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Materiality Matrix Use in Aligning and Determining a Firm's Sustainable Business Model Archetype and Triple Bottom Line Impact on Stakeholders

Valeska V. Geldres-Weiss ^{1,*} , Nicolás Gambetta ², Nathaniel P. Massa ³  and Skania L. Geldres-Weiss ⁴

¹ Department of Management and Economics, Faculty of Law and Business, Universidad de La Frontera, Temuco 4811230, Chile

² Facultad de Administración y Ciencias Sociales, Universidad ORT Uruguay, Montevideo 11300, Uruguay; gambetta@ort.edu.uy

³ Department of Management, Faculty of Economics, Management and Accountancy, University of Malta, Msida MSD 2080, Malta; nathaniel.massa@um.edu.mt

⁴ Department of Economics and Business, Facultad de Ciencias Sociales, Empresariales y Jurídicas, Universidad de La Serena, La Serena 1700000, Chile; skania.geldres@userena.cl

* Correspondence: valeska.geldres@ufrontera.cl; Tel.: +56-9-9735-0999

Abstract: The materiality matrix is a tool that helps companies understand how the stakeholders' view of material issues in environmental, social, and economic/governance dimensions influences their value creation process, and creates triple bottom line impacts through shaping their strategic business model elements. Building on the multidimensional definition of materiality, we propose to use the materiality matrix as a tool to aid the transformation of a company's existing traditional business model into a more sustainable one (inside-out approach), and to enable the identification of the most appropriate business model archetype to incorporate innovation into its sustainable business model (outside-in approach). This paper presents the materiality matrix as a new tool to enhance and transpose a company's business model towards sustainability—as illustrated through the analysis of the Viña Concha y Toro business model case. This new tool contributes to sustainable business model literature and stakeholder theory by incorporating the materiality matrix as a gateway to business model innovation, and as a tool to explain the dynamics in the sustainable value creation process and concomitant impact on stakeholders.

Keywords: sustainable business model canvas; sustainable business model archetype; materiality matrix; winery; agri-food sector; sustainability



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1. Introduction

Five years since its globe-spanning adoption by all 193 United Nations (UN) member states, and a mere decade to its target date—the 2030 Agenda for Development resolution presents an urgent clarion call. This juncture of aroused awareness and incessant demands for sustainability and corporate responsibility, now more than ever, present the perfect opportunity for companies to review their business models in order to understand their value creation processes and gauge whether they are maximising total value to stakeholders—beyond financial imperatives. Financial crises and social calamities (e.g., COVID-19), as well as extreme weather conditions, pose an urgent need for companies to do things differently and responsibly, and to embrace a long-term view of prosperity. To achieve this goal, companies need to develop more holistically sustainable business models. Without changing current business models—in which growth is predicated on selling more goods to more people—environmental stresses will increase business risks and costs—mitigating and ultimately compromising essential fundamentals of sustainability. Some companies are examining their business models to make these needed changes—this includes for example circular economy initiatives and B-Corps—but none of these changes

are yet mainstream [1]. Recent studies have identified Sustainable Business Model (SBM) archetypes as a means to enable users to understand potential impacts of innovating in relation to different types of business models [2], and have also developed a new business model canvas that incorporates social and environmental layers, expanding on the original (economic) business model canvas [3]. However, none of these studies explain how companies that are in the process of transforming their traditional business models into more sustainable ones can use the current sustainability information they have, to advance to these innovative and more SBMs. Companies that are in this process usually have already identified the material issues for the stakeholders and for the company management. To help companies speed up their business model transformation, management needs a simple mechanism to link their company's materiality matrix (MM) to a SBM archetype in order to align and identify the innovation needed; and to facilitate their advance from a traditional business model canvas to a sustainable business model canvas. This will help transitioning companies make the necessary changes to their business models in a more practical and intuitive way.

In this context, and aligned with increasing attention and policy focus on global food security, the agri-food sector has a key role to play in sustainably producing and providing safe and affordable food for all. Within the agri-food sector, various scholars have logically highlighted the wine industry's inextricable connection with the core fundamentals of sustainability [4–6]. Furthermore, the industry is inherently linked to the terroir and other ecologically-related environmental aspects, which are directly associated with the product and its sustainability.

This study aims to understand the role the material issues identified in a company's materiality matrix (MM) play in identifying its SBM archetype as developed by Bocken et al. [2]; and the value creation process as proposed by the Triple Layered Business Model Canvas (TLBMC) developed by Joyce and Paquin [3].

Towards this end, a case study of an established major Chilean winery, Viña Concha y Toro S.A. (VCT) is undertaken to analyse and illustrate this holistic view of a company's value creation process. Currently, Chile ranks as the seventh largest wine producer, and is also the fourth largest exporter globally. Established in 1883, and spanning generations, the case company VCT is based in Chile, and is considered Latin America's largest winery. As one of Chile's oldest wineries, VCT is also one of the world's top ten wine exporters. The firm is an ideal candidate for research seeking case-specific, rich, and deep applied understanding into sustainability operationalisation; and the fact that the company is extensively internationalised, brings into play various cultural contexts including myriad stakeholder interaction and relational dependencies in its supply and value chains. Over the years, the company has instituted various sustainability initiatives, gradually evolving into a broader holistic commitment informing their strategy.

We undertake a detailed analysis of VCT's sustainability reports for the period 2017–2019. Furthermore, we also extensively interview the deputy sustainability manager of the company to garner deeper insights on the key sustainability aspects underpinning this study. We analyse the changes in VCT's material issues and any associated changes in their prioritisation, through the MM analyses between 2017 and 2019—to understand how these changes impact in the SBM archetype and value creation process.

Our study draws from stakeholder theory, given that this perspective associates value creation with and for stakeholders [7]. We contribute to SBM literature as we show how the MM, conceived by a multidimensional expression of materiality, relates to the SBM archetypes developed by Bocken et al. [2], and the Triple Layered Business Model Canvas (TLBMC) developed by Joyce and Paquin [3]. We also contribute to stakeholder theory in that we provide evidence that the value creation of a SBM is brought about by taking into account stakeholder demands. An effective SBM creates value for stakeholders aligned with their requirements, which in turn creates a strong link between the company and its stakeholders—probably stronger than in a common generic business model. Finally, this study offers the opportunity to understand how the wine industry is changing its

sustainability material issue priorities. This also underlies the contribution of our study to stakeholder theory, showing the potential that stakeholders have—through the identification of material issues—to help a company transform its business model into a more sustainable one.

2. Literature Review

Though scholars may dispute extents of conceptual similarity or difference among fundamentals of Corporate Social Responsibility (CSR) and stakeholder theory [8]—mounting sensitivity to veritable environmental concerns and finite resources [9], combined with incessant visible cases of corporate malfeasance, and a post-financial crisis questioning of sustainability in employed capitalist ideals—has invariably seen key aspects of the two perspectives converge. Beyond public and societal demands, increasing policy and regulatory requirements justly see mounting pressure on businesses to bring stakeholder and sustainability responsibilities to the fore of their agendas. Further to maintaining awareness and striving for relational harmony among vested parties with at times inherently conflicting motivations, stakeholder theory “begins with the assumption that values are necessarily and explicitly a part of doing business” [10]. Managerial in its application, Freeman [11] consolidates positing that stakeholder theory essentially encapsulates two fundamental questions. The first, “What is the purpose of the firm?”—directs managers to understand and establish the shared sense of value they create, and what, through sustainable business enterprise draws its key stakeholders together. Moreover aligned with Porter’s [12,13] strategic competitiveness-derived notion of shared value, “this propels the firm forward and allows it to generate outstanding performance, determined both in terms of its purpose and marketplace financial metrics” [10] (p. 364). The second question asks of management, “what responsibility do you owe to stakeholders?” This requires managers to articulate how they intend to conduct business specifically and operationally, and establish the kinds of relationships and rapport they need and want to create with their stakeholders to deliver on their purpose [10]. The latter in particular, inferring the need to visibly communicate, gauge and account for these relationships with stakeholders.

While keeping in mind the undisputed importance of shareholders and profits, critical in sustaining operations and growth—stakeholder theory underpins the need for managers to develop and nurture mutually sustaining relationships, inspire their stakeholders, and create communities where all parties contribute to deliver the value committed to by the firm [7,14,15]. Significantly, important profits become the result, rather than sole driver in the value creation process [8,16–18]. Given current realities, Freeman et al. [10] (p. 364) holistically observe that at the core lies the notion that “Economic value is created by people who voluntarily come together and cooperate to improve everyone’s circumstance”—in itself an inferred requirement for sustainability. Stakeholder theory implies that stakeholders will support a company if they get value back in exchange [7,19], along the long-term cycle and mutual quest for sustainability.

