <<< | (blank) | Y2 | Y3 | Y | Y |
| E | RQ3 | 4 | P | challenges of RM | <take note of the CHALLENGES IDENTIFIED, in this interview and in others and probe about the ways that the university ADDRESSES THEM, directly or indirectly - focus on PRACTICES; >probe about how as the INSTITUTION helped to OVERCOME the challenges; the role of the SUPERIOR (Leader member exchange theory); the importance given to the PROFESSIONAL DEVELOPMENT OF THE STAFF; what LINKS the members together; FORMAL TRAINING but also MORAL SUPPORT and the development of SOFTER SKILLS through INFORMAL INTERACTIONS> <<< | (blank) | Y2 | Y3 | Y | Y |

| Order Class | RQ | Order sequence | Question /Probe/Integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|---|---|---------|-------|---------|---------|---------|
| E | RQ3 | 5 | Q | perceptions, principles and themes; challenges of RM; conflict management | With reference to any differences between what academics expect and the service that RMA's actually provide, how are these 'CONFLICTING SITUATIONS' managed? <<< | (blank) | Y2 | Y3 | Y | Y |
| E | RQ3 | 5 | P | perceptions, principles and themes; challenges of RM; conflict | <probe for INSTITUTIONAL INTERVENTION more than personal management of conflicts> <<< | (blank) | Y2 | Y3 | Y | Y |
| F | RQ2 | 1 | Q | small states challenges and impact on RM | What are your views on the following statements? How do you think that each of the following characteristic of a small state impacts the role of the RMA at the university? <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 1 | Q | small states challenges and impact on RM | (1) Small communities are CLOSELY-KNIT societies and are characterised by strong social cohesion, such that once social unity is distorted it may take many years to be rectified (Farrugia, 2007) <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 1 | P | small states challenges and impact on RM | <probe about the IMPACT OF CLOSE TIES on the relationship between RMA and researcher; researcher and university authorities; CONFLICT MANAGEMENT; addressing the NEEDS of researchers> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 2 | Q | small states challenges and impact on RM | (2) in spite of having a strong cultural and national identity, small states may see themselves as MINIATURE MODELS OF LARGER STATES and may remain intellectually dependent on larger states (Farrugia, 2002) <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 2 | P | small states challenges and impact on RM | <probe about RELIANCE/RELATIONSHIP with larger, closer countries; the possibility that research groups in small states or universities may not take the LEAD; the extent to which university Research Management in small island states is influenced or otherwise by the PRACTICES ADOPTED BY METROPOLITAN COUNTRIES> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |

| Order Class | RQ | Order sequence | Question /Probe/integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|-----|----------------|------------------------------------|--|--|-------|-------|---------|---------|---------|
| F | RQ2 | 3 | Q | small states challenges and impact on RM | (3) small states are very often TAKERS RATHER THAN MAKERS of the world policies (Crossley et al., 2009). They tend to join international organisations to relieve the pressures that the international community puts on them. This alliance may put small states at the mercy of policies that are set by larger countries and which may be impossible for small states to implement due to their characteristics, challenges and political legacies (Darmanin, 2009) <<< <enquire whether the interviewee AGREES with these statements; probe about factors that characterise the FORMULATION AND IMPLEMENTATION OF AUTONOMOUS POLICIES; IMPORTING structures and systems from other countries> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 3 | P | small states challenges and impact on RM | <enquire whether the interviewee AGREES with these statements; probe about factors that characterise the FORMULATION AND IMPLEMENTATION OF AUTONOMOUS POLICIES; IMPORTING structures and systems from other countries> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 4 | Q | small states challenges and impact on RM | (4) The high demand for HUMAN CAPITAL coupled with the scarcity of resources in small states, particularly island states, put constant pressure on them to be selective among their LIMITED RESOURCES and are expected to identify niche areas of SPECIALISATION in which they have a good potential to compete on the international market (Brandt, 2004) <<< <probe about dealing with LIMITED RESOURCES, BRAIN DRAIN, difficulties to achieve CRITICAL MASS and SPECIALISATION> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 4 | P | small states challenges and impact on RM | <probe about dealing with LIMITED RESOURCES, BRAIN DRAIN, difficulties to achieve CRITICAL MASS and SPECIALISATION> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 5 | Q | small states challenges and impact on RM | (5) small states are often characterised by the existence of a PRINCIPAL, PUBLICLY-FUNDED UNIVERSITY which strives to attain a degree of autonomy from significant political influence (Nkrumah-Young et al., 2008). Universities in small states are capable of responding with greater flexibility and appropriateness to national development needs, by providing more culturally sensitive and relevant higher education than is available in larger countries (Teasdale, 1989) <<< < probe about the effects of the existence of COMPETING HEIs; impact on RESEARCH; managing the LIMITING FACTORS; university's RESPONSE to changes and market demands> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |
| F | RQ2 | 5 | P | small states challenges and impact on RM | < probe about the effects of the existence of COMPETING HEIs; impact on RESEARCH; managing the LIMITING FACTORS; university's RESPONSE to changes and market demands> <<< | Y1 | Y2 | (blank) | (blank) | (blank) |

| Order Class | RQ | Order sequence | Question /Probe/integrated (Q/P/I) | Classification - Literature review | Field Question | Key 1 | Key 2 | Key 3 | RMA 1 | RMA 2 |
|-------------|----|----------------|------------------------------------|------------------------------------|---|---------|---------|-------|-------|---------|
| Z | Z | 1 | Q | Conclusion | Following this discussion, are there other persons working at the university which you suggest that I should contact in order to enhance my knowledge of RM within the University; <<< | Y1 | Y2 | Y3 | Y | (blank) |
| Z | Z | 2 | Q | Conclusion | Thank you for all that valuable information, is there anything else you'd like to add before we end? Any documents you can refer me to so I can carry out a content analysis e.g. Research Strategy; Council/Senate/Research Committee Minutes; other minutes; recent calls for applications; template contract of employment of staff <<< | Y1 | Y2 | Y3 | Y | (blank) |
| Z | Z | 3 | Q | questions about the interviewee | Age? Sex? | (blank) | (blank) | Y3 | Y | Y |
| Z | Z | 4 | Q | questions about the interviewee | Nationality and residence? | (blank) | (blank) | Y3 | Y | Y |

