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Synopsis on

Identifying Critical Success Factors for the Health-tech Startups: An empirical study in India & Australia

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1. Introduction

In the last few decades, many transformations have been seen in different aspects of human activities due to technological innovations. These technological developments are making significant changes in the healthcare domain, especially the growth of information and communication technology (ICT) has impacted health service delivery in many ways. For instance, it has replaced face-to-face consultation with virtual consultation, manual health records with electronic health records, and so on. Many actors are playing a role in the healthcare transformation, such as clinicians, technologists, governments, and multinational companies (Awade & Hamlyn, 2013; Tavares, 2018). Multinational companies have brought ground-breaking solutions using technological transformations. For example, IBM has been developing medical software to create comprehensive patient data records since 1960 (Duangnet, 2010). Microsoft has built AI-powered virtual assistance, chatbot, and cloud data-sharing tool for the healthcare system. Likewise, Google uses AI to help in cancer diagnosis, predict disease outcomes, and provide tools for better healthcare services (Diez, 2012).

Additionally, a distinctive type of small firm is also making essential contributions to this transformation. Such companies are called Health-tech startups. Basically, Health-tech startups are young companies established by one or more entrepreneurs to build up remarkable products or services and bring them to the healthcare market. These emerging companies are nimble, risky, and continuously dealing with issues to address the gaps in the healthcare systems. Nevertheless, the nature of health-tech startups is different; they are initiated with uncertainty in a very competitive environment and bring unique solutions to contribute to the health field (Muhos et al., 2019).

These emerging firms have been contributing to sophisticated medical inventions and remedies, bridging the gap between the physician community and the patients, trying to reach under-served markets, and aiming to reduce healthcare service delivery costs. However, In the healthcare system, health-tech startups have been facing a lot of challenges, for instance, investment in infrastructure development, building consumer trust to attract the consumers for adopting to the startup's product or services, difficulty in coaxing clinicians to join the venture, security and privacy issues and many more (Wass & Vimarlund, 2016).

However, developed and developing nations tackle such hurdles using technology-based solutions; one such solution is telehealth. In developed countries, the sources of these solutions can be private businesses and Government or non-profit organizations. However, most of the solutions in developing countries come from private businesses, especially startups.

Alternatively, it has been seen that the size of the global health-tech market has been rising sharply for the past few years. The global health-tech market is proliferating and envisions reaching $639.4 billion by 2026 from $106 billion in 2019. It is predicted that the compound average growth rate (CAGR) of the global health-tech market will be 28.5% during the forecast period (Adams, 2020).

Nevertheless, startups have a high failure rate in this growing health-tech market. It has been found that 98 out of 100 health-tech startups do not survive; they often loose steam and are considered nonprofitable (Rigg, 2022). It might be due to the lack of a creative business model and missing the go-to-market strategy and so forth. Thus, financial and economic losses have been observed in the long run. Hence, it is required to explore the phenomena and find out the health-tech startup's success factors to offer them some directions that pave the path to success.

2. Literature review

The literature review was done in three stages. Firstly, a total of 110 journals were scanned - Financial Times' top 50, top ten information systems journals (including the basket of eight and two from the special interest group based on impact factors), and the top 50 Scopus-indexed journals in the areas of health informatics and health information management. Only five studies portrayed the information of health-tech startups in health service delivery. Due to this reason, eight databases (Scopus, PubMed, Institute of Electrical and Electronics Engineers Xplore (IEEE Xplore), Web of Science, Embase, Medline, Cochrane Review, and PsycINFO) were screened, and 17 articles concerning the business model and framework were discovered. In this, only seven articles evaluated the model with startup cases. However, the contribution of startups was not depicted in those studies. Therefore, grey literature was investigated to comprehend the current startup's contributions to healthcare service delivery. However, the sources didn't speak about the contribution in detail. Contribution basically means the startup's resources, key

activities, revenue, cost structure, communication channel, customer segment, and relations. Open-access python code was used to identify the materials for the grey literature review.

From the overall analysis, a few gaps are identified:

- Limited evidence on the health-tech startups' business model: Cheng et al., (2013) described the eight telemedicine business venture models from existing healthcare organizations (and not from the startups). Sprenger & Mettler, (2016) presented the business model patterns considering two e-health services. They also reported that the design helped in a specific context, but its utility was limited.
- Critical Success Factors (CSF) for health-tech startups remain unclear from existing literature. So far, there is no CSF framework. Prag et al., (2016) denoted the CSF term in their study (for chronic disease management in a particular country's context). Still, the study neither represented the list of CSFs nor explained the CSF concept associated with the model.
- Limited studies talked about regulations, including the challenges faced by health-tech startups. Hwang & Christensen, (2018) reported the challenges (such as regulatory barriers, lack of retail market, and reimbursement). However, these challenges were reported from the healthcare organization's perspective, but there was no evidence from startups. Vannieuwenborg et al., (2017) represented the challenges- (unclear values of key actors, e-health value network complexity, technological barriers, and policy issues, including regulations) to bring e-care platforms into the healthcare market.
- Limited number of studies showed the consumer's behavior towards the service adoption but no evidence from startups. Hossain et al., (2019) reported consumers' positive outlook toward e-care services, with maximum acceptance from urban areas because of proper knowledge and availability of resources.