2.1. Sustainable Business Models and Stakeholders

The origins of stakeholder theory predate the contemporary popular notion of business models in the literature. Initially a more nuanced view on capitalism, stakeholder theory emphasised the interconnectedness and relationships between a business, and essentially the entities it must, to greater or lesser extents, symbiotically interact with in order to sustain its operations and enterprise—namely, its customers, suppliers, employees, investors and communities among others—i.e., its stakeholders, as opposed to a quasi-sole focus on shareholder primacy. In 1984 Freeman [20] had consolidated various perspectives at the time, detailing his ‘stakeholder theory of organisational management and business ethics’—at a time when business culture and common perception yet considered the notion of ethics and any corporate social responsibility beyond Milton Friedman’s [21] paramount emphasis on shareholder’s profits and adherence to laws and regulations—not comfortably reconcilable with the motives of business enterprise—put mildly. While Freeman [20]

had coined the now classic definition of the concept: ‘any group or individual who can affect or is affected by the achievement of the organisation’s objective’—elusive universal consensus still sees scholars contest and debate defining ‘stakeholders’, such as ‘who, and what counts’ [22,23].

In this regard, today’s heightened awareness, questions original notions of stakeholder theory—as societal, political and regulatory demands converge, perceiving broader holistic perspectives of stakeholders, and enterprises’ obligations [22,24]—since businesses are now being actively seen as members of the societies within which they operate. This, essentially bolstered contemporary stakeholder perspectives, broadening the perceived remit of businesses’ responsibilities, co-acknowledging and aligning both corporate and social intent [25]. Perhaps the recent declaration by Freeman [26], considered the father of stakeholder theory, effectively echoed what is now a generally acknowledged realisation across all stakeholder groups: that ‘Managing Stakeholders’ is the theme for the 21st century, and that the task of executives is to create as much value as possible for stakeholders without resorting to trade-offs. Great companies endure because they manage to get stakeholder interests aligned in the same direction. In such contexts, the capacity to ‘endure’ derives directly from sustainability.

Complementarily, business models are developed, configured and operationalised to create value [7,27–29]—with some form of value proposition at their core. While the conceptual notion of a business model is not new, ‘business models’ per se comparatively gained scholarly interest more recently [29]. Among various alternative models, Osterwalder and Pigneur’s [30] business model canvas is considered among the most well known and extensively deployed by businesses—also equally acknowledged in academic circles. However, typical of non-sustainability-oriented business models, its emphasis is on unidirectional economic value—where the business creates value for the customer in exchange for financial economic value transacted for the business [7].

Drawing from the sustainability movement, and aligned with stakeholder theory, Stubbs and Cocklin [31] and Lozano [32] proposed that a SBM must consider all the stakeholders needs—incorporating social and environmental dimensions beyond economic imperatives. Stubbs and Cocklin [31] specifically underline the requirement for sustainable organisations to adopt a stakeholder rather than a shareholder view of the firm—highlighting that a company’s longer term (and hence sustainable) success is inextricably related to the success of its stakeholders. In this line, these authors state that companies also need to treat nature as a stakeholder and promote environmental stewardship; from a holistic view. Accordingly, Upward and Jones [33] and Stubbs and Cocklin [31] probably make the first steps toward developing a SBM theoretical framework.

Concurrently, and drawing from an inherent need to account for value, the emergent and complementary ‘triple bottom line’ concept [34] inferred that the overall outcomes from a business model had to invariably also consider ecological and social, besides economic performance.

Guided by this, and building on the established and comprehensive yet easy to visualise and deploy Osterwalder and Pigneur [30] business model canvas, Joyce and Paquin [3] incorporated these two additional sustainability components and developed the TLBMC. Here, ‘stakeholder’ and ‘lifecycle’ perspectives respectively inform components on the two additional social and environmental canvas layers, expanding on the original economic business model canvas—seeking to account more fully for sustainability at strategic and operational levels. This represents an inside-out approach to analyse business model innovation. Given its foundation on the established and widely-used Osterwalder and Pigneur [30] canvas, coupled with its novel ease of use in visually enhancing analyses in conceptualising high-level sustainability-oriented innovation and operational strategies—we adopt this triple-layer framework for the purposes of our case investigation. As inferred earlier, sustainability scholars stress that the value of sustainability be necessarily shared among all actors, including “the natural environment and society as main actors” in order to be realised, extended and maintained over the longer-term [30,35]. In this regard, literature

underlines that SBMs are necessarily holistic in their scope—where respective components are intimately interconnected through the stakeholders and explicable only by reference to the whole. Grigorescu et al. [36] point out that stakeholders are critically relevant in the SBM, playing an important role in consistently incorporating sustainability objectives into business models—concomitant longer-term collective outcomes cascading beyond the enterprise, to the national level.

In view of this, and the aforementioned core relevance of stakeholders in SBMs, the theoretical basis informing this research is stakeholder theory. On this foundation, Freudenreich et al. [7] propose a new approach, where business models create value, organise and facilitate the exchange of value creation with and for stakeholders, their proposed stakeholder value creation framework directly relates the organisation to its stakeholders (Figure 1), it shows this value creation in relation to the confluence from both the business model and stakeholder theory perspectives. Building on Freeman [11], these authors stress that the business model must consolidate value creation at the nexus of business model and stakeholder theory perspectives. They posit that in considering value creation, a SBM must answer: what and how sustainable value is created (deriving from traditional business model perspectives), whereas from the stakeholder theory perspective, the with and for whom that value is created, is addressed.

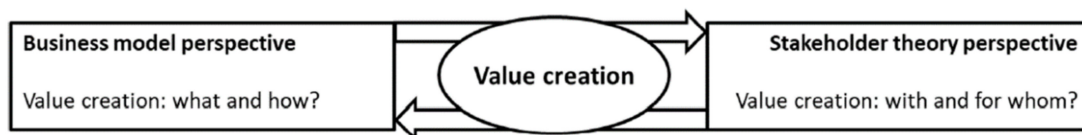


Figure 1. Business model and stakeholder theory perspectives on value creation.

In relation to the company, this stakeholder value creation framework establishes five stakeholder groups (societal, financial, employees, customers and business partners) with and through which value creation dimensions, activities and interactions take place [7]. These authors state that in this framework and within the joint creation processes, stakeholders are both (co)creators of value and receptors of the value created. Such mutually sustaining value generating dynamics across stakeholder categories have been empirically observed and also deemed beneficial and effective in agricultural contexts [9]. The business model archetypes identified by Bocken et al. [2] configures an outside-in approach to allow users to understand the potential impacts of innovating in relation to different types of business models. The archetypes are: maximise material and energy efficiency; create value from ‘waste’; substitute with renewables and natural processes; deliver functionality rather than ownership; adopt a stewardship role; encourage sufficiency; repurpose the business for society/environment; and develop scale-up solutions. The SBM archetypes describe groupings of mechanisms and solutions that may contribute to enhancing and building up the business model for sustainability; aiming at developing a common language useful in facilitating and enabling the development of sustainable business models in practice [2].

2.2. The Materiality Matrix

As acknowledged earlier, investing one’s intent and attention on sustainability and talking about ‘value’ without the capacity to observe, gauge or assess any such initiative for the purposes of management and goal attainment is logically a moot point. This fundamental need (to gauge, measure and account for) becomes more critical (both internally and externally) when driven by mounting social (and therefore stakeholder) expectations and regulatory pressures transposed into evermore quantified obligations and compliance requirements. Business models at their core inherently infer and align with the need to analyse, assess and measure—given their strategic scope directly linked to prospective opportunities and performance. This need to measure and assess, had seen the development of Osterwalder and Pignur’s [37] original business model canvas draw from Kaplan and Norton’s [38,39] balanced scorecard. In itself a strategic management tool and framework,

this balanced scorecard seeks to manage, assess and direct organisational performance on a broader set of factors deemed of strategic competitive importance, beyond the usual focus on financial metrics. Resulting from increasingly perceived needs to account for even broader stakeholder-related factors in a more focused manner, scholars further developed extended derivatives from Kaplan and Norton's original balanced scorecard. Significant interest in incorporating sustainability metrics for establishing and auditing business performance saw the development of the sustainability balanced scorecard [40]. See also, Hansen and Schaltegger [41]; Figge et al. [42]—which in turn, and to differing extents helped shape aspects of emerging SBMs. While the important capacity for management to account for, value and audit the linkage between strategic direction and goals set, and actual measurable progress or performance attained—is acknowledged as central to business models—it is however at times elusive or more challenging to quantify aspects of sustainability beyond generic inferences. This more so in the case of complex non-financial, qualitative measures. Addressing this particularly testing issue for SBMs, in their conceptual paper on assessing sustainability-oriented business models, Lüdeke-Freund et al. [40] (p. 169) highlight this SBM assessment gap and declare: “Whether and how ‘sustainable business models’ effectively support sustainable development is not just a matter of design, but also of the measurability and manageability of business model effects”.