APPENDIX 5

TEMPLATE – THEMATIC MAP

| Parent Node Name | Node | Sub Node 1 | Sub Node 2 | University | Responsible | Doc Type | Doc Year, Month | Coded Text | Grade Level | Job Title | No of yrs at the university | No of yrs in the job | Qualification Level | Discipline or Background | Age Group | Gender | Country of Birth | | | |
|--|---|--|------------|------------|-------------|----------|-----------------|------------|-------------|-----------|-----------------------------|----------------------|---------------------|--------------------------|-----------|--------|------------------|--|--|--|
| RM STRUCTURES | Centralised vs Decentralised structures Development of university RM structures Job description of research managers Pre-Award vs Post Award RMO in conjunction with other offices Services offered by the RMO Size of the team Specific Guidelines and Collective Agreements for RIMAs Strategic side of Research Management Structures within the faculty The different bits and pieces The research committee Training for RIMAs | Decentralised offices with their own budgets | | | | | | | | | | | | | | | | | | |
| | | One-stop shop from a central perspective | | | | | | | | | | | | | | | | | | |
| | | Relationships and role segregation between the two levels | | | | | | | | | | | | | | | | | | |
| | | Relationships within the decentralised offices | | | | | | | | | | | | | | | | | | |
| | | Roles and tasks within the central office | | | | | | | | | | | | | | | | | | |
| | | Capacity Building in RM (incl KTO, Intellectual Property, Business Incubator, Seed Capital Fund) | | | | | | | | | | | | | | | | | | |
| | | Development and expansions of research centres including indirect roles | | | | | | | | | | | | | | | | | | |
| | | Origins and milestones of the RMO and the RM concept | | | | | | | | | | | | | | | | | | |
| | | Administrative Services | | | | | | | | | | | | | | | | | | |
| | | Organisational charts | | | | | | | | | | | | | | | | | | |
| RM CHALLENGES | INSTITUTION-ORIENTED | 1.A. Agenda Setting | | | | | | | | | | | | | | | | | | |
| | | Characteristics of small states | | | | | | | | | | | | | | | | | | |
| | | Government having objectives that are incongruent with those of the university (maybe coming from having one university) | | | | | | | | | | | | | | | | | | |
| | | Lack of or inability to implement certain policies | | | | | | | | | | | | | | | | | | |
| | | Politicians' perspectives | | | | | | | | | | | | | | | | | | |
| | | Smallness creates certain limitations in itself, though small state can fare well within certain political unions | | | | | | | | | | | | | | | | | | |
| | | To follow and address the agenda of funders | | | | | | | | | | | | | | | | | | |
| | | Trade union pressure | | | | | | | | | | | | | | | | | | |
| | | Wrong perceptions by outsiders (e.g. funders) lead to direction of funds away from a small country | | | | | | | | | | | | | | | | | | |
| | | Addressing the needs of the country while being autonomous, with limited resources | | | | | | | | | | | | | | | | | | |
| RM CHALLENGES | INSTITUTION-ORIENTED | 1.B. Being the main public (sole) university | | | | | | | | | | | | | | | | | | |
| | | Being (the main, sole), public and comprehensive university | | | | | | | | | | | | | | | | | | |
| | | Being publicly funded | | | | | | | | | | | | | | | | | | |
| | | Challenge for the main, public, comprehensive university to lead the others in the country | | | | | | | | | | | | | | | | | | |
| | | Challenges for the university to make itself visible | | | | | | | | | | | | | | | | | | |
| | | Characteristics of Small Island States, National Comprehensive University - leads the R&I landscape | | | | | | | | | | | | | | | | | | |
| | | Engagement with society | | | | | | | | | | | | | | | | | | |
| | | In being autonomous | | | | | | | | | | | | | | | | | | |
| | | In changing the way the university is financed | | | | | | | | | | | | | | | | | | |
| | | In having or introducing competition among universities in the country | | | | | | | | | | | | | | | | | | |
| In managing to attract large companies to work with you and cut favourable deals | | | | | | | | | | | | | | | | | | | | |
| In using the limited resources towards the university and not replicating efforts in other institutions (create diversification) | | | | | | | | | | | | | | | | | | | | |
| Need to cater for all demands, be comprehensive | | | | | | | | | | | | | | | | | | | | |
| Negative sentiment that ensues unfavourable decisions impact other colleagues, may be viewed as a risk to the career | | | | | | | | | | | | | | | | | | | | |
| One main public university or more | | | | | | | | | | | | | | | | | | | | |
| Pressure on the university because of its unique role | | | | | | | | | | | | | | | | | | | | |
| Pressure to do the research when you committed to a strong research agenda | | | | | | | | | | | | | | | | | | | | |
| Reaching a balance between the various university missions and objectives | | | | | | | | | | | | | | | | | | | | |
| Rivalry between faculties, departments and research groups | | | | | | | | | | | | | | | | | | | | |
| The need to nurture fields of scholarship and research which relate to the home country | | | | | | | | | | | | | | | | | | | | |
| The university needs to be the driver instead of the government like in larger countries | | | | | | | | | | | | | | | | | | | | |
| To change the manner in which universities, research are funded | | | | | | | | | | | | | | | | | | | | |
| To understand the academic side of a university and to make it and research relevant to the needs of society | | | | | | | | | | | | | | | | | | | | |
| Too many universities for a small country | | | | | | | | | | | | | | | | | | | | |
| Characteristics of SIS, Vulnerability and Resilience (incl ability to recover) of small island states | | | | | | | | | | | | | | | | | | | | |
| Economic crisis (national or international) that reduces motivation and limits all the progress in developing RM structures | | | | | | | | | | | | | | | | | | | | |
| Economic crisis that restricts significantly the funding for research, compromising it, unless..... | | | | | | | | | | | | | | | | | | | | |
| Macro (national) aspects impacting the micro (university) aspects | | | | | | | | | | | | | | | | | | | | |

