Future of healthcare start-ups in the era of digitalization: bibliometric analysis

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Received 9 October 2022
Revised 17 October 2022
20 October 2022
Accepted 21 October 2022

Abstract

Purpose – It is the responsibility of the national governments to deliver healthcare services that are both effective and affordable to everyone. There are still gaps in this supply, which is extremely demanding. In this sense, companies are attempting to reach neglected markets and disrupt the marketplace with novel solutions. Although there are still anecdotal examples, a thorough literature evaluation is lacking. This study aims to provide a synthesis of the future of healthcare start-ups.

Design/methodology/approach – Papers that included the term "healthcare start-ups," "health-tech start-ups," "start-up," "Artificial intelligence in healthcare," and "Health tech start-ups in India" were considered for the analysis. The Biblioshiny package under the R programming tool was considered for a detailed analysis of the papers.

Findings – A total of 854 documents were related to healthcare start-ups, from which only 14 papers are related to health-tech start-ups and four papers are related to artificial intelligence in healthcare start-ups. It has been found from the past works of literature that the effectiveness of technology for information and communication in healthcare has significantly increased in recent years. Technology has already begun to permeate the healthcare market from other fields and industries. One way that the internet will help the industry evolve is by integrating digital health into daily life.

Research limitations/implications – The study is not using other databases but is limited to Google Scholar and Scopus. A significant constraint of this study is the paucity of relevant literature in reputable publications on health and information systems. Another restriction was that gray literature, such as any journal or newspaper written by members of the health community about health-tech start-ups, was not taken into account.

Practical implications – Healthcare players should exhibit a fundamental openness to novel solutions to facilitate the digitalization of the healthcare system. Developing technology is widely used, and from an innovation perspective, a start-up should focus on innovation by employing technology and offering revolutionary healthcare solutions.

Originality/value – The novelty of this research is based on its presentation of an organized and thorough literature evaluation, which defines the current state of the art concerning green start-ups. To create a sustainable start-up, a thorough study of the information gained in respect of its healthcare start-up is presented.

Keywords Healthcare start-ups, Health-tech start-ups, Artificial intelligence, Virtual reality, India

Paper type Literature review

1. Introduction

By producing "money," "jobs," "goods and services," "taxes" and "wealth," innovation is strongly linked to economic growth (Reynolds *et al.*, 2005). Global entrepreneurship development is reflected in the rise of start-ups internationally. One of the fields where science and technology have advanced at a particularly impressive rate during the past century is health (Awasthi *et al.*, 2006). At the same time, there has been a significant disparity between and within nations and epidemic areas, and the COVID-19 pandemic has highlighted the

International Journal of Industrial Engineering and Operations Management
Vol. 4 No. 1/2, 2022
pp. 1-18
Emerald Publishing Limited
e-ISSN: 2690-6104
p-ISSN: 2690-6090
DOI 10.1108/IJIEOM-10-2022-0046

weakness in the worldwide healthcare system. Prior to the COVID-19 pandemic, worldwide healthcare businesses were worth US$8.45tn, and despite a 2.6% fall in spending in 2020 as a result of the pandemic, it is predicted that global healthcare spending will reach US$10tn by 2022 (Mukherjee, 2021). Due to the reduction in healthcare spending brought on by lockdown and social isolation measures, more people are using technologies and virtual platforms to check their health. Thus, the pandemic illustrates both the potential and catastrophe aspects of the same coin. While placing pressure on the "infrastructure," "human" and "financial resources" of the healthcare sector and revealing social inequalities, it also served as a stimulus for change throughout the ecosystem and encouraged innovation and start-ups to address the health issues (Mukherjee, 2021).

Technology has long been used in the healthcare industry. In the recent few decades, there has been considerable uptake in the field of diagnostics, which has improved service offerings. Technology has significantly raised the standard of care while simultaneously upending the marketplace for the provision of healthcare services (Chen *et al.*, 2013). Due to a lack of resources, service delivery may be unequal or insufficient in developing countries. To close this gap, new technology-based businesses are experimenting with innovative business models (Versleijen *et al.*, 2015). The number of health-tech businesses increased in 2020. Various areas of healthcare, including telemedicine, radiography, diagnostics, therapies and others, were represented by these start-ups. Overall, it made a positive difference in the standard of public healthcare. Additionally, these fresh developments filled a number of holes that had long existed in the healthcare industry. There were a number of accessibility issues, healthcare quality issues and other issues in the rural areas of the country. These voids were filled in the most efficient way possible, thanks to health-tech entrepreneurs and the digital revolution in healthcare (Agrawal, 2022).