3. Methodology

Based on the literature gaps, this research was aimed

- To develop an operational definition of successful health-tech startups.
- To identify health-tech startups' critical success factors (CSFs).

- To explore the path relationships among the CSFs of health-tech startups for value creation in the target market.

The research investigation was performed in the context of a developing country India and a developed country Australia. Mixed-method approach was used for the data collection. It addressed the objective with in-depth qualitative information and strengthened it with quantitative data followed by statistical validation.

Semi-structured interviews assist in asking more open-ended questions that allow the interviewer to discuss the phenomena profoundly. This method allows interviewees to share their views about health-tech startups and healthcare service delivery. In contrast, a structured interview hinders this chance and binds the information limit within the prior set of questions. Hence, the semi-structured interview would help to procure in-depth information regarding the success factors for health-tech startups. Based on the interview findings, a conceptual framework was proposed, a quantitative survey was conducted, and finally, PLS-SEM was used to validate the framework.

The judgement sampling technique was used. An interview guideline was prepared before conducting the interviews with health-tech startup founders, such as the CEO, CTO, CFO, and COO who have more than ten years of domain experience. Twenty interviews were conducted with Indian health-tech startup founders, and 17 interviews with Australian health-tech startup founders. The interviews were recorded and stored in UQ RDM.

Interview recordings were transcribed into textual data files using Microsoft word transcribe features, and the coding was done using NVivo 12. Braun and Clarke's thematic analysis approach was used to code and identify the factors. Braun and Clark's thematic analysis technique was followed (Braun & Clarke, 2006). The technique has six steps: data familiarization, initial code generation, initial factor identification, revision of identified factors, defining the final factors, and finalizing the analysis. Final critical success factors emerged with several iterative interactions.

Inter-coder reliability test was performed to reduce the coding bias of the qualitative data analysis, where two different researchers agreed on how to code the same content. It's often used

in the content analysis that ensures the reliability of the coding. Here, it was estimated using Cohen's kappa.

Crisp set qualitative comparative analysis (csQCA) method was used to analyse those critical success factors corresponding to each startup considered in this study. csQCA determines which logical conclusions a data set supports. It helps to identify the different combinations of factors that are critical to getting the outcome. Therefore, this method provided the configurations of the coded CSFs from the qualitative data. The outcome assisted in the quantitative investigation.

In the semi-structured interviews, I asked the respondents about the success aspects: How to define the success of health-tech startups? What is success according to founders, clinicians, and investors' points of view? The thematic analysis approach was also used to understand the metrics of successful health-tech startups. The investigation enquired beyond this identification and tried to perceive the weightage of each component of the success metrics. Analytic Hierarchy Process (AHP) was performed using Microsoft excel to examine the weightage. AHP is a multiple-criteria decision-making technique developed by Thomas L. Saaty to make a decision on a complex problem where many components or criteria are present (Saaty, 2004). Researchers used AHP in various fields for decision-making, planning, selection, development, prioritizing, ranking, and performance measurement (Merhi, 2021). AHP was used to prioritize the components of the metric that successful startups contain.

Based on the interview insights, conceptual path relationships among critical success factors were proposed. Prior literature scanning did not show a suitable scale for the study. As literature remains scant to offer adequate scales to use directly as measurement indicators, measurement indicators were prepared with literature underpinning and interview comprehension. This part of the research aims to establish validated path relationships using a quantitative approach. The research did not engage in the scale development aspect to ensure the reliability and validity of the scale. Nevertheless, all necessary checks were performed and provided a robust pre-requisite for the selected statistical method.

The final questionnaire was arranged in two parts. The first part started with a brief introduction to the survey and provided questions on critical success factors of health-tech startups. The questions were constructed for each item with a five-point Likert-type scale ranging from 1

(strongly disagree) to 5 (strongly agree) to measure the agreement level. The measurement items were arranged in random order to eliminate the monotony of questions. The second part presented demographic details and participants' backgrounds. At the end of this part, respondents were asked for any open suggestions on the research topic and options to share their email ID if they would like to receive the survey report. This survey mode was entirely online.