| Parent Node Name | Node | Sub Node 1 | Sub Node 2 | Univer- sity | Resp- ondent | Doc Type | Doc Year; Month | Coded Text | Grade Level | Job Title | No of yrs at the univer- sity | No of yrs in (the job | Quali- fication Level | Discip- line or Back- ground | Age Group | Gender | Country of Birth |
|------------------|--------------|--|------------|--------------|--------------|----------|-----------------|------------|-------------|-----------|-------------------------------|-----------------------|-----------------------|------------------------------|-----------|--------|------------------|
| | | 1A. Highly skilled job | | | | | | | | | | | | | | | |
| | | 1B. Qualifications, training and continuous professional development | | | | | | | | | | | | | | | |
| | | 2. Multi-functionalism and RMA Specialisation | | | | | | | | | | | | | | | |
| RM CHALLENGES | RMA-ORIENTED | | | | | | | | | | | | | | | | |
| | | 3A. Stressful and demanding job | | | | | | | | | | | | | | | |
| | | 3B. Coaching Others | | | | | | | | | | | | | | | |
| | | 4. Role of the RMA | | | | | | | | | | | | | | | |
| | | 5. Compromise - Career | | | | | | | | | | | | | | | |

| Parent Node Name | Node | Sub Node 1 | Sub Node 2 | Univer- sity | Res- pondent | Doc Type | Doc Year/ Month | Coded Text | Grade Level | Job Title | No of yrs at the unive- rsity | No of yrs in the job | Quali- fication Level | Discip- line or Back- ground | Age Group | Gender | Country of Birth | | | |
|---|--|--|---|-----------------|-----------------|-------------|-----------------------|---------------|----------------|--------------|---|----------------------------|-----------------------------|---------------------------------------|--------------|--------|---------------------|--|--|--|
| RM STRATEGIES | INSTITUTION-ORIENTED | 3.B Dealing with an economic crisis | Addressing the economic crisis (setting up committees...) Transform the restrictions imposed by an economic crisis into opportunities Attracting and working with the best people | | | | | | | | | | | | | | | | | |
| | | 3.C Supporting the research environment, including policies, funding and attracting and working with the best people | Funding research Policies and approaches in favour of research Supporting the research environment Building infrastructures that will enable new research to flow including making long term proposals to give direction Creating and building science parks | | | | | | | | | | | | | | | | | |
| | | 3.D Investing in infrastructures | Investing in a good IT system that facilitates gathering, saving and sharing information, etc. Investment in funding opportunities software (for researchers and for RMAs) Use of external funds to invest in infrastructures | | | | | | | | | | | | | | | | | |
| | | 3.E Learning from and collaborating and joining forces | Working with the city hosting the university for future collaborations, investments in science and technology parks Keeping good relationships with other entities outside university Small island states joining forces (aim to lobby with funders together) With larger countries With larger universities, research centres in larger countries, including on a trans-national level | | | | | | | | | | | | | | | | | |
| | | 4.A Conflict Management | Benchmarking with larger, stronger (neighbouring or metropolitan) countries Bibliometrics | | | | | | | | | | | | | | | | | |
| | | 5.A Information gathering, performance evaluation, bibliometrics, benchmarking and rankings | Gather information and mapping what is going on Monitoring (measurement and evaluation) of research Moving up rankings Post evaluation of projects, results, allocation of funding, including discussion at Council level.... Research Agenda and evaluation of research Using role models, success stories within and build on them | | | | | | | | | | | | | | | | | |
| | | 5.B Quality Assurance | A quality Assurance Policy Academic tenure and promotion Creating a code of conduct for researchers Joining European-wide networks of excellence that give a 'certificate' of quality to the outside world Managing enhancement – the University evidence base (this is relevant in evidence based management EBM) Regular evaluations of the university systems to ensure quality | | | | | | | | | | | | | | | | | |
| | | 5.C University Leadership | Leadership in favour of research | | | | | | | | | | | | | | | | | |
| | | 5.B Servant Leadership | Approaching academics, informing them about the role of RMAs, training them Encouraging and guiding researchers to explore and apply for funds Meeting researchers, understanding their needs, approaching them to opportunities Research Management based on communication Same RMAs assigned to the same departments for a number of years to build healthy relationships | | | | | | | | | | | | | | | | | |
| | | 1.A Career path, evolution and job titles | | | | | | | | | | | | | | | | | | |
| | | 1.B PHD as a must for RMA | | | | | | | | | | | | | | | | | | |
| | | 1.C supporting the academic side of the RMA | | | | | | | | | | | | | | | | | | |
| | | 1.D the institution supporting RMAs in furthering their studies | | | | | | | | | | | | | | | | | | |
| | | 1.E Supporting active participation in Professional Associations | | | | | | | | | | | | | | | | | | |
| | | 1.F Training, learning and sharing best practices in RM | Contracting external consultants to give advice on better management of research projects Learning, sharing and contributing towards Best Practices in RM Training and having funds or access to funds for training Training for RMAs and making funds available for training | | | | | | | | | | | | | | | | | |
| 2.A Conditions of work | | | | | | | | | | | | | | | | | | | | |
| 2.B Salaries | Paying for overtime Performance bonus | | | | | | | | | | | | | | | | | | | |
| 2.C A more tailored and distinctive approach towards people working in RMO than people working in other departments | | | | | | | | | | | | | | | | | | | | |
| 3.A giving autonomy to RMAs to develop, carry out their work, treated as a professional | | | | | | | | | | | | | | | | | | | | |
| 3.B Specialisation of RMAs | | | | | | | | | | | | | | | | | | | | |
| 3.C Job rotation between departments, RMAs | | | | | | | | | | | | | | | | | | | | |
| 3.D Annual evaluation, appraisal, revision to job description of RMAs | | | | | | | | | | | | | | | | | | | | |