Originally derived from financial accounting and legal spheres [43], the concept of materiality highlights and discerns what is relevant and important. By extension and via application, materiality assessment is today also broadly adopted and directly linked to both CSR and sustainability performance—and, thus, invariably concerns stakeholders, given the usage of, and impact on resources and contingent effects on organisations' ecosystem realities. This linkage was arguably prompted by Starik in 1995 [30] who seriously asked: ‘Should trees have managerial standing?’—and called out as a serious omission the non-recognition of nature as a stakeholder [44,45]. Addressing this persistent tendency for denying the environment stakeholder status, contemporary sustainability practice sought to transpose this into materiality assessment. For example, the international Association of Chartered Certified Accountants (ACCA), considered the global body for professional accountants, together with consulting and auditing firm KPMG and other associated environmental partners, staked their commitment in ‘Identifying natural capital risk and materiality’ [46]. Since its establishment in 2000, the Global Reporting Initiative (GRI) established an evolving portfolio of sustainability aspects that serve as an enterprise sustainability reporting guideline. Recognised and adopted worldwide across industries in the corporate world, the practicality and application of this assessment framework has also been acknowledged by scholars [40,47–50]. In its most recent iteration, the GRI reporting standards were explicit about the need to broaden consultation on aspects of stakeholder engagement. The GRI G4 guidelines further stress that reporting organisations should determine materiality and identify a process for accounting for such perspectives—including the interests of any stakeholders with whom the business may not be in constant or obvious dialogue. In this respect, it could be said that the materiality concept emerged as the most important element in the new GRI G4 guidelines on corporate sustainability reporting—especially, for instance, in the agricultural sector [43].

The GRI framework offers a sound guideline for sustainability reporting, and in the case of the G4 edition, specifically enhances this through the MM. This edition allows for a broad stakeholder-oriented approach in defining sustainability priorities, which, in our case, relate to the wine industry which forms part of the agri-food sector. In this regard, through the MM, the GRI's stakeholder approach is also useful for developing our research. The MM requires that the relevant sustainability aspects, from both the company's, and the stakeholder's perspectives, are juxtaposed—seeking to match and align both in the MM [40] (Figure 2).

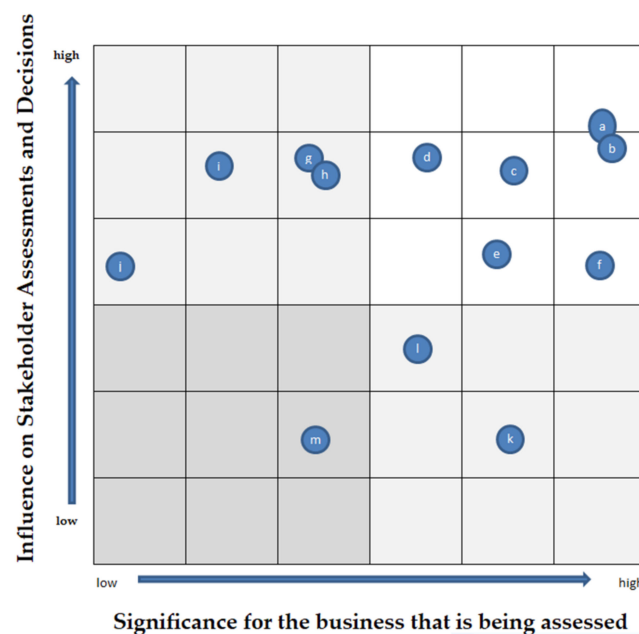


Figure 2. Illustration of a materiality matrix (MM).

Seeking more graduated assessment, each of a MM's material issues can also be identified with, and attributed a number to facilitate further evaluation—where higher values, indicate higher attributed priorities [51].

2.3. Material Issues in the Wine Industry

Ouvrard et al. [52] note that in the context of intense global competition, mounting societal expectations and market demands, wine producers and the broader industry ecosystem are generally very keen on environmentally friendly businesses; and sustainability and environmental issues tend to be reflected in their business models. Benson-Rea et al. [53] observe that in the New Zealand wine industry, multiple business models co-exist alongside each other. In wine production and distribution, topics related with environmental issues include land, water, energy, and chemical use, the generation and management of organic and inorganic waste streams, the production of greenhouse gas emissions, and the impact on ecosystems [54]. Olaru et al. [55] logically underline that sustainability of the wine industry involves environmental concerns in the grape production and processing systems.

In this industry the stakeholders' pressures drive sustainable practice [4,56]. With respect to stakeholder demands and requirements specifically associated with the agri-food sector, Dania et al. [57] establish stakeholders' sustainability requirements in agri-food supply chains across economic, environmental, and social dimensions (Figure 3).

2.4. Research Proposition

From the literature review in Section 2.1 we identified prior studies that have developed some solutions to help companies transition from a traditional business model to a sustainable business model. Specifically, Joyce and Paquin [3] developed the TLBMC to expand the original economic business model canvas allowing firms to account more fully for sustainability at strategic and operational levels showing the triple bottom line impact on stakeholders. Bocken et al. [2] identified business model archetypes that may contribute to building up the business model for sustainability and aim to develop a common language useful in accelerating the development of sustainable business models in practice. From the stakeholder theory perspective, stakeholders have a relevant role to play in the business model innovation process. Freudenreich et al. [7] propose a new approach, where business models create value, organise and facilitate the exchange of value creation with and for stakeholders—while Grigorescu et al. [36] point out that stakeholders are critically relevant in the SBM, playing an important role in consistently incorporating sustainability

objectives into business models. However, none of these studies have discussed how the relevant sustainability aspects from both the company's and the stakeholder's perspectives represented in the MM (see Section 2.2), can be used by companies to apply the solutions developed in the abovementioned studies—to turn their current business model into a more sustainable one, and thus, to create sustainable value for their stakeholders and society as a whole. Based on this, we develop the following research proposition:

Research proposition: The material issues identified in a company's materiality matrix (MM) are useful to align and determine the Sustainable Business Model archetype (SBM archetype) and the triple bottom line impact on stakeholders (TLBMC).

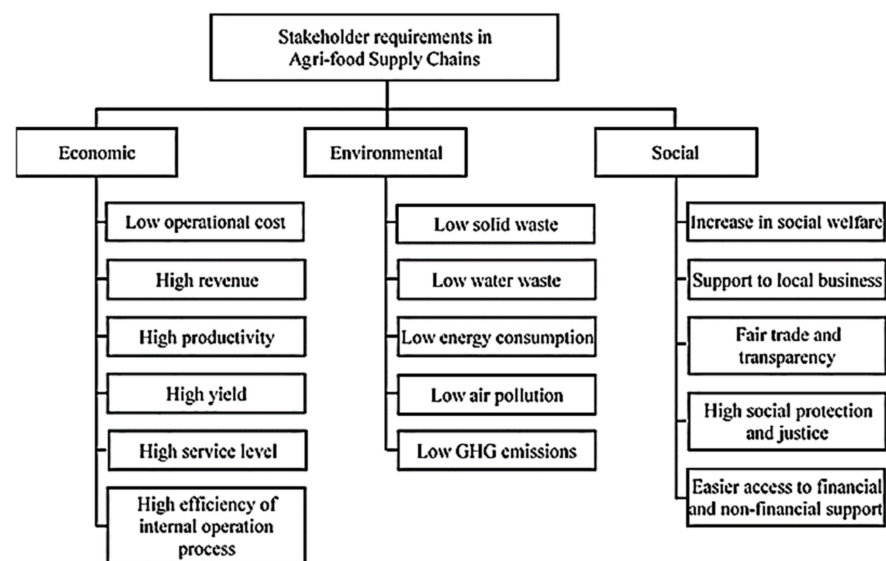


Figure 3. Stakeholder requirements in a sustainable agri-food supply chain.