Partial least square structural equation modelling (PLS-SEM) was used to analyse the quantitative data. The PLS-SEM was appropriate for this study as the method is suitable for predicting key target constructs, formative measurement indicators, the complex model with many constructs and indicators, a small sample size, and non-normally distributed data (Banihashemi et al., 2017). Smart PLS 3.3.9 tool was utilized to perform the PLS-SEM analysis.

In PLS-SEM, analysis encompasses two stages: initially, we test the measurement model where indicators assessment takes place, and then the structural model, which evaluates the significance of path relationships among the factors. At first, respondents' demographic characteristics were examined, followed by descriptive statistics of the data. Next, the measurement model was assessed to check the indicators' collinearity, significance, and relevance. Lastly, the analysis revealed the significance of path relationships, exogenous factors' effect on endogenous factors, and coefficients of determination to show the model's goodness.

4. Findings

4.1. Operational definition of successful health-tech startups

Besides, from the interview and in-depth literature review, I have formulated an operational definition to define the success of health-tech startups. Therefore, the proposed operational definition of a successful health-tech startup is an active company that has been in the business for three or more years and has one or more of the following characteristics- yearly increasing number of customers, repeat customers, number of jobs created, have raised funding within three years, generated some revenue and increase in profit every year, have some market share, and created a notable social impact.

The AHP analysis showed that generating revenue and making profits (23%) take the highest weightage among all the components. The number of repeat customers (22%) followed by the

total number of customers (17%) came next in the priority weights to indicate successful health-tech startups. Interview respondents highlighted the importance of early fundraising due to investors' interest generally pointing to successful startups. However, experts' input showed that this component has the least priority (6%) among others to present successful health-tech startups.

The obtained consistency ratio value was less than 0.10 for all the components corresponding to time alternatives, three years and five years. Higher weightage was found for most components within three years of the alternative. Only market share indicated high priority for five years. Cross multiplication of this weightage with the prior normalized weightage without time alternatives demonstrated that overall, within three years (67%) was the preferred alternative.

4.2. Critical success factors

Thirteen critical success factors have emerged. A description is given in Table 1 below.

Table 1. Description of critical success factors

CSF	**Description**
Funding strategy	Feasible financial plan of the startup to run the business over a period of time from the inception
Tech infrastructure	Adequate digital infrastructure, including emerging technologies (such as AI, blockchain technology, cloud computing, and so on) to provide the foundation for startups, and their operations for better-intended value proposition, including data privacy and security
Team proficiency	Team's knowledge, skills, and attributes, including the capacity to get experts' assistance for the startup's value creation using available resources
Exit strategy	Planning for the exit of an entrepreneur from his company to maximize the enterprise value of the company in a merger and acquisition transaction etc
Continuous advancement	Constant learning to improve or betterment of the offered values and to mitigate the risk and challenges, including the survival between the investment and return on investment
Product-market fit	A product or service that satisfies a strong market demand; in which a company's target customers are buying, using, and telling others about the company's product
Socio-economic good	Offered value of the startups should create social as well as economic impact (like mitigating the inequality in access to healthcare by reaching

CSF	Description
	underserved markets), including the mitigation of healthcare crises, such as a pandemic.
Revenue strategy	A clear strategy to generate income from delivering the intended products or services and get the investment's return or feasible plan for the profitability of the investment
Scalability	Viability of the business to increase in terms of size or scale and for profitable growth
Omnichannel Connection	An effective channel to reach end consumers by establishing last-mile connections using a combinational approach, such as online-offline presence, digital marketing, etc.
Ecosystem support	A suitable environment or marketplace where suppliers, distributors, customers, government agencies, and so on support in the development of products or services through competition and cooperation. Support includes transparent policy, industry footprint for better consumer trust, and genuine feedback from loyal customers.
Complementary Partnerships	A successful agreement with one or more parties to get specialized expertise, services, resources, and skills for a win-win situation
Networking activities	The ability to form new relationships with various stakeholders by attending incubation programs, conferences, summits, and trade fairs to expand the business by finding new customers, investors, and partners

Cohen's kappa value is 0.80, representing the nearly perfect agreement among the raters. The proportion of agreement between coders is 0.92, and the proportion of expected agreements by chance is 0.59. Therefore, factor coding has been considered sufficiently reliable based on the acceptable value of inter-coder reliability.

The csQCA result showed four configurations of factors for India's startups and five configurations for Australia's startups that lead to the outcome scalability. Funding strategy, technological infrastructure, team proficiency, product-market fit, and revenue strategy are present in all the configurations, so these five factors are necessary for scalability. From the context of necessary and sufficient, it can be stated that each of these five factors is necessary with other factors among all the configurations but not sufficient for the outcome because no single factor itself represents the outcome to be defined as a sufficient factor for the outcome. Another side, the remaining factors are neither necessary nor sufficient as individual factors. But the combination with other factors is important that can lead to the outcome. The csQCA result

has sufficient coverage and high consistency—higher values better the configuration of factors for the outcome.