APPENDIX 6

TEMPLATE – DATA ANALYSIS MATRIX

| Orientation | Challenge (1) | Challenge (2) | Result | REF (1) | REF (2) | Discussion - insights | Link with specific Strategy/ finding | UCY resp | LoI | UoI resp | UoM | UoM resp | Literature SIS | Literature RM | Conclusions | Link with other themes (theme) |
|----------------|---|---------------|--|---------|------------------------------|---|---|----------|-----|----------|-----|----------|---|---|---|---|
| RMA - Oriented | 1. Job Skills, Qualifications and Gaining Trust | | job requires experience, since demands from customers are high. Experience on: | | | So one can argue that RM by its nature requires skills and experience - that's known from the literature and it was explained in the sis context. from the sis context it also came out that the RMAs require to be familiar with the context and be ready to adapt their skills. | - Career paths | | | | | | - limited resources - multifunctionalism - breadth specialisation (wide in a sis context) | -RMAs as expeditors of the research process (servant leadership) -RMAs need to gain the trust of researchers - academic preparation, qualifications (See Comment D2 on Pg1; D6 on Pg3) | - contextual adaptation of RMAs (incl knowledge of the context) while staying attached to the Profession - context-driven RM and RMAs: including possible re-definitions (See Comment D2 on Pg1; D6 on Pg3) | - Recognition of the profession; - RMA with special skills |
| | | | (a) familiarity with university structures (i.e. experience in the same place; within universities); (b) experience with people's characters (different personalities); (c) experience within a small country | C1a1 | Pg23 Pg26 Pg29 Pg35 | - RMAs need to understand research and the closer they are to that world the better; they need to understand managing authorities, funders etc. But they are not really getting prepared for that world, at least before they enter in it (as supported by literature). So the challenge is owing to the nature of the profession, mainly the academic preparation and qualifications that are acquired/required. (INCLUDE COMMENT HERE ON THE PERCEPTIONS ABOUT THE PROFESSION TO THE INTERVIEWEES + THEIR MEMBERSHIP IN PROF ASSOCIATIONS OF RMAs) MAY ALSO LINK TO THE COMMENT MADE UNDER STRESSFUL JOB - ROLE AMBIGUITY DUE TO LACK OF RECOGNITION OF THE PROFESSION | | | | | | | | | | |
| | | | Job requires academic qualifications, since customers are generally highly qualified (academically) | C1a11 | Pg23 Pg26 Pg29 Pg35 | same as above | Qualifications are required | | | | | | - limited resources - multifunctionalism - breadth specialisation (wide in a sis context) | -RMAs as expeditors of the research process (servant leadership) -RMAs need to gain the trust of researchers - academic preparation, qualifications (See Comment D2 on Pg1; D6 on Pg3) | - contextual adaptation of RMAs (incl knowledge of the context) while staying attached to the Profession - Context-driven RM and RMAs: including possible re-definitions (See Comment D2 on Pg1; D6 on Pg3) | - Recognition of the profession; - RMA with special skills |
| | | | Because of the limited opportunities in sis for researchers, rules and regulations may appear to be jeopardising academic freedom. RMAs may be seen as a threat if not properly perceived | C1b | Pg26 Pg60 | Academic recognition and limited opportunities pose challenges for RMAs, but also call for adaptability- the need to understand the specific context and maybe focus on some skills more than others e.g. more as mediators: conflict management. This emphasises the need for RMAs in sis to be more specifically prepared for sis | - Training Opportunities for RMAs | | | | | | - limited opportunities - conflict management - distortion of social unity - face to face society, with back to back relations - RMA supporting the researcher along the entire career - lack of critical mass | - mediators/ conflict management - tailoring of the curriculum | - Role Ambiguity; - Recognition of the profession | |
| | | | Job requires specialised skills (e.g. soft skills and familiarity with research; need to understand what's in the mind of Managing Authorities, funders etc) | C1a111 | Pg23 Pg26 Pg29 Pg35 | See 1a1 | - Training Opportunities for RMAs | | | | | | - limited resources - multifunctionalism - breadth specialisation (wide in a sis context) | -RMAs as expeditors of the research process (servant leadership) -RMAs need to gain the trust of researchers - academic preparation, qualifications (See Comment D2 on Pg1; D6 on Pg3) | - contextual adaptation of RMAs (incl knowledge of the context) while staying attached to the Profession - Context-driven RM and RMAs: including possible re-definitions (See Comment D2 on Pg1; D6 on Pg3) | - Recognition of the profession; - RMA with special skills |
| | | | New updates new regulations and the duplication of efforts / lack of congruence/ direction when they happen One respondent (MR) insisted that this job is not for everyone. In view of the need to keep yourself updated with the constant developments (in RM) | C2a | Pg25 Pg33 | - emphasis was made by a decentralised office at UCY; reason? Possibly due to the element of distance that exists between central and decentralised - UoM no such experience yet - the need for constant updating required: in RM may threaten the comfort zone of an RMA in a sis unit, which is a national, flagship university with no equals. Constant changes and new development are causes of stress because they threaten the comfort offered by a national flagship university where things may be expected to remain constant - due to less opportunities. So whereas the limited opportunities may be a cause of dissatisfaction in themselves, they may be a source of comfort to those who want a stable job | - Regular meetings centralised-decentralised - Crucial role of RMO to bring together RMA from centralised and decentralised together | | | | | | - limited job mobility opportunities; - comfort of a publicly funded institution; the status of a flagship university (its nice to be associated with it) | - RM as a dynamic job that in sis may appeal to some (constant training; non-routine, where opp are limited) but be unliked by others (threat to cosine ss) | - Cosiness and job stability - agenda setting | |