"Computing," "software development" and "data transfer" all have their roots in artificial intelligence (AI). "Machine learning," "deep learning," "speech recognition," "robots" and "biometric identification" are examples of technology that use AI. AI is applicable to a wide range of industries, including the "automotive," "healthcare" and "assembling and manufacturing sectors." Digital health start-ups appear to represent a threat to some people while inspiring others. The majority of healthcare organizations see opportunities in digital health start-ups to accelerate their own technological change, either through collaboration or mergers and acquisitions. In addition to the start-ups, major firms in the healthcare industry also want to invest in the field of digital health. One strategy is to digitize their own company model to increase productivity and advance the business model. Some people decide to build a value-driven program around their unique product. Another method to use the data more effectively than previously conceivable is to create entirely new business models that would not be feasible without big data and the associated analytics.

The information technology industry appears to be the focus of the literature on high-tech start-ups (Chakraborty *et al.*, 2021). The path of a start-up in delivering health services is fraught with uncertainty, and as a result, failure rates are high. Existing research does, however, highlight the shortcomings that entrepreneurial efforts could solve. The current study summarizes the future of healthcare start-ups in India in this digital era. Through the extensive research carried out in this study the following question would be answered, i.e.

RQ1. Is there a future for healthcare start-ups in India in this digital era?

The novelty of this research is based on its presentation of an organized and thorough literature evaluation, which defines the current state of the art concerning green start-ups. To create a sustainable start-up, a thorough study of the information gained in respect of its healthcare start-up is presented.

This review is categorized into five sections. The purpose of the study is explained in the first section. The literature review of past literature is discussed in the second section. The

methodology employed in this paper is discussed in the third section. The fourth and fifth sections talk about the detailed analysis of the studied literature and show how this evaluation is limited and what areas need more study. The final section wraps up the study.

2. Literature review

2.1 Start-ups ecosystem

The World Economic Forum has broadened the definition of innovation to include "ecosystems," which are dynamic networks of people and organizations working together to achieve an inventive goal (Smorodinskaya *et al.*, 2017). Three major domains can be used to categorize the interactions between people and organizations within the start-up ecosystem. These three areas include technological transfer, governance and financing. The start-up ecosystem comprises 20 funding organizations, nine regulatory organizations and 22 technology transfer organizations, making it a complicated ecosystem where companies must navigate numerous regulatory and policy frameworks (Mukherjee, 2021).

2.2 Digital health

According to several authors, the concept of employing electronic tools to support various health services in an attempt to enhance people's lives is known as "digital health" (Parati *et al.*, 2019). The literature offers a range of perspectives on how new technology might revolutionize the pharmaceutical industry, improve patient outcomes, enhance healthcare, lower healthcare costs and collect patient information (Robinson *et al.*, 2015). In the majority of the literature that is now available, technology has a role in a number of areas, mostly in the utilization of data to discuss one's health perspectives with others or to research health, ailments and therapies (Lupton, 2013). To learn about health-related topics, express opinions and collaborate with non-healthcare experts, doctors and other medical specialists use application software and online platforms, forming a digital health ecosystem (Morande *et al.*, 2020). Therefore, digital health is associated with various technology tools that enable users to actively manage their health conditions and are urged to follow the medicines that their doctors have prescribed (Asi and William, 2018). The implementation of a digital solution could prevent its efficient application, which suggests a cost-related issue in some nations. However, the utilization of healthcare technologies may be constrained by the ability of qualified healthcare professionals to use digital platforms (Morande *et al.*, 2020).