4.3. Proposed critical success factors framework

The interview data analysis identified relationships among the critical success factors (Figure 1).

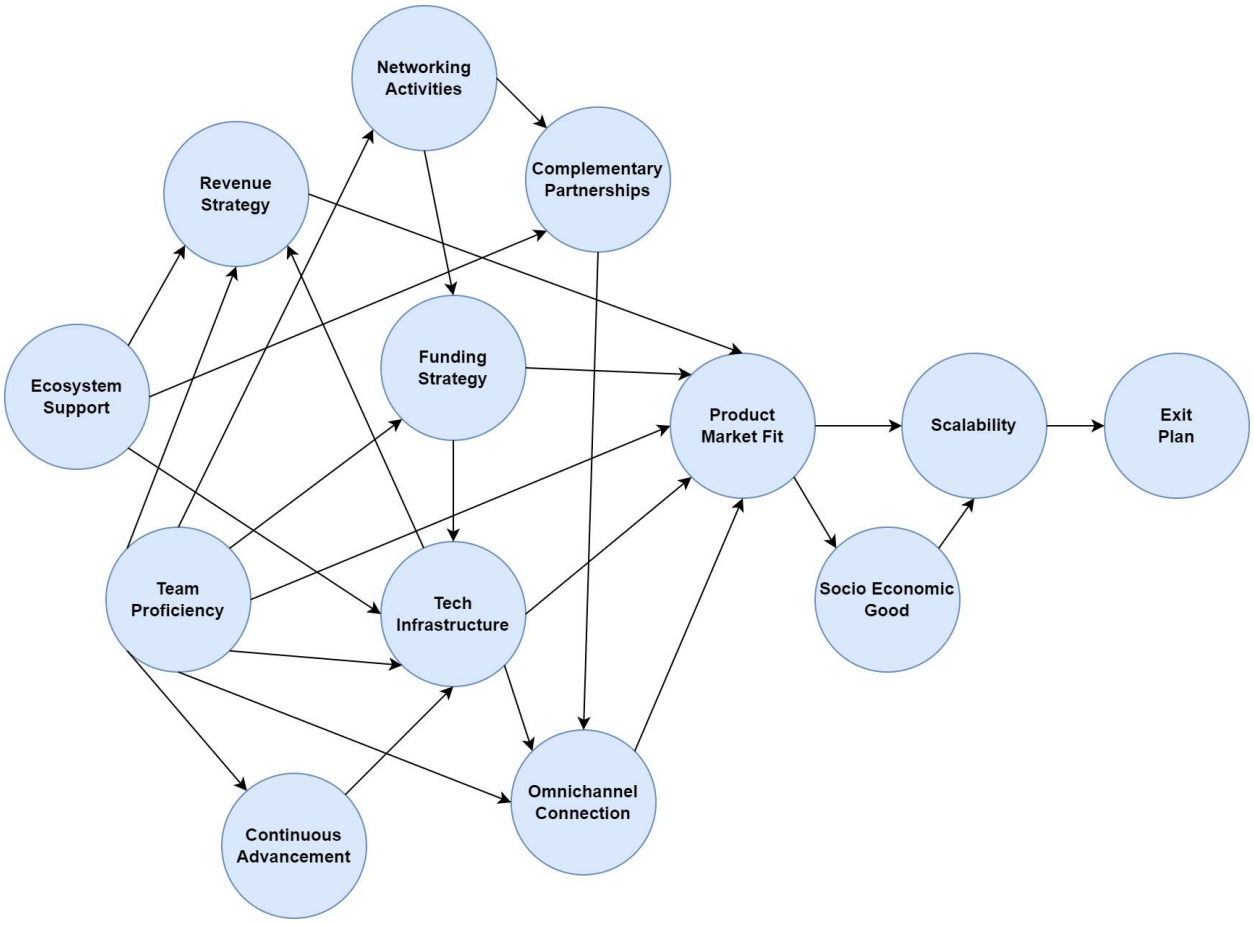

Figure 1. Proposed CSF framework

Health-tech Startup creates value for different stakeholders once their solutions fit the target market. The product-market fit eventually brought socio-economic impact, an essential value for customers and providers, including founders. Another side, product-market fit directs the health-tech startups toward scalability, which also comes from the socio-economic impact. In the long run, scalable health-tech startups are headed to investors' exit or other business acquisitions, including listing their business in the public market. Overall, it was found that value creation for different stakeholders through health-tech startups' product-market fit, social impact, and scalability, including strategic exit.