| Orientation | Challenge (1) | Challenge (2) | Result | REF (1) | REF (2) | Discussion - Insights | Link with specific Strategy finding | UCY resp | UoI resp | UoM resp | Literature SIS | Literature RM | Conclusions | Link with other themes (theme) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|--|---|--|---------|---------|-----------------------|-------------------------------------|----------|----------|----------|----------------|---------------|-------------|--------------------------------|---|-----------------------------------|--|--|--|--|--|--|--|--|--|--|-------------------------------|--|--|----------------------------------|--|--|--|--|--|--|--|---------------------|--|--|--|
| RMA - Oriented | (2) Multi-functionalism and RMA Specialisation | 1. Going the extra mile: multiple tasks, sometimes unrelated to RM 2. Role Overload 3. Specialized RMAs 1. Stressors for RMAs 2. Researchers are demanding 3. Staff turnover 4. Role ambiguity | 1. Compromise academic background/personal research vs administration 2. Limited job opportunities and job mobility | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | (3) Stressful and Demanding job, the need to coach others | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | (4) Career related challenges | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | (1) Context Related | | | |
| Institution - Oriented | (2) Resource Related | 1. Academic/Researcher related 2. RMA - related 3. University resources in general - limited funding 1. Internally - researchers vs researchers 2. Externally 3. Challenges from closely knlt and personalised relationship 2. Internally - RMAs vs researchers 3. Internally - RMAs vs RMAS 4. Internally - RMAs vs other departments 1. Challenges to have a formal research strategy and direction 2. Reactionary approaches - not strategic 3. Selectivity and specialisation 4. Centralised vs decentralised (incl. fragmentation) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | (3) Relationships and Perceptions | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | (4) Policy and Processes related | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

APPENDIX 7

RMA DEMOGRAPHICS

Appendix 7a: RMA interviewees classified by gender and age group

| Gender | Age Group | UCY | Uol | UoM | Total |
|--------------------|-----------|-----------|----------|-----------|-----------|
| F | 26-40 | 9 | 1 | 6 | 16 |
| | 41-65 | 3 | 4 | 3 | 10 |
| F Total | | 12 | 5 | 9 | 26 |
| M | 26-40 | 2 | 2 | 1 | 5 |
| | 41-65 | 2 | 1 | | 3 |
| M Total | | 4 | 3 | 1 | 8 |
| Grand Total | | 16 | 8 | 10 | 34 |

Appendix 7b: RMA interviewees classified by discipline or academic background

| Discipline or Background | UCY | Uol | UoM | Total |
|--|-----------|----------|-----------|-----------|
| Finance and Accounting | 6 | | 2 | 8 |
| Management | 2 | | 4 | 6 |
| Economics | 2 | 1 | 1 | 4 |
| Public Administration | 1 | 1 | | 2 |
| Political Sciences | 1 | 1 | | 2 |
| Anthropology | | 2 | | 2 |
| International relations | 2 | | | 2 |
| Business | 1 | | | 1 |
| Chemical Engineering | | | 1 | 1 |
| Computer Science | | 1 | | 1 |
| Earth Sciences | | 1 | | 1 |
| European Studies | 1 | | | 1 |
| Geography | | | 1 | 1 |
| Human Resources | | | 1 | 1 |
| Molecular Biology; Food and Humand Nutrition | | 1 | | 1 |
| Grand Total | 16 | 8 | 10 | 34 |

Appendix 7c: RMA interviewees classified by qualification level

| Qualification Level | UCY | UoI | UoM | Grand Total |
|------------------------------|-----------|----------|-----------|-------------|
| Masters Degree | 11 | 4 | 6 | 21 |
| Bachelors Degree | 4 | | 3 | 7 |
| Doctorate Degree | | 2 | 1 | 3 |
| Reading for PhD but not read | 1 | 2 | | 3 |
| Grand Total | 16 | 8 | 10 | 34 |

Appendix 7d: RMA interviewees classified by no of years at the university and no of years in the RMA job

| No of years at the University | No of years in the job | UCY | UoI | UoM | Grand Total |
|-------------------------------|------------------------|-----------|----------|-----------|-------------|
| 6 to 10 years | 1 to 5 years | | 1 | | 1 |
| | 6 to 10 years | 9 | 2 | | 11 |
| 6 to 10 years Total | | 9 | 3 | | 12 |
| 1 to 5 years | 1 to 5 years | 4 | | 8 | 12 |
| | | 4 | | 8 | 12 |
| 1 to 5 years Total | | | | | |
| > 10 years | > 10 years | 3 | 2 | | 5 |
| | 1 to 5 years | | 1 | 1 | 2 |
| | 6 to 10 years | | 1 | 1 | 2 |
| > 10 years Total | | 3 | 4 | 2 | 9 |
| < 1 year | < 1 year | | 1 | | 1 |
| < 1 year Total | | | 1 | | 1 |
| Grand Total | | 16 | 8 | 10 | 34 |

