Risks and opportunities of digitalisation in pharmaceutical ecosystems: A SWOT analysis approach

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INTRODUCTION

The pharmaceutical industry (PI) is undergoing rapid digital transformation, integrating artificial intelligence (AI), robotisation, and electronic prescribing systems to enhance efficiency, reduce errors, and improve patient care. The process of digitalisation poses challenges, with cybersecurity being a significant concern. Digitalisation presents a clear chance to achieve a competitive edge in the pharmaceutical sector, offering efficiency and cost-effectiveness in areas such as community pharmacies and manufacturing.[1]

AIM

To identify the risks and opportunities of pharma digitalisation ecosystems.

METHOD

Phase I
A SWOT analysis through interviews with 30 stakeholders; physicians, pharmacists in patient care settings, quality assurance officers from pharmaceutical companies, regulatory affairs officers and medicine procurement officers was undertaken.

Phase II
A focus group comprising of 5 stakeholders, one from each field, was set-up to quantify risks on a 5x5 risk matrix, considering the probability of event occurrence and severity of consequences. A Likert scale from 1 to 5 was used to calculate a risk prioritisation number (RPN) which is the product of Probability and Severity.

RESULTS

Thirty stakeholders; 6 physicians, 6 pharmacists in patient care settings, 6 quality assurance officers from pharmaceutical companies, 6 regulatory affairs officers and 6 medicine procurement officers participated in a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis through interviews. Figure 1 represents the key strengths, weaknesses, opportunities and threats as identified through interviews with 30 different stakeholders. A total of 15 weaknesses and threats were chosen to be quantified during a focus group.

S
- Environmental Benefit (n=30)
- Communication and Information (n=28)
- Increased Patient Benefit (n=28)
- Improved Workflow and Efficiency (n=22)

W
- Investment (n=22)
- Time consuming / staff training (n=20)
- System suitability and Adaptability (n=16)
- Maintenance (n=16)

O
- Artificial Intelligence (n=17)
- E-prescriptions (n=16)
- Centralised system (n=16)
- Stock Management system (n=14)

T
- Cybercrime (n=27)
- Data Losses and Integrity (n=25)
- Power and Connection issues (n=21)
- Higher risk of abuse (n=15)

Figure 1: Key findings from the strengths, weaknesses, opportunities and threats analysis.

Following the focus group, the threat with the highest average RPN score (13.8) was related to cybersecurity, followed by regulatory challenges (11.6). (Figure 2)

The threat with the lowest average RPN score is related to the need for human intervention, having an average score of 6.0

For the 3 threats with the highest RPN, risk mitigation strategies were proposed. Five stakeholders suggested a higher investment towards upgrading IT hardware and software to mitigate cybersecurity risks.

Threat	RPN value
Cybersecurity	13.8
Regulatory Challenges	11.6
Time and Training	11.4
Maintenance	10.8
Risk of Abuse	9.6
Power and Connection	9.4

Figure 2: Major threats of pharma digitalisation

CONCLUSION

Digitalisation presents both strengths and challenges in the pharma. While enhancing efficiency and accuracy, issues such as cybersecurity risks, high costs and workforce adaptation require interventions. Future research should focus on further solutions or risk mitigation strategies.

REFERENCE

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