4.4. Model validation using PLS-SEM

Survey respondents were from different professional roles, such as entrepreneurs, founders, business executives, clinicians, academicians, policymakers, and engineers. Among the respondents, around 40 % were either health-tech startup entrepreneurs or founders, including c-suite executives. It was found that only 29% of the respondents were female, and a similar gender variation irrespective of the developing and developed country. More than half of the respondents were between 31 and 40 years old and had 6 to 10 years of healthcare industry experience.

The measurement model testing revealed the outer Variance Inflation Factor (VIF) to access the collinearity and outer weight and loading to examine the significance and relevance of the indicators. The outer VIF of all the measurement indicators was less than four. It infers no potential collinearity among the indicators, as a value of five or higher indicates collinearity issues.

Outer weights were examined, followed by the outer loadings of the indicators to ensure significance and relevance. Eleven measurement indicators' outer weight and loading were not significant ($p>0.05$). Therefore, these indicators were not considered for structural model testing. The conceptual understanding ensured that discarding these indicators would not affect the formative measurement constructs because factors can be represented entirely without these indicators. Factors characteristics were not compromised if the model had discarded non-significant indicators. Moreover, only a few respondents in semi-structured interviews mentioned the aspect of these indicators. Therefore, significant indicators were adequate to represent and measure the critical success factors. Another side, some of the indicator's outer weight was not significant, but their outer loading was significant, so they were retained in the model.

For Structural model evaluation, bootstrapping was performed, a nonparametric procedure that tests the statistical significance of various PLS-SEM results, such as path coefficients, f^2, and R^2 values. In bootstrapping, subsamples are randomly drawn (with replacement) from the original data set. A complete bias-corrected and accelerated (BCa) bootstrap was performed with 5000 subsamples to test the structural model. BCa is the most stable procedure and adjusts for biases

and skewness in the bootstrap distribution. The inner VIF values were below four. Therefore, no potential correlations were found among the critical success factors.

The coefficient of determination (R square) was checked to show the model's goodness. R square values were either substantial (>0.75) or moderate (>0.50) for the critical success factors. It infers that the model describes critical success factors significantly well. Similarly, f square value was examined to assess the effect of the exogenous factors on endogenous factors. Mainly medium and some large effects were observed on the factors. However, ecosystem support and funding strategy showed small effects on technology infrastructure and product-market fit.

It was observed that the three path relationships were non-significant out of 25 path coefficients (Figure 2). Team proficiency and funding strategy did not significantly affect the product-market fit. Similarly, ecosystem support did not reveal a significant effect on technological infrastructure. The possible reasons for the insignificant path relationships among critical success factors are argued in the following.

Tech infrastructure is the core of health-tech startups. The possible reason for the not significant effect of ecosystem support on technology infrastructure might be the competitive advantage and protection of technological solutions. A health-tech startup has to build the in-house tech infrastructure to create value. The ecosystem can support the startups to get financial benefits and resources, including some directions through incubations (Schulte-Althoff et al., 2019). However, health-tech startups need to create and protect their solutions from the technological front to make an impact in the target market.

Funding strategy is indeed for operations from inception to every stage of a startup's journey. An adequate financial plan helps a startup to stay active in business and acquire resources for its offering. Nevertheless, developing a solution fulfilling the target market's need for which customers are willing to pay is not dependent on the funding process (Stevenson et al., 2022). Therefore, the findings suggest that a health-tech startup should facilitate and bring the funding fit in such a way that it should prevent the delay in the product development process and focus on shaping its customer-oriented solution for better market fit.