Appendix 7e: RMA interviewees classified by membership in professional associations of RMAs

| Membership in Professional Association of RMAs | UCY | UoI | UoM | Grand Total |
|--|-----------|----------|-----------|-------------|
| No | 14 | | 6 | 20 |
| Yes | 2 | 8 | 2 | 12 |
| Other | | | 2 | 2 |
| Grand Total | 16 | 8 | 10 | 34 |

APPENDIX 8

ACADEMIC ORGANISATION

Appendix 8a: Academic organisation of Schools and Faculties at the UoI

School of Education

- Faculty of Education Studies
- Faculty of Sport, Leisure Studies and Social Education
- Faculty of Teacher Education

School of Engineering and Natural Sciences

- Faculty of Civil and Environmental Engineering
- Faculty of Earth Sciences
- Faculty of Electrical and Computer Engineering
- Faculty of Industrial Eng., Mechanical Eng. and Computer Science
- Faculty of Life and Environmental Sciences
- Faculty of Physical Sciences

School of Health Sciences

- Faculty of Food Science and Nutrition
- Faculty of Medicine
- Faculty of Nursing
- Faculty of Odontology
- Faculty of Pharmaceutical Sciences
- Faculty of Psychology

School of Humanities

- Faculty of History and Philosophy
- Faculty of Icelandic and Comparative Cultural Studies
- Faculty of Languages and Cultures
- Faculty of Theology and Religious Studies

School of Social Sciences

- Faculty of Business Administration
- Faculty of Economics
- Faculty of Law
- Faculty of Political Science
- Faculty of Social and Human Sciences
- Faculty of Social Work

Interdisciplinary Studies

- Environment and Natural Resources
- Nordic Master's Programme in Gerontology
- Public Health Sciences
- Viking and Medieval Norse Studies

Source: adapted from www.english.hi.is [accessed on 28/05/2017]

Appendix 8b: Academic organisation of faculties and departments at the UCY**FACULTY OF HUMANITIES**

- **Department of English Studies**
- **Department of French and European Studies**
- **Department of Turkish and Middle Eastern Studies**

- **Language Centre**

MEDICAL SCHOOL**FACULTY OF PURE AND APPLIED SCIENCES**

- **Department of Biological Sciences**
- **Department of Mathematics and Statistics**
- **Department of Computer Science**
- **Department of Physics**
- **Department of Chemistry**

- **Molecular Medicine Research Center**
- **Oceanography Centre**

FACULTY OF SOCIAL SCIENCES AND EDUCATION

- **Department of Education**
- **Department of Social and Political Sciences**
- **Department of Law**
- **Department of Psychology**

- **Centre for Applied Neuroscience**

GRADUATE SCHOOL**FACULTY OF ECONOMICS AND MANAGEMENT**

- Department of Business and Public Administration
- Department of Accounting and Finance
- Department of Economics

- Centre for Banking and Financial Research
- Economics Research Centre

FACULTY OF ENGINEERING

- Department of Architecture
- Department of Electrical and Computer Engineering
- Department of Mechanical and Manufacturing Engineering
- Department of Civil and Environmental Engineering

- FOSS Research Centre for Sustainable Energy
- KIOS Research Center for Intelligent Systems and Networks
- Nireas International Water Research Center

FACULTY OF LETTERS

- Department of Byzantine and Modern Greek Studies
 - School of Modern Greek
- Department of History and Archaeology
 - Archaeological Research Unit
- Department of Classics and Philosophy

Source: adapted from www.ucy.ac.cy/en [accessed on 28/05/2017]

Appendix 8c: Academic organisation of faculties and departments at the UoM

| | |
|--|--|
| <p>FACULTY OF ARTS</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Anthropological Sciences Classics & Archaeology English French Geography German History History of Art International Relations Italian Maltese Oriental Studies Philosophy Sociology Spanish & Latin American Studies Translation, Terminology & Interpreting Studies | <p>FACULTY FOR THE BUILT ENVIRONMENT</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Architecture & Urban Design Civil & Structural Engineering Conservation & Built Heritage Construction & Property Management Environmental Design Spatial Planning & Infrastructure Visual Arts |
| <p>FACULTY OF ECONOMICS, MANAGEMENT & ACCOUNTANCY</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Accountancy Banking & Finance Economics Insurance Management Marketing Public Policy | <p>FACULTY OF DENTAL SURGERY</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Dental Surgery Oral Rehabilitation & Community Dental Care Restorative Dentistry |
| <p>FACULTY OF HEALTH SCIENCES</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Applied Biomedical Science Communication Therapy Food Studies & Environmental Health Health Services Management Medical Physics Mental Health Midwifery Nursing Occupational Therapy Physiotherapy Podiatry Radiography | <p>FACULTY OF INFORMATION & COMMUNICATION TECHNOLOGY</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Artificial Intelligence Communications & Computer Engineering Computer Information Systems Computer Science Microelectronics & Nanoelectronics |
| <p>FACULTY OF LAWS</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Civil Law Commercial Law Criminal Law Environmental & Resources Law European & Comparative Law International Law Legal History & Methodology Media, Communications & Technology Law Public Law | <p>FACULTY OF MEDICINE & SURGERY</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Anatomy Clinical Pharmacology & Therapeutics Family Medicine Medicine Obstetrics & Gynaecology Paediatrics Pathology Pharmacy Physiology & Biochemistry Psychiatry Public Health Surgery |
| <p>FACULTY OF LAWS</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Civil Law Commercial Law Criminal Law Environmental & Resources Law European & Comparative Law International Law Legal History & Methodology Media, Communications & Technology Law Public Law | <p>FACULTY OF EDUCATION</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Arts, Open Communities & Adult Education Early Childhood & Primary Education Education Studies Health, Physical Education & Consumer Studies Inclusion & Access to Learning Languages & Humanities Education Leadership for Learning & Innovation Mathematics & Science Education Technology & Entrepreneurship Education |