Ensuing support for this proposition, should see companies able to utilise the MM they would have already prepared for sustainability reporting purposes, as a gateway to help transform their business model into a more sustainable one.

3. Materials and Methods

To understand the role that the MM plays in identifying the SBM archetype and value creation process in a SBM, we use an in-depth case study based on Viña Concha y Toro (VCT)—a well-established and internationalised wine grower and producer operating in a sector characterised by its inextricable link to elements fundamental to core aspects of sustainability. Such a case study approach allows rich contextually applied insights, and the analysis of empirical projects [58] that involve research and theory in the early or intermediate stages of development [59,60]. In this regard, such approaches have been effectively used in sustainability studies [61]. Case studies enable one to transform qualitative evidence into deductive research [60]. This methodology is used to gain an understanding of the processes and social interactions that develop in organizations in a specific historical context [62]. The objective of the case study was to extract information about: (1) VCT's sustainability approach; (2) VCT's materiality matrix; and (3) VCT's SBM elements. This is based on a thorough evaluation and content analysis of documentary evidence provided by VCT's extensive annual sustainability reports published on their website: Sustainability Report 2017 [63], Sustainability Report 2018 [64], and Sustainability Report 2019 [65].

Content analysis has been used to study a range of disclosure types in the accounting literature (e.g., [66,67]), and more specifically in this connection, one notes it is a common approach in CSR reporting [68].

The Sustainability Report 2017 [63] was assured by the external auditor provided by Deloitte, and was performed under the International Standard on Assurance Engagements (ISAE) 3000. ISAE 3000 is the assurance standard for non-financial information, and is issued by the International Federation of Accountants (IFAC). ISAE 3000 is usually applied for the audit of internal control, sustainability and compliance with laws and regulations. The sustainability reports for 2018 [64] and 2019 [65] were assured by the external auditor AENOR, who issues GRI standards certificates of compliance. The report review undertaken by the external auditor consisted in an enquiring process on different VCT units and management areas which had been involved in the development processes and drawing up of the report—as well as in the application of analytic procedures and checking tests. On the basis of procedures, the auditors state that nothing comes to their attention which causes them to conclude that the selected data for the sustainability reports has not been prepared in all material respects in accordance with the GRI reporting guidelines. Moreover, on the basis of validation from well-known and established international audit firms, we consider this information reliable for the purposes, scope and research objectives of our study.

The sustainability reports' content analysis is furthermore supported by our in-depth interviewing of VCT's deputy Sustainability Manager, providing further complementary qualitative and quantitative insights on detailed aspects beyond what was disclosed in the sustainability reports. The sustainability reports' content was thoroughly analysed, with a focus on the evolution of sustainability pillars and elements defined by the company between 2017 and 2019. In parallel, and aligned with our research objectives, analytic attention also converged on identifying the priority evolution of sustainability aspects, specifically the changes in material issues and the changes in their prioritisation, through the MM analysis. The first step in this study is to identify VCT's business model elements and identify the most relevant sustainability aspects through the period 2017–2019. The second step is to analyse the sustainability aspects prioritisation, in this sense the MM provides the sustainability priorities—matching the stakeholders' sustainability priorities with the company's sustainability priorities, in a matrix format [40]. The third step is to analyse possible matching between the material issues identified in the MM, and the established VCT sustainability pillars; in relation to ensuing elements consolidated in the TLBMC, and the SBM archetypes.

4. Results

4.1. VCT Sustainability Approach

“VCT's vision of sustainability is based on understanding that economic success goes hand in hand with caring for the environment, making rational use of natural resources, coupled with a commitment to people and the social sphere in which it operates. This virtuous circle is essential in the company's business model” [65] (p. 28). The definition of the objectives' content and strategic foci were based on their analysis and ensuing themes aligned with the winery's main stakeholders—identifying areas and issues requiring internal and/or external management to achieve strategic goals [65]. In 2018, VCT defined its 2022 corporate strategy, aiming at growth in business profitability and the creation of value based on the strategic pillars of excellence, sustainability and innovation; further including in 2019 the people pillar [65]. The components of VCT's strategic model incorporate the sustainability strategy into its core business: the production of high-quality wines. The sustainability strategy considers the product as the central element, and the strategic pillars emanate from and support this core element. In alignment, VCT's business model is articulated as follows: “The business model demands that the company participate actively in each of the stages of the value chain; vineyards, winemaking cellars, bottling plants and commercial offices, giving the company a vertical integration that assures the quality of each of their processes and of the final products” [64] (p. 18).

The winery defined its sustainability strategy around the following six strategic pillars, based on an analysis of the most relevant issues aligned with its key stakeholders. Each pillar's objectives contribute to fulfil VCT's vision:

1. Product: provide products of excellence that create the best experience for our customers.
2. Customers: create partnerships with our customers.
3. Supply Chain: be a partner for our suppliers.
4. People: have highly committed employees.
5. Society: create shared value for society.
6. Environment: be an example for the industry on environmental practices

To monitor the implementation of its sustainability strategy, VCT created a Sustainability Executive Committee involving leading executives that manage various pillars, the General Manager, and the Sustainable Development Area (led by VCT's deputy Sustainability Manager). In this way, sustainability became an essential element of the company, differentiating and positioning VCT as an exemplar for the industry in global markets. The company's Sustainability Strategy is aligned with the 2030 Agenda and the Sustainable Development Goals (SDGs) defined by the United Nations. While considering all the goals important and interconnected, the company nevertheless focuses efforts on those that are critical to its business and where they can have the greatest positive impact.

In 2012, VCT issued its first Sustainability Report prepared under GRI methodology. In this regard, in 2020, for the sixth consecutive year, VCT has been included in the Dow Jones Sustainability Index, an established international sustainability index assessing economic, social, and environmental aspects of a business, as well as corporate governance. Besides, the company has also been bestowed various awards associated with both sustainability as well as their wine brands.

The company defined eight categories of stakeholders, these categories were prioritised according to the stakeholder's degree of influence and interest in the organisation. The categories were classified as external and internal, according to the type of relationship they have with the company. VCT Internal stakeholders are the following: Employees; Shareholders; and Investors. VCT External stakeholders are the following: Suppliers; Communities; Society; Government and authorities; customers and the media. Moreover, VCT [65] (p. 10) declare: "The company seeks to encourage the engagement of all its stakeholders, with an emphasis on continuously promoting collaboration through various activities and communication channels where demands, opinions, concerns and suggestions can be expressed".

VCT's deputy Sustainability Manager states that the drivers that led the company in their sustainability initiative were: "1. The external driver: it came to the company around 2007 when the first formal requests for information regarding the company's sustainable management began, at that time, very influenced by the role that retail had taken. At that beginning, the responses that the company provided regarding the information requirements were rather informative and without compromising future performance regarding the different matters, given that the reported practices were only those that were implemented intuitively. The main concern of retail more than a decade ago was of an environmental nature, regarding the existence of analysis of impacts or minimal indicators. 2. The internal driver: when we realise that the company did not have a systematic management on the subject, the creation of a department in charge of proactively managing and promoting environmental and social issues within the company was formalised. In addition to formalisation in terms of functions, it is established that the Sustainable Development area operates in a transversal manner and acting as an internal facilitator. In addition, the management is formalised, through the generation of a Strategic Plan 2012–2015 in the first stage, which has renewed its continuity for the period 2015–2020".

4.2. VCT MM Evolution

The company, through surveys and interviews with employees, suppliers and other stakeholders, carried out [65] (p. 8): "a materiality analysis considering the results of the

previous year and the structure of its Sustainability Strategy as a basis, in order to update it, adapting to the changes, trends and new challenges in the matter". The VCT MM represents the VCT prioritisation of material topics. Between 2017 and 2019, the material topics were analysed in order to represent its evolving prioritisation. Figure 4 shows that in 2019, the company focuses on four material themes which are distributed in three prioritised groups. These material themes are: water management; mitigation and adaptation to climate change; employees' well-being; and waste management and recycling.