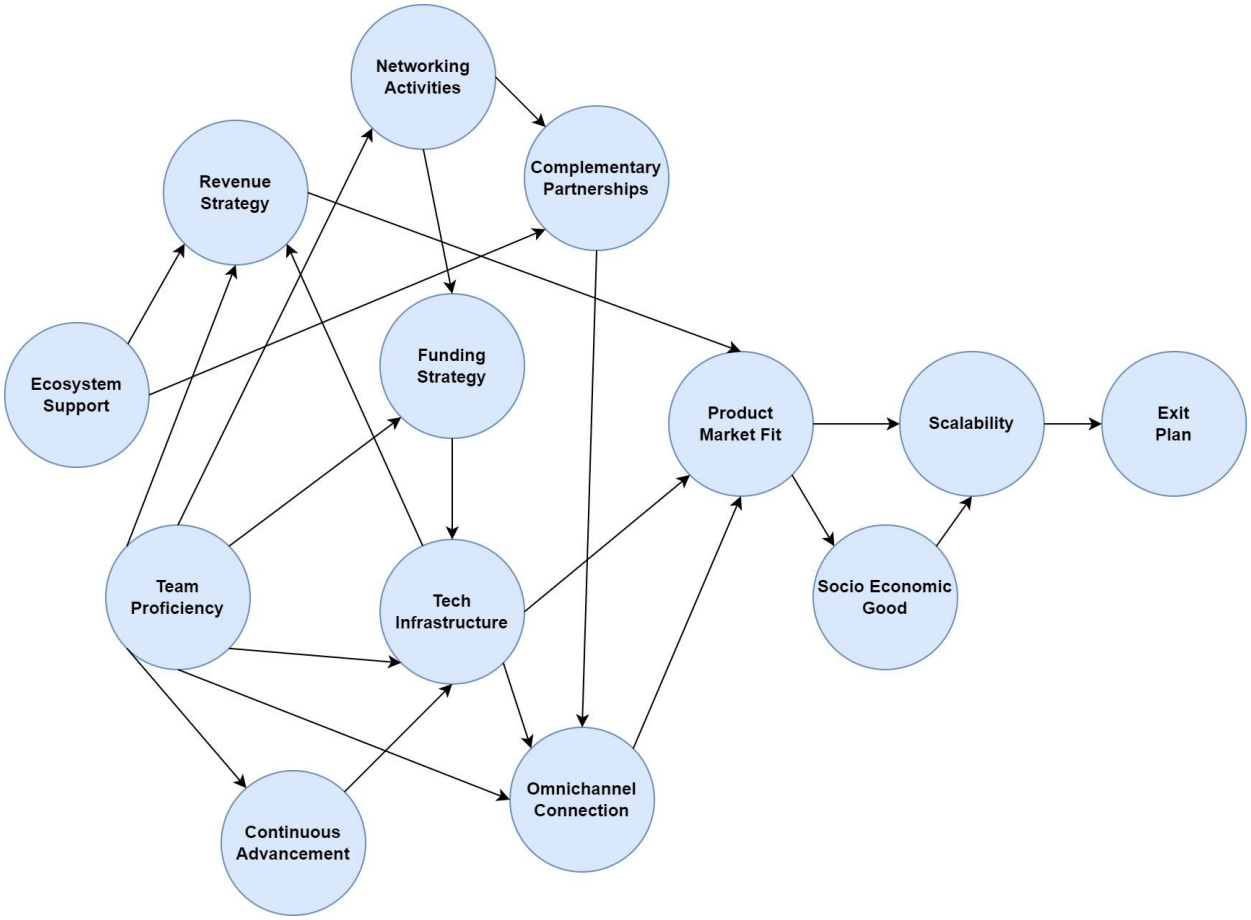

Figure 2. Validated CSF framework

Team proficiency helps bring a product that the market wants (Tripathi et al., 2019). In the health-tech space, there might be a possibility that the team proficiency is not enough to bring a customer-oriented product. The product has to pass several stages to get usage approval. Moreover, it takes longer than other startups, and sometimes a health-tech startup has to alter its solutions based on regulatory guidelines (Jarrin & Parakh, 2021). Therefore, team proficiency might not directly influence the product-market fit in the health space. Other aspects can mediate the relationships that the study cannot suggest based on the current empirical findings and consider it a limitation of the work.

5. Discussion

The research first proposed an operational definition of successful health-tech startups, identified the critical success factors, and developed a framework based on the validated path relationships among them that can assist the health-tech startups in becoming successful.

5.1. Successful health-tech startups metrics

The proposed operational definition is as follows: *A successful health-tech startup is an active company that has been in the business for three or more years and has one or more of the following characteristics- yearly increasing number of customers, repeat customers, and the number of jobs created, has raised funding within three years, generated some revenue and have profit increased every year, have some market share and made a notable social impact.* This proposition can easily recognize a successful health-tech startup in the target market. Besides the quantifiable measurement options and replicability opportunities, the definition also revealed success beyond financial performance. It is in line with the existing literature that shows startups' success may extend beyond the financial indicators (Steininger, 2019).

5.2. Critical success factors and their relationships

The interview analysis revealed 13 critical success factors of health-tech startups. All the founders, irrespective of the country, highlighted team proficiency and product-market fit for the startups' success. Existing studies showed the crucial role played by the founding team in the product's success. Team proficiency is required for the ideation, development, and minimum viable product formation to disrupt the market (Kier & McMullen, 2020). The lack of this capability also shuts down several businesses due to an imbalance between individual and firm goals (Nuscheler et al., 2019). Team proficiency also drives establishing product-market fit. Extensive literature discusses the role of product-market fit in determining success. Reaching product-market fit represents some level of success for early-stage startups (Kasabov, 2015).

The respondents mentioned the impact creation aspect of their products and services. These impacts drive value creation in the healthcare market (Gleiss et al., 2021). Existing studies highlighted the socio-economic value healthcare platforms bring to the market. Therefore, health-tech startups should aim to create social and economic impact irrespective of developed and developing countries' markets. The value is not only focused on patients but also creates value for other stakeholders such as clinicians, entrepreneurs, and investors (Garbuio & Lin, 2019).