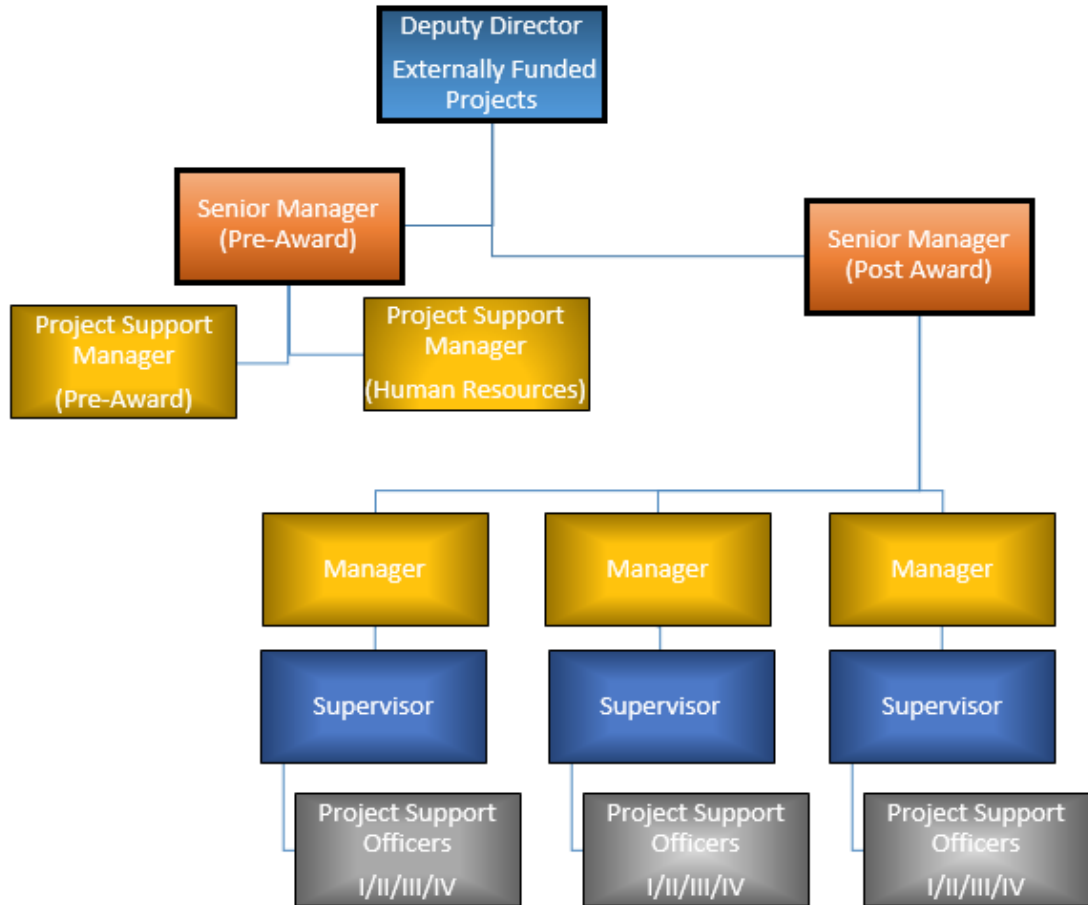
| | |
|---|---|
| <p>FACULTY OF SCIENCE</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Biology Chemistry Geosciences Mathematics Physics Statistics & Operations Research Metamaterials Unit | <p>FACULTY OF MEDIA & KNOWLEDGE SCIENCES</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Cognitive Science Corporate Communication Digital Arts Information Policy & Governance Library Information & Archive Sciences Media & Communications |
| <p>FACULTY OF ENGINEERING</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Electronic Systems Engineering Industrial & Manufacturing Engineering Industrial Electrical Power Conversion Mechanical Engineering Metallurgy & Materials Engineering Systems & Control Engineering | <p>FACULTY OF THEOLOGY</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Church History Fundamental & Dogmatic Theology Moral Theology Pastoral Theology, Liturgy & Canon Law Philosophy Sacred Scripture, Hebrew & Greek |
| <p>FACULTY FOR SOCIAL WELLBEING</p> <p><i>Departments</i></p> <ul style="list-style-type: none"> Counselling Criminology Disability Studies Family Studies Gender Studies Gerontology Psychology Social Policy & Social Work Youth & Community Studies | |
| <p>INSTITUTES</p> <ul style="list-style-type: none"> INSTITUTE OF AEROSPACE TECHNOLOGIES INSTITUTE OF ANGLO-ITALIAN STUDIES INTERNATIONAL INSTITUTE FOR BAROQUE STUDIES INSTITUTE FOR CLIMATE CHANGE & SUSTAINABLE DEVELOPMENT CONFUCIUS INSTITUTE INSTITUTE OF DIGITAL GAMES INSTITUTE OF EARTH SYSTEMS ENVIRONMENTAL MANAGEMENT AND PLANNING RURAL SCIENCES & FOOD SYSTEMS EURO-MEDITERRANEAN CENTRE ON INSULAR COASTAL DYNAMICS THE EDWARD DE BONO INSTITUTE FOR THE DESIGN & DEVELOPMENT OF THINKING INSTITUTE FOR EUROPEAN STUDIES ISLANDS & SMALL STATES INSTITUTE INSTITUTE OF LINGUISTIC AND LANGUAGE TECHNOLOGY INSTITUTE OF MALTESE STUDIES MEDITERRANEAN ACADEMY OF DIPLOMATIC STUDIES MEDITERRANEAN INSTITUTE INSTITUTE FOR PHYSICAL EDUCATION & SPORT INSTITUTE OF SPACE SCIENCES & ASTRONOMY INSTITUTE FOR SUSTAINABLE ENERGY INSTITUTE FOR TOURISM, TRAVEL & CULTURE | <p>CENTRES</p> <ul style="list-style-type: none"> CENTRE FOR BIOMEDICAL CYBERNETICS CENTRE FOR ENGLISH LANGUAGE PROFICIENCY CENTRE FOR ENTREPRENEURSHIP & BUSINESS INCUBATION CENTRE FOR ENVIRONMENTAL EDUCATION & RESEARCH CENTRE FOR LABOUR STUDIES CENTRE FOR THE LIBERAL ARTS & SCIENCES CENTRE FOR LITERACY CENTRE FOR MOLECULAR MEDICINE & BIOBANKING CENTRE FOR RESILIENCE & SOCIO-EMOTIONAL HEALTH CENTRE FOR TRADITIONAL CHINESE MEDICINE EURO-MEDITERRANEAN CENTRE FOR EDUCATIONAL RESEARCH <p>SCHOOLS</p> <ul style="list-style-type: none"> SCHOOL OF PERFORMING ARTS Dance Studies Music Studies Theatre Studies INTERNATIONAL SCHOOL FOR FOUNDATION STUDIES |