VCT MM 2017 (3x3) 8 groups: 33 material themes	VCT MM 2018 (3x3) 6 groups: 40 material themes	VCT MM 2019 (4x4) 9 groups: 34 material themes
3.3.07 Water	3.3.02 Water Management	4.4 Water Management
3.3.06 Energy and Carbon Footprint	3.3.01 Energy	4.3.02 Mitigation and Adaptation to Climate Change
3.3.05 Waste	3.2.13 Emissions and Carbon Footprint	4.3.01 Employees Well-being
3.3.04 Health and security	3.2.12 Impact of Climate Change on the Business	3.4.01 Waste Management and Recycling
3.3.03 Remuneration	3.2.11 Research and Innovation	3.3.13 Energy (efficiency and use of renewable energy)
3.3.02 Welfare and Benefit	3.2.10 Working Conditions	3.3.12 Commitment to Sustainability
3.3.01 Community management	3.2.09 Communication of Corporate and Sustainability Strategy	3.3.11 Biodiversity and Soil Care
3.2.08 Impacts of Climate Change on the business	3.2.08 Waste Management and Recycling	3.3.10 Human Rights
3.2.07 Biodiversity	3.2.07 Transparency and information to customers	3.3.09 Human Capital Development
3.2.06 Training and Knowledge Center	3.2.06 Ethics and Anticorruption	3.3.08 Diversity and Equal Opportunities
3.2.05 Supplier Development	3.2.05 Health and Safety	3.3.07 Legal Compliance
3.2.04 Innovation	3.2.04 Human Rights	3.3.06 Responsible Sourcing
3.2.03 Quality management	3.2.03 Product Innovation	3.3.05 Ethics and Anti-corruption
3.2.02 Products with positive impacts	3.2.02 Regulatory Compliance	3.3.04 Innovation, Research and New Technologies
3.2.01 Ethics and anti-corruption	3.2.01 Promoting Sustainability in the Supply Chain	3.3.03 Support for Local Development
3.1.01 Social impact of products	3.1.06 Product Quality and Safety	3.3.02 Promotion of Sustainability in the Supply Chain
2.3.01 Management and Evaluation of suppliers	3.1.05 Corporate Culture	3.3.01 Health and Safety
2.2.10 Pesticides and Fertilizers	3.1.04 Remuneration, Welfare and Benefits	3.2.06 Supply Management (grapes and materials)
2.2.09 Working conditions	3.1.03 Engagement and Working Environment	3.2.05 Product Quality and Safety Management
2.2.08 Career development	3.1.02 Initiatives that promote the protection of the environment with communities and employees	3.2.04 Internal Culture
2.2.07 Relations and work climate	3.1.01 Career Development	3.2.03 Risk Management
2.2.06 Diversity and equal opportunities	2.2.09 Suppliers Management and Evaluation	3.2.02 Corporate Strategy
2.2.05 Materials	2.2.08 Contribution to SDG's	3.2.01 Excellence in Operations
2.2.04 Promotion of sustainability in the supply chain	2.2.07 Community Management	2.3.03 Innovation and New Products
2.2.03 Profitability and economic value	2.2.06 Diversity and Equal Opportunities	2.3.02 Customer Satisfaction
2.2.02 Human Rights	2.2.05 Quality Management	2.3.01 Marketing and Responsible Drinking
2.2.01 Responsible Marketing	2.2.04 Relations and Customers Satisfaction	2.2.05 Profitability and Economic Indicators + Economic Performance
2.1.04 Supply and logistics management	2.2.03 Responsible Consumption	2.2.04 Awards, Recognitions and Strategic Alliances
2.1.03 Customer Satisfaction	2.2.02 Responsible Marketing	2.2.03 Information Security
2.1.02 Transparency and information to customer	2.2.01 Contribution to the Wine Industry	2.2.02 Certifications
2.1.01 Fulfillment	2.1.09 Vineyards Management	2.2.01 Transparency and Customer Information
1.2.01 Vineyard management	2.1.08 Profitability and Economic Indicators	2.1.02 Origins and Portfolio (Family of Wineries)
1.1.01 Disemination and Promotion of sustainability	2.1.07 Certifications	2.1.01 Efficiency in Distribution
	2.1.06 Training and Knowledge Center	1.2.01 Social Initiatives and Volunteering
	2.1.05 Biodiversity	
	2.1.04 Information Security	
	2.1.03 Brands Management	
	2.1.02 Social Initiatives and Volunteering	
	2.1.01 Materials and Supplies	
	1.1.01 Awards and Recognitions	

Figure 4. Viña Concha y Toro S.A. (VCT) 2017, 2018, and 2019 MM prioritisation of material themes.

The materiality process carried out by the company each year considers the results of the previous year, the structure of the sustainability strategy as a basis, and the necessary updates to adapt to changes, trends and new challenges. The VCT prioritisation process includes surveys and interviews with stakeholders, a review of the industry's sustainability context, and the gathering of internal information. Figure 4 represents VCT's materiality matrices for the years 2017, 2018, and 2019. Figure 4 was consolidated in line with the prioritisation of the material topics indicated by VCT each year in its materiality matrices published in its 2017, 2018, and 2019 sustainability reports. We assigned a number to

each material topic, the higher the value, the higher the priority [51]. The numbers were assigned with the following logic: the first number indicates the priority level for the company, the second the priority level for the stakeholders and the third the priority of the item in the corresponding quadrant.

The company defined thirty-three material topics distributed in eight groups in 2017; forty material topics distributed in six groups in 2018; and thirty-four material topics distributed in nine groups in 2019 (Figure 4). Although the number of material topics and groups during 2019 is very similar to 2017, the difference lies in the focus of the topics distributed in their top three priority groups. In order to carry out this targeting, the company expanded its MM from 3×3 to a 4×4 matrix in 2019.

When comparing the MM between 2017 and 2019, the trend of the materiality process was to focus on the most relevant material issues, observing, during 2019, in the first three priority groups, the four material topics most relevant to the company (Table 1).

Table 1. VCT Number of material themes between 2017 and 2019, in the first three groups.

Material Themes in MM	2017	2018	2019
First prioritisation	6	2	1
Second prioritisation	8	13	2
Third prioritisation	1	6	1

During 2019, only four material topics (water management, mitigation and adaptation to climate change, employee wellbeing, and waste management and recycling) were concentrated in the three highest priority groups. On the other hand, in 2017, there were sixteen material topics in the top three priority groups, and in 2018, there were twenty-one. Figure 5 shows that water management represents VCT's number one priority. The company's highest priority issue on sustainability is water management (Figure 5). The table also shows that the highest priority area contained seven material topics in 2017, two topics in 2018 and only one in 2019, showing a focused strategy on water management. The changes made by the company between 2017 and 2019, in terms of prioritising of material issues, generated a targeting of VCT priorities.

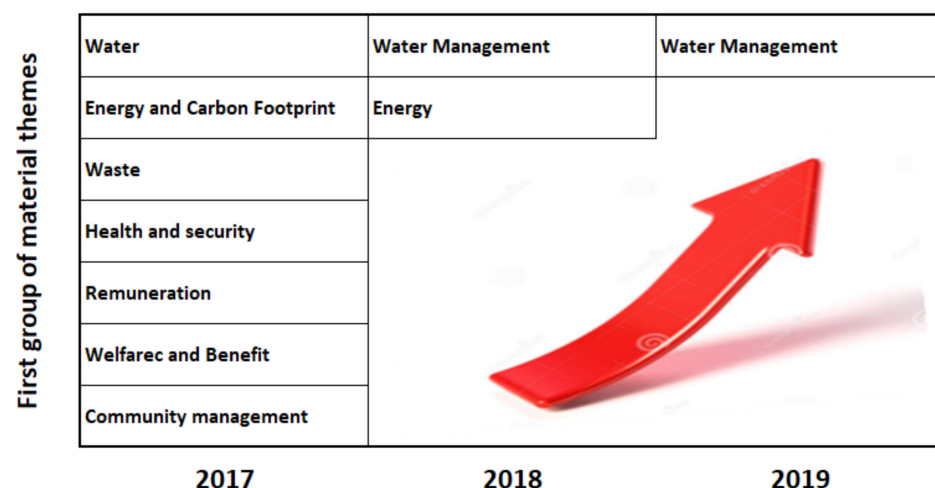


Figure 5. VCT material themes, prioritisation of first group tendency.

4.3. VCT SBM Elements

We defined the elements of the company's sustainable business model as those elements that are measured by the company in the main elements reported by VCT in each pillar of its sustainability strategy. The main elements reported by the company in each pillar in its annual sustainability reports were considered by this study as elements of the VCT SBM. In Figure 6, we show the VCT SBM elements between 2017 and 2019.