The respondents critically mentioned product-market fit for startup value creation. The product-market fit is the initial stepping stone of a health-tech startup's impact creation in the target

market. This finding is consistent with the existing research on technology startups' success (Garbuio & Lin, 2019; Kasabov, 2015; Nelson et al., 2019), which focuses on the strategies to build product-market fit by eliminating the startup's barriers and projecting a significant growth. Additionally, findings revealed the socio-economic impact creation in the target market. This impact creates value for the customers and their staying intention with the startup's offerings.

5.3. Theoretical contribution

The thesis findings contribute to health technology entrepreneurship literature, including small and medium-scale digital health venture research. The operational definition of successful health-tech startups is an important addition to the existing literature that extends the measurement of successful startups. This research is the first study that explicitly investigated the critical success factors of health-tech startups and provided a detailed understanding of the health-tech startups' success. This research found that the value creation should be for every stakeholder directly or indirectly related to the specific market is essential for the startup's success. Health-tech startups should create value for patients, clinicians, investors, insurers or payers, governments, entrepreneurs, and the team.

5.4. Contribution to practice

The operational definition resolves the subjective controversies to represent successful health-tech startups. It will fix the disparities among the startups' founders, investors, and researchers' viewpoints on success. They can use the success metrics to categorize successful health-tech startups in the market. Critical success factors of health-tech startups give the crucial direction to the health-tech entrepreneurs, founding team members, and c-suite executives to shape their business strategy for success in the target market. The critical success factors can also assist the startups before their official launch. The founders, including the startup's team, should focus on the area that brings the success of their startups. They also prepare their measurement metric to reflect the scale-up possibilities of their business. To create value, every concerned stakeholder of health-tech startups should always focus on customer-oriented business development and consider the value of other stakeholders associated with the business.

6. Conclusion

5.1. Limitations and future research directions

Even though this research provides valuable insights on critical success factors and offers an operational definition to represent successful health-tech startups, it has some limitations which offer future research opportunities.

Literature only available in English was screened. There might be a possibility of relevant articles in other languages which further research can consider, including other databases. In AHP, six experts' input was captured to prioritize the metrics component based on the weightage. Although it's a sufficient number mentioned in the literature, future researchers may consider more experts from diverse professions to strengthen these research findings.

The considered health-tech startups were primarily in the growth stage, and only a few were at the early stage during the data collection. Critical success factors at the mature stage of a startup might differ from these research's propositions. Future scholars can investigate the later-stage health-tech startups, including unicorn startups, and compare them with these research findings.

Formative indicators were developed for quantitative survey research to measure the factors for validation of path relationships and used the PLS-SEM method for analysis. Another pertinent point was the limited number of survey respondents due to the small target population size. However, further research can explore other statistical methods, such as covariance-based SEM with reflective indicators, to examine the methodological comparisons with the findings.

The data were collected during the COVID-19 pandemic between 2020 and 2021. Many changes have been observed in the healthcare ecosystem, such as rapid growth of telehealth services, new policies, the Government's active participation in improving the healthcare service delivery system, new health-tech businesses, and a high rate of technology adoption in the healthcare industry. In this changing landscape, many health-tech startups have shown remarkable growth. The COVID-19 pandemic could be a different angle to see the startups' growth and success, which was beyond the scope of the study.

Identified critical success factors exhibited some probable linkage with dynamic capabilities and competitive advantage perspective. However, it was not clear adequately to share in findings and

claim for research contribution. Further researchers can explore those perspectives through the lens of critical success factors for the success of health-tech startups.

Research findings can be applied to other types of startups in the healthcare industry, including small and medium-sized enterprises. However, further study can explore the success metric and critical success factors in other domains' startups to support the generalizability of the findings. They can also look for a longitudinal analysis that traces health-tech startups' evolution and changes from early-stage to growth, maturity, and exit.

6.2. Concluding summary

According to research findings, health-tech startups should focus on building a proficient team, robust technological infrastructure, funding strategies for long-run sustainability, and developing product-market fit for socio-economic impact creation. By aiming for value creation, successful health-tech startups reflect scalability, including exit strategies to enable investors to move out of their investments.

This research contributes to the literature by delivering a measurable metric of successful health-tech startups and extending the understanding of their critical success factors, including path relationships. The detailed analytical discussion provides some direction on digital entrepreneurship in the health space and the necessary activities that startup entrepreneurs should focus on while shaping their businesses.