Source: adapted from www.um.edu.mt [accessed on 28/05/2017]

APPENDIX 9

**UOM CAREER PROGRESSION STRUCTURE
FOR RMAs**

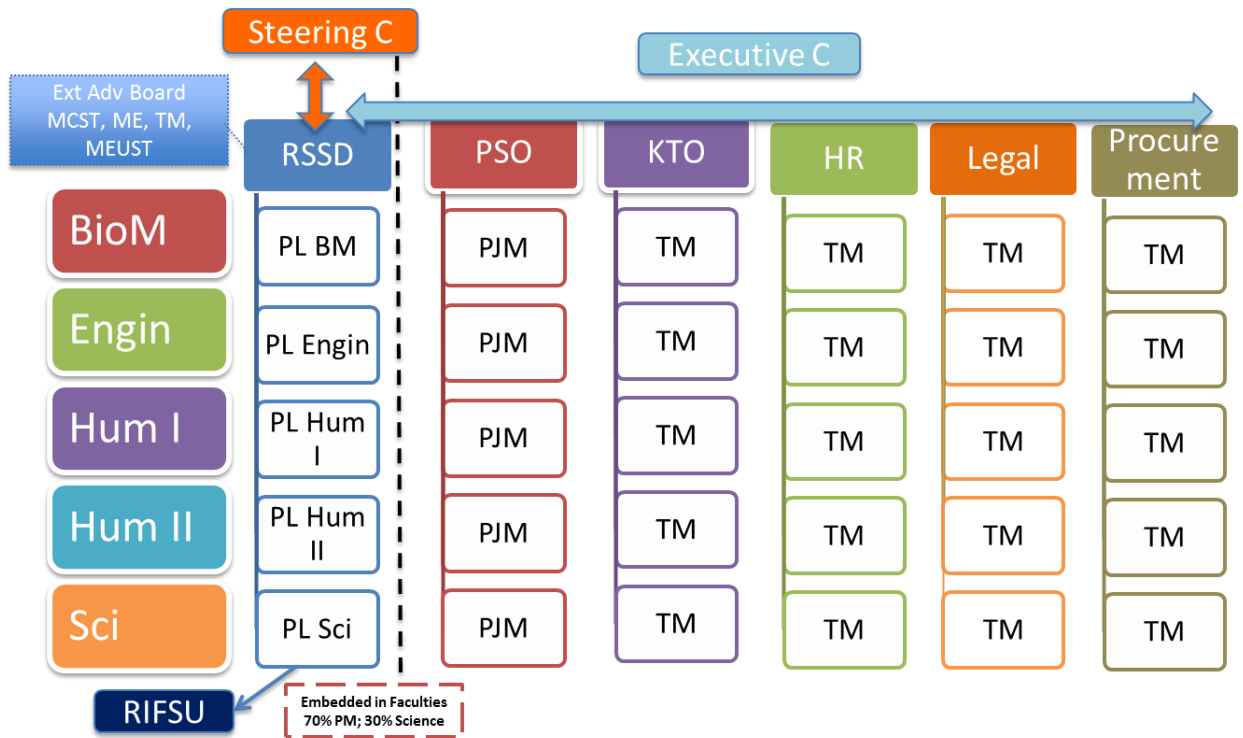
Appendix 9: UoM's career progression structure for RMAs



APPENDIX 10

**PROPOSED RESEARCH SUPPORT MATRIX AT
THE UOM**

Appendix 10: Proposed research support matrix at the UOM



Key:

- RSSD = Research Support Services Directorate
- PSO = Project Support Office
- KTO = Knowledge Transfer Office
- HR = Human Resources Office
- BioM = Biomedical
- Engin = Engineering
- Hum = Humanities
- Sci = Sciences
- PL = Project Leader
- PJM = Project Manager
- TM = Team Member
- RIFSU = Research and Innovation Facilities Support Unit

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