	2017 Pillars & Elements	2018 Pillars & Elements	2019 Pillar & Elements
	Environment Pillar 2017	Enviromental Pillar 2018	Enviromental Pillar 2019
Elements	Water	Water	Water
	Energy	Energy	Energy
	Biodiversity	Biodiversity	Biodiversity
	Waste	Waste	Circular Economy
	Climate change	Climate change	Climate change
	Supply Chain Pillar 2017	Supply Chain Pillar 2018	Supply Chain Pillar 2019
Elements	Responsible Supply Chain	Responsible Supply Chain	Responsible sourcing
	Carbon Footprint	Sustainability Index	Sustainability index
	Packaging	Sustainable packaging	Sustainable packaging
		Packaging carbon footprint	Packaging carbon footprint
	Product Pillar 2017	Product Pillar 2018	Product Pillar 2019
Elements	Innovation	Innovation	Innovation
	Quality	Quality	Quality
	Sustainable atributes	Sustainable attributes	Sustainable attributes
	Responsible drinking	Responsible drinking	Responsible drinking
	Customers Pillar 2017	Customers Pillar 2018	Customers Pillar 2019
Elements	Efficiency in logistics costs	Efficiency in logistics costs	Efficiency in logistics costs
	Efficiency in CO2 emissions	Efficiency in CO2 emissions	Efficiency in CO2 emissions
	Integral customers	Integral customers	Integral customers
	People Pillar 2017	People Pillar 2018	People Pillar 2019
Elements	Career development	Career development	Career development
	Engagement	Engagement	Engagement
	Knowledge center	Knowledge center	Training
	Ethical management	Ethical management	Ethical management
	Society Pillar 2017	Society Pillar 2018	Society Pillar 2019
Elements	Productive alliances	Productive alliances	Productive alliances
	Extension for grape growers	Extension for growers	Extension for growers
	Communities	Communities	Communities
	Education	Education	Education
		Entrepreneurship	Entrepreneurship

Figure 6. The VCT Sustainable Business Model (SBM) elements for the period 2017–2019.

The evolution of the elements of each sustainability pillar of the company between 2017 and 2019 are analysed and outlined below:

- In the Environment Pillar the evolution of its elements is related to the incorporation of the element of circular economy. The “waste” element was replaced by the “circular economy” element. The Environment Pillar elements that remain in 2019 are: water, energy, biodiversity and climate change.
- In the Supply Chain Pillar, the evolution of its elements is related to: first, the replacement of the elements “Carbon Footprint” by “Sustainability Index” and “Packaging” by “Sustainable packaging”, both changes were made by the company in 2018. Second, the incorporation of a new element called “Packaging carbon footprint”, a change made in 2018 and third, the Responsible Supply Chain element was replaced by the Responsible Sourcing element.
- In the Product Pillar, there are no changes related to its elements during the period, the elements are the following: innovation, quality, sustainable attributes, and responsible drinking.

- In the Customers Pillar, there are no changes related to its elements during the period. In the 2017–2019 period, the elements are the following: efficiency in logistics costs, efficiency in CO₂ emissions and integral customers.
- In the People Pillar, the evolution of its elements is related to the replacement of the element “Knowledge Center” by “Training” in 2019. The elements of the People Pillar that remain unchanged in the period 2017–2019 are the following: career development, engagement and ethical management.
- In the Society Pillar, the evolution of its elements is related to the incorporation of a new element, called “Entrepreneurship”. The elements of the Society Pillar that remain unchanged in the period 2017–2019 are the following: productive alliances, extension for grape growers, communities and education (training).

4.4. Developing the Environmental and Social Canvas Layers for VCT

Using the elements of the VCT SBM 2019 described above, we developed the ‘environmental life cycle’ and the ‘social stakeholder’ layers of the TLBMC, as can be seen in Figures 7 and 8. The criteria and method used was to relate the elements of the VCT SBM with the framework in the form of the TLBMC developed by Joyce and Paquin [3]. We developed only the environmental and social layers of the canvas, as the elements of the VCT SBM are concentrated on these two topics.










<p>Supplies and Outsourcing </p> <p>Water: Goal 2020: ~10% Water Footprint. Progress 100%. SDG 6.4 agenda 2030: Substantially increase water-use efficiency .</p> <p>Energy: Goal 2020: 100% Renewable Supply. Progress: 80%. SDG 7.2 agenda 2030: Increase the share of renewable energy in the global energy mix.</p>	<p>Production </p> <p>Quality: Goal 2020: 100% Unified Quality Strategy Implementation. Progress: 66%. SDG 9.4 agenda 2030: Promote the adoption of clean technologies.</p>	<p>Functional Value </p> <p>The functional unit of VCT are the 266,791 thousand liters of wine produced on 2019 and the functional value is the total of these liters consumed by customers.</p>	<p>End-of-Life </p> <p>Sustainable packaging: Goal 2020: 100% of premium portfolio using lightweight bottles. Progress: 86%. SDG 12.2 agenda 2030: Decrease raw material / product. Circular Economy: Goal 2020: 100% Waste avoiding landfills. Progress: 97%. SDG 12.5 agenda 2030: Reduce the generation of waste.</p>	<p>Use Phase </p> <p>Packaging carbon footprint: Goal 2020: 15% Reduction per bottle. Progress: 146%. SDG 9.4 agenda 2030: Decrease CO₂ emissions per unit of value added.</p>
<p>Environmental Impacts </p> <p>Efficiency of CO₂ emissions: Goal 2020: 15% Reduction per bottle. Progress: 87%. SDG 9.4 agenda 2030: Promote the adoption of clean technologies</p>		<p>Environmental Benefits </p> <p>Biodiversity: Goal 2020: 100% Native Forest with conservation alternatives. Progress 75%. SDG 15.1 agenda 2030: Ensure the conservation of ecosystems</p> <p>Climate Change: Goal 2020: 30% Reduction in scope 1 and 2 carbon emissions. Progress 90%. SDG 13.2 agenda 2030: Incorporate measures relating to climate change .</p>		
<p>Materials </p> <p>Sustainability Index: Goal 2020: 100% Suppliers with sustainability assessment. Progress: 50%. SDG 12.2 agenda 2030: Decrease raw material / product.</p>		<p>Distribution </p> <p>Efficiency in logistics costs: Goal 2020: 19.5 \$/litre. Progress: 102%. SDG 8.2 agenda 2030: Improve productivity through innovation.</p>		

Figure 7. The environmental life cycle layer of the Triple Layered Business Model Canvas (TLBMC), 2019 VCT.

The TLBMC built for this case study, specifically the ‘environmental life cycle’ layer and the ‘social stakeholder’ layer of the TLBMC, allows us: first, to identify and establish a comprehensive vision of the elements of the company’s sustainable business model; second, to specify the actions carried out by the company in terms of social and environmental sustainability; third, to have a holistic vision of the company’s SBM showing the different types of value creation, in terms of both social and environmental sustainability; and fourth, to enable the integration of the different types of value creation, in terms of both social and environmental sustainability. Seeing how the overlaid SBM elements from the different strategic sustainability pillars defined by VCT match the different components

of the SBM canvas’ environmental and social layers, provided for useful and interesting insights directly aligned with our research objectives.








<p>Local Communities</p>  <p>Responsible sourcing: Goal 2020: Key suppliers meeting the Corporate Ethics Standard. Progress: 75%. SDG 8.8 agenda 2030: Protect labor rights and safe work environment.</p> <p>Extension for Growers: Goal 2020: 100% Of participants with positive impacts on knowledge. Progress: 75%. SDG 8 agenda 2030: Promote training policies.</p>	<p>Governance</p>  <p>Ethical Management: Goal 2020: 100% Facilities under ethics certification systems. Progress: 90%. SDG 8.8 agenda 2030: Protect labor rights and safe work environment.</p> <p>Integral Customers: Goal 2020: 100% Of customers complying with the Corporate Ethical Standard. Progress: 75%. SDG 8.8 agenda 2030: Protect labor rights and safe work environment.</p>	<p>Social Value</p>  <p>Communities: Goal 2020: 4 Social programs. Progress: 75%. SDG 9 agenda 2030: Develop infrastructure for people’s wellbeing.</p> <p>Entrepreneurship: Goal 2020: Business Accelerator operating in the company. Progress: 66%. SDG 8 and 17 agenda 2030: Improve productivity through innovation and Promote the establishment of effective alliances.</p>	<p>Societal Culture</p>  <p>Sustainable Attributes: Goal 2020: 100% Brands with identified attributes and implemented campaigns. Progress: 75%. SDG 12.8 agenda 2030: Promote the access to information on sustainability.</p>	<p>End-User</p>  <p>Innovation: Goal 2020: 3 New product categories. Progress: 100%. SDG 8.2 agenda 2030: Improve productivity through innovation.</p>
<p>Social Impacts</p>  <p>Responsible Drinking: Goal 2020: 100% Campaign implemented in 4 phases. Progress: 75%. SDG 3.5 & 12.6 agenda 2030: Strengthen the prevention of harmful alcohol consumption and Adopt sustainable practices and incorporate information about sustainability.</p>	<p>Social Benefits</p>  <p>Education: Goal 2020: 100% Of graduates in labor market. Progress: 100%. SDG 4 agenda 2030: Ensure access to formal education.</p>			

Figure 8. The social stakeholder layer of the TLBMC, 2019 VCT.