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Thesis Outline

Abstract
Declaration by Author
Publications included in this thesis
Submitted manuscripts included in this thesis
Other publications during candidature
Contributions by Others to the Thesis
Statement of Parts of the Thesis Submitted to Qualify for the Award of Another Degree
Research Involving Human or Animal Subjects
Acknowledgements
Financial Support
Keywords
Australian and New Zealand Standard Research Classifications (ANZSRC)
Fields of Research (FoR) Classification
Table of Contents
List of Figures
List of Tables
List of Abbreviations

Chapter 1: Introduction

- 1.1 Overview
- 1.2 Healthcare ecosystem
- 1.3 Emergence of health-tech in service delivery
- 1.4 Sectoral challenges in healthcare services: resources inadequacies and failures.
- 1.5 Research problem
- 1.6 Research aim
- 1.7 Research significance
- 1.8 Thesis structure

Chapter 2: Literature review

- 2.1 Review process and directions
- 2.2 Overview of health-tech platforms
- 2.2.1 Technology Adoption
- 2.2.2 Electronic health services
- 2.2.3 Business planning and framework
- 2.2.4 Providers' and consumers' views on health-tech services
- 2.3 Role of health-tech startups in healthcare
- 2.3.1 Emerged dimensions of health-tech startups
- 2.3.2 Startups offerings and challenges
- 2.3.3 Predominant theories and models
- 2.4 Concepts and theoretical framing of the research
- 2.4.1 Successful startups measurement

2.4.2 Critical success factors identification
2.4.3 Service-Technology-Organization-Finance (STOF) framework
2.4.4 Concept of value creation
2.5 Conclusion
Chapter 3: Methodology
3.1 Research design
3.1.1 Epistemology
3.1.2 Theoretical perspective: Positivism
3.1.3 Methodological details and methods used in the research
3.1.3.1 Qualitative approach
3.1.3.2 Quantitative approach
3.2 Trustworthiness
3.3 Ethical considerations
3.4 Conclusion
Chapter 4: Identifying operational definition of success and critical success factors
4.1 Overview of the study
4.2 Success metric of health-tech startups
4.3 Prioritize the success components using AHP
4.4 Critical success factors of health-tech startups
4.5 Value for different stakeholders of health-tech startups
4.6 csQCA findings: Configuration of factors that lead to the outcome
4.7 Concluding discussion
Chapter 5: Critical success factors for value creation
5.1 Investors' perspective on critical success factors of health-tech startups
5.2 Conceptual framework of critical success factors
5.3 PLS-SEM to analyse the CSF framework
5.4 CSF path relationships and value creation: some essential discussions on findings
5.5 Conclusion
Chapter 6: Discussion
6.1 Successful health-tech startup metric
6.2 Critical success factors of health-the startups
6.3 Theoretical contribution
6.4 Practical implications
Chapter 7: Conclusion
7.1 Limitations and future research direction
7.2 Concluding summary
References
Appendices
Appendix A. Ethics approval letters
Appendix B. Survey Questionnaire

Journal and conference publications

1. Chakraborty, I., Edirippulige, S., & Ilavarasan, P. V. (2023). The role of telehealth startups in healthcare service delivery: A systematic review. International Journal of Medical Informatics, 105048. https://doi.org/10.1016/j.ijmedinf.2023.105048 (ABDC A).

2. Chakraborty, I., Ilavarasan, P. V., & Edirippulige, S. (2021). Health-tech startups in healthcare service delivery: A scoping review. Social Science & Medicine, 113949. https://doi.org/10.1016/j.socscimed.2021.113949. (CABS 4)

3. Chakraborty, I., Ilavarasan, P. V., & Edirippulige, S. (2021). COVID-19 as a Catalyst for Telehealth Growth in India: Some Insights. Journal of the International Society for Telemedicine and EHealth, 9, e3 (1-4). https://doi.org/10.29086/JISfTeH.9.e3.

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5. Chakraborty, I., Edirippulige, S., & Ilavarasan, P. V. (2022). Digital health startups in the time of COVID-19 crisis: Adaptation or Malfunction? In 22nd Successes & Failures of Telehealth Conference (SFT 2022) (p. 76). SFT-22 Conference Proceedings.

6. Chakraborty, I., Ilavarasan, P. V., & Edirippulige, S. (2021). What is a successful health information technology startup? In 2021 MICA's 7th International Communication Management Conference (ICMC 2021) (pp. 174-175). MICA. https://www.mica.ac.in/ICMC2021.

Papers under progress

1. Critical success factors of health-tech startups in the Global South: Insights from a qualitative study. (Under review in a peer-reviewed journal)

2. Operational definition and critical success factors of health-tech startups. (In progress for submission)

3. Critical success factor framework of health-tech startups for value creation. (In progress)

Other publications and in-progress papers

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3. What helps age-tech startups to scale up? Some insights and implications (Submitted to a peer-reviewed journal)

4. What drives front-end innovation in fem-tech startups (Submitted at a leading management information systems conference)

5. Adaptive business strategy of digital health startups to sustain and grow in the COVID-19 crisis: Some insights from qualitative research (In progress)