4.5. Aligning the MM with the TLBMC and the SBM Archetypes

To test our research proposition, we relate the elements of the 2019 VCT SBM (that were previously matched with, and consolidated in the TLBMC) with the material issues defined in VCT’s 2019 MM. We do this in order to visualise how the company responds and adjusts its business model in relation to the sustainability issues included in the MM developed—consolidating and considering the importance of the material issues defined by both the stakeholders and VCT (Figure 9).

Figure 9 shows that all elements of the VCT TLBMC respond to the material issues identified in the company’s MM. In some cases, each element of the SBM responds to more than one of the material issues identified. In the ‘environmental life cycle’ and ‘social stakeholder’ layers of the triple layered business model canvas, it is possible to observe the case organisation’s progress towards the achievement of the goals related to each element of its SBM (Figures 7 and 8).

The goals linked to the four more relevant material issues and its level of achievement are the following:

- Water management: 10% reduction of water footprint (100%);
- Mitigation and adaptation to climate change: 30% reduction in scope 1 and 2 (90%);
- Employee wellbeing: 100% departments with career plans (50%);
- Waste management and recycling: 100% waste avoiding landfills (97%).

Finally, we link each of the material issues included in VCT’s MM with the SBM archetypes (Figure 9). Out of the eight SBM archetypes, all the material issues included in the MM are related to four of them:

- Technological—maximise material and energy efficiency;
- Technological—substitute with renewables and natural processes;

- Social—adopt a stewardship role;
- Technological—create value from waste.

SBM Archetype (Outside-in approach)	2019 VCT MM material themes (relevance for VCT & Stakeholders)	2019 VCT MM material theme priority group	2018 VCT MM material theme priority group	2017 VCT MM material theme priority group	VCT Strategic Pillar	2019 VCT SBM Elements	SBM Canvas Layer (Inside-out approach)
Technological - Maximise material and energy efficiency	4.4 Water Management	1	1	1	Environmental	Water	Environmental - Supplies and outsourcing
Technological - Substitute with renewables and natural processes	4.3.02 Mitigation and Adaptation to Climate Change	2	2	2	Environmental	Climate Change	Environmental - Environmental benefits
Social - Adopt a stewardship role	4.3.01 Employees well-being & 3.3.01 Health and Safety	2	2	1	People	Career Development	Social - Employees
Technological - Create value from waste	3.4.01 Waste Management and Recycling	3	2	1	Environmental	Circular Economy	Environmental - End of life
Technological - Substitute with renewables and natural processes	3.3.13 Energy (efficiency and use of renewable energy)	4	2	1	Environmental	Energy	Environmental - Supplies and outsourcing
Technological - Substitute with renewables and natural processes	3.3.12 Commitment to Sustainability	4	2	8	Supply Chain	Sustainability index	Economic - Value proposition
Social - Adopt a stewardship role	3.3.11 Biodiversity and Soil Care	4	5	2	Environmental	Biodiversity	Environmental - Environmental benefits
Social - Adopt a stewardship role	3.3.10 Human Rights & 3.2.03 Risk Management & 3.3.07 Legal Compliance & 3.3.05 Ethics and Anti-corruption & 2.2.03 Information Security	4	2	2	People	Ethical Management	Social - Governance
Social - Adopt a stewardship role	3.3.09 Human Capital Development	4	3	5	People	Career Development	Social - Employees
Social - Adopt a stewardship role	3.3.08 Diversity and Equal Opportunities	4	4	5	Society	Education	Social - Social benefits
Social - Adopt a stewardship role	3.3.06 Responsible Sourcing	4	5	5	Supply Chain	Responsible sourcing	Economic - Resources
Technological - Maximise material and energy efficiency	3.3.04 Innovation, Research and New Technologies & 2.3.03 Innovation and New Products	4	2	2	Product	Innovation	Economic - Activities
Social - Adopt a stewardship role	3.3.03 Support for Local Development	4	5	-	Society	Entrepreneurship	Social - Social value
Social - Adopt a stewardship role	3.3.02 Promotion of Sustainability in the Supply Chain	4	2	-	Supply Chain	Packaging carbon footprint	Economic - Partners
Social - Adopt a stewardship role	3.2.06 Supply Management (grapes and materials)	5	4	6	Society	Extension for Growers	Social - Local communities
Social - Adopt a stewardship role	3.2.05 Product Quality and Safety Management & 3.2.02 Corporate Strategy	5	3	-	Product	Quality	Economic - Value proposition
Social - Adopt a stewardship role	3.2.04 Internal Culture	5	4	-	People	Training	Social - Employees
Social - Adopt a stewardship role	3.2.01 Excellence in Operations	5	4	-	Customers	Efficiency of CO2 Emissions	Economic - Activities
Social - Adopt a stewardship role	2.3.02 Customer Satisfaction	6	4	6	Supply Chain	Sustainable packaging	Economic - Customer relationship
Social - Adopt a stewardship role	2.3.01 Marketing and Responsible Drinking	6	4	5	Product	Responsible Drinking	Social - Social impacts
Social - Adopt a stewardship role	2.2.05 Profitability and Economic Indicators Economic Performance	7	5	5	Product	Sustainable attributes	Economic - Revenues & Costs
Social - Adopt a stewardship role	2.2.04 Awards, Recognitions and Strategic Alliances & 2.1.02 Origins and Portfolio (Family of Wineries)	7	6	-	Society	Productive Alliances	Social - Scale of outreach
Technological - Substitute with renewables and natural processes	2.2.02 Certifications	7	5	-	Product	Sustainable Attributes	Economic - Resources
Social - Adopt a stewardship role	2.2.01 Transparency and Customer Information	7	4	6	Customers	Integral Customers	Economic - Customer relationship
Technological - Maximise material and energy efficiency	2.1.1 Efficiency in Distribution	8	4	-	Customers	Efficiency in logistics costs	Economic - Channels
Social - Adopt a stewardship role	1.2.01 Social Initiatives and Volunteering	9	5	-	Society	Communities	Social - Social value

Figure 9. The 2019 VCT MM linked to SBM canvas elements and SBM archetypes.

Interestingly, the four most relevant material issues are linked to these four SBM archetypes.

As shown in Figure 9, the MM is useful to, both, understand how the company creates value for stakeholders as shown in the TLBMC; as well as, to identify the SBM archetype that may contribute to building up the business model for sustainability. These ensuing results support our research proposition.

These empirical findings were consolidated and supplemented by complementary insights garnered by means of interviews with VCT's deputy Sustainability Manager, seeking support for the aligned SBM archetypes we identify for VCT. After understanding the different SBM archetypes, the deputy Sustainability Manager stated that there is no single SBM archetype that identifies VCT, but there are four that best encompass VCT's

strategy, and also provided us with the rationale for that statement (using the methodology developed by Bocken et al. [2] we provided). The four SBM archetypes the manager identified for VCT, and the rationale provided for each respective choice, is shown below:

1. SBM archetype 1: maximise material and energy efficiency:
 - a. Value proposition: packaging reduction; introduction of a light bottle with 13% less weight and therefore a reduction in the generation of waste and reduction of emissions in transportation and processing.
 - b. Value creation and delivery: VCT worked with Cristalerías de Chile for the development of the new light bottle, the eco-glass format, which became a standard for the Chilean wine industry.
 - c. Value capture: the light bottle provided for cost savings related to the main input of VCT's operations.
2. SBM archetype 2: create value from 'waste':
 - a. Value proposition: currently 98% of waste is recycled, reused or recovered. Organic waste is used to generate compost that is applied again to the earth due to its high organic content, which helps to increase the health and productivity of the soils. VCT is moving towards 100% of waste destined for recycling, reuse or recovery.
 - b. Value creation and delivery: VCT has different alliances for each type of waste to be recovered.
 - c. Value capture: through its circular economy initiatives VCT generates savings for transport and disposal of waste, and the sale of waste. For waste that is generated on a smaller scale, alternatives for use are sought.
3. SBM archetype 3: substitute with renewable and natural processes:
 - a. Value proposition: VCT has Initiatives to incorporate renewable energy. The company is moving towards a 100% renewable energy supply in all its facilities.
 - b. Value creation and delivery: in order to communicate this attribute to its consumers, VCT generated a joint project with CRS (Centre for Resource Solutions) to bring to Chile the Green-e renewable energy certification standard, which enables the use of a seal on the product to promote and communicate recognition the said attribute.
 - c. Value capture: the use of renewable energies has meant lower energy costs and a reduced carbon footprint. Through product labelling, VCT communicates this directly to consumers in the most receptive markets—emphasising the sustainable attributes of its products.
4. SBM archetype 4: adopt a stewardship role:
 - a. Value proposition: application of ethical standards in the supply chain, through VCT's established responsible sourcing program.
 - b. Value creation and delivery: through VCT certification of the Sustainability Code of Wines of Chile (Vinos de Chile), environmental and social aspects are worked upon through collaboration with grape suppliers, focusing on agricultural practices.
 - c. Value capture: through supply chain programs, VCT has achieved and enjoys suppliers' loyalty. There are different types of programs depending on the provider segment. Supply chain programs are in place to enhance and advance suppliers' quality, productivity, and sustainability. This generates, promotes and fosters suppliers that operate in a coordinated manner with the organisation, improving sustainability and response rates.

It is interesting to note that the self-perception of VCT regarding the four SBM archetypes coincides with the same four SBM archetypes that—based on our analysis—we linked with the material issues included in the MM. This confirms that the linkage

we established is aligned and appropriate, confirming the approach we propose and the usefulness of the MM in this endeavour.

From joint analysis we observed the following: first, the VCT SBM answers the “what and how value is created” questions from the sustainable business model theory perspective in the company, in an inside-out approach (Figures 7 and 8). Second, the VCT SBM also answers the “with and for whom the value is created” questions from the stakeholder theory perspective (Figure 9—because each of the SBM elements in the canvas are related to the material issues included in the MM). Third, water management represents the number one sustainability priority of the company (Figure 5), while the top four priorities are complemented in 2019 with two more environmental issues (mitigation and adaptation to climate change, and waste management); and a social issue (employee wellbeing)—as we indicated in Figure 4. Fourth, the material issues included in the MM are all linked to a different SBM archetype, and these archetypes are also linked to environmental and social topics, from an outside-in approach (Figure 9). Finally, the stakeholders’ requirements in a sustainable agri-food supply chain as stated by Dania et al. [57] are related to environmental and social topics which are met by VCT, with the exception of the issue related to “easier access to financial and non-financial support”, which is not explicitly specified in the company’s sustainability reports.

5. Discussion and Conclusions

Previous studies have developed methodologies and solutions to help companies transform their business model into a more sustainable one, as is the case of the SBM archetypes [2] and the TLBMC [3]; but none of these studies explored how the materiality matrix could be a tool to help companies advance towards a sustainable business model. Our study is motivated by increasing expectations and the urgent need for companies to transform their business by introducing innovation to their business models in order to conduct business in a more sustainable way—seeking maximisation not only of financial and economic value, but also social and environmental value. Drawing from stakeholder theory, this study’s research objective is to understand the role that the material issues identified in a company’s MM play in identifying its SBM archetype and its value creation process as proposed by the TLBMC.

To test and establish support for this study’s research proposition, we use an in-depth case study focused on Viña Concha y Toro, a world leading winery based in Chile. VCT conduct business in the agri-food industry, a sector of interest as these companies need to play a significant role in the 2030 Agenda since they are directly linked to SDG 12—‘Responsible consumption and production’, and SDG 2—‘Zero hunger’.

This paper provides an approach, through the use of the MM, for linking the theoretical concept of the SBM archetype that aligns and refers to business model innovation, to the SBM elements represented in a TLBMC. Based on our results, we conclude that the MM has the potential to help companies identify the SBM archetype relevant to transform their traditional business model into a more holistically sustainable business model; and to also better enable an understanding of the dynamics that create triple bottom line impact on their stakeholders. This study proposes a tool that companies can use to transform their business model, and to advance toward more comprehensive strategic and operational sustainability using information from the MM they typically construct during their sustainability report preparation process.

We contribute to the SBM literature as we show how the MM, conceived by a multidimensional expression of materiality, relates to the SBM archetypes developed by Bocken et al. [2], and the TLBMC developed by Joyce and Paquin [3]. This also underlies the contribution of our study to stakeholder theory, showing the potential that stakeholders have—through the identification of material issues—to transform the firm’s business model into one of sustainability. This study is novel in linking these three concepts to propose a useful tool for companies to advance in their sustainability journey. A strength of the methodology employed in this study is that based on content analysis, in that we gather

the audited and documented information required to develop the basis of this research, and we in turn additionally validate and confirm our observations with complementary rich insights from in-depth interviewing with the senior sustainability management of Viña Concha y Toro, a recognised world leader in sustainability, ranked in the 2020 Dow Jones Sustainability Index.

Firms can use the approach we propose with the MM to understand how their stakeholders' view of material issues in the environmental, social and economic/governance perspectives influence both their value creation process, and the triple bottom line impact on stakeholders through shaping and informing their SBM elements. This will help companies to incorporate in their current business models the sustainability issues that progressively matter most to their stakeholders over time—and hence, enhance their clarity of vision and alignment in turning their business models into more comprehensively sustainable ones. This is an internal transformation of the current business model elements produced by the stakeholders' influence. Additionally, we propose to use the MM to identify the more suitable SBM archetypes, or a combination of SBM archetypes, that will allow the company to explore the potential impacts of innovating towards different types of business models. Hence, we identify the MM as the gateway for companies to innovate and develop a business model that allows them to deliver sustainable value to their stakeholders.

Additionally, and in consolidation, the purpose of understanding the role that the MM plays in shaping the SBM elements of the company and SBM archetypes, is also particularly relevant in current times, where new players expect to enter into the sustainability standards issuers' arena. This, more specifically given the International Financial Reporting Standards (IFRS) foundation's proposal seeking to impose a (simplified) single view of materiality more closely linked to the financial materiality view—in contrast to the multidimensional definition of materiality proposed by the GRI framework. In this regard, this study furthermore shows the enhanced relevance that the multidimensional definition of materiality represented in a MM has in: shaping the dynamics of a SBM from an outside-in approach; establishing association with the SBM archetypes developed by Bocken et al. [2]; and from an inside-out approach, articulating the value created, as in the TLBMC developed by Joyce and Paquin [3]. The simplified view of materiality, focused on the enterprise value creation process to shareholders, is a step back in the study of SBM from the holistic approach provided by the multidimensional view of materiality, which focuses on the organization's significant impact on the triple bottom line to a wider range of stakeholders [69].

That said, there are potential limitations to this proposed use of the MM. Firstly, the linkage of the material themes to the SBM elements in the canvas, and to the SBM archetypes is reflective, based on the current business model canvas and SBM archetypes. This analysis should be revisited periodically to identify new synergies. Secondly, the industry sector should be considered when using the MM for this purpose, as the SBM archetypes are related to different groups of business model innovations (technological, social and organisational), and each of them may be more suited to specific industries. Our research is based on a case study in the winery industry, other industries could pose different complexities.

Our study is timely as the issuers of sustainability standards and metrics are entering into a process of mergers, and in this regard new players will as expected emerge. The concept of materiality is one of the most relevant to be considered by companies when issuing a sustainability report, and we show that its multidimensional definition perspective should prevail due to its comprehensive nature and potential to promote business model innovation. Our findings and results create a straightforward methodology for companies to use in order to incorporate innovation and transform their business models towards sustainability. It helps sustainability standards issuers and financial reporting standards issuers to understand the link between materiality and the value creation process; as well as the triple bottom line impact on strategic operations through the dynamics in the SBM.

Our study provides a tool that the leading firm of a value chain can use to coordinate and require other members of the value chain to apply, with the purpose of identifying collaboration opportunities to align and comprehensively strengthen the sustainability of the value chain, by finding and establishing mutually reinforcing complementarities. This study also opens avenues for future research as we need to better understand how the multidimensional concept of materiality impacts the quantified figures of financial statements as a result of the dynamics in the company's value creation process—and more specifically, how these dynamics generate triple bottom line impact on stakeholders.

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