Healthcare organizations understand that they require creative ideas and to alter their working practices (Morande *et al.*, 2020). Entrepreneurship in the field of digital health is defined *as "the pursuit of opportunity under conditions of uncertainty with the goal of creating user-defined value through the deployment of digital health innovations. It is the pursuit of information and communication technologies (ICT, including telemedicine, wearables, mobile health, and data analytics) to the medical field with the goal of improving patient outcomes, improving the quality of healthcare, and improving health and experience"* (Wulfovich and Meyers, 2020). Digital healthcare start-ups work with non-health issues as well as with major corporations. They are not just healthcare clients. This has made it possible for the emergence of "digital health communities," which are made up of involved actors, healthcare organizations and healthcare practitioners (Iyawa *et al.*, 2016). Due to the prospects presented by innovative technologies, courses in digital literacy and digital health entrepreneurship are becoming more popular. On the one hand, this is due to an engaged investor community that has more faith in this industry. Examples of these investors include "subsidies," "venture capitalists" and "crowdfunding" (Wulfovich and Meyers, 2020). The convenience of the use of digital healthcare equipment has risen, which has good effects on patients' daily life. At the same time, favorable effects are seen from the standpoint of the customer.

2.3 Artificial intelligence in healthcare in India

Every stakeholder in the healthcare sector is battling from the front lines during a global health disaster like COVID-19. In many nations, including India, the pandemic has been referred to as a fundamental change in digital healthcare. Many have argued that this is the ideal time for India to revamp its healthcare system and assist health IT companies as they attempt to fill the gaps in the country's established healthcare system (Jiang *et al.*, 2017). Numerous healthcare sectors in India use AI to assist them in their work because they need mechanization for many different jobs. The Indian start-up ecosystem has experienced significant growth in recent years (Vijai and Wisetsri, 2021). The nation has received millions of dollars in funding for tech-related businesses in the previous year, ranking high among all other countries. These firms are gaining attention, thanks to their own creativity and top services (Garbuio and Lin, 2019).

Recently, AI technologies have had a significant impact on the healthcare industry, sparking a lively debate on whether AI doctors would someday take the place of human doctors (Singh *et al.*, 2021). While AI can undoubtedly help doctors make better medical judgments or perhaps substitute human judgment in some operational areas of healthcare, we do not believe that human doctors will be replaced by computers in the near future (Young, 2022). Both in terms of income and growing market share, the healthcare industry is expanding quickly in India. Numerous new health-tech businesses have emerged in India, thanks to this expanding sector. They offer services to numerous healthcare market segments, schedule appointments, distribute medications online and function as a venture with a commercial focus (Vijai and Wisetsri, 2021).

2.4 Aspects of technology adoption in healthcare start-ups

The adoption, incorporation and use of developing technology in the provision of healthcare services is referred to as technology adoption. In general, adoption and utilization differ across users; developers are at the front of the line and are accompanied by early adopters, who evaluate the innovation and get started immediately. However, with technology, the optimum population grows progressively in the shape of early adopters and a late majority (Garbuio and Lin, 2019). Service providers make up a sizable portion of technology adopters in healthcare settings, though user acceptance spurs this expansion. User adoption of tech-enabled healthcare services is fairly difficult, but companies in the market, particularly entrepreneurs, are always working to make it easier.

The literature's main takeaway is that IT makes the e-health platform a valuable communication tool for medical practices. Similar to this, IT has improved the system to give medical treatments in less time, decreasing the amount of time patients must wait for their turn (Vijai and Wisetsri, 2021). The various taxonomies used to describe IT-enabled e-care services include "telemedicine," "telehealth," "e-health" and "m-health." Before employing such solutions, a tested IT infrastructure is required to properly distinguish the healthcare and operate in all organizational factors (Iyawa *et al.*, 2016).

It is conceivable that the success of IT installation and the provision of healthcare services made possible by it depend on the acceptance of technology by both service providers and users. From the viewpoint of a start-up, IT expertise and other adoption-promoting elements influence healthcare execution and assessment procedures and system designers. Adopting technology strategically can create opportunities for advancement and research that promote re-modeling in healthcare venture services. Technology adoption-driven transformation emphasizes improving current service delivery procedures (Chakraborty *et al.*, 2021). It might give a health-tech business a competitive edge in healthcare. However, health technology entrepreneurs are constantly concerned with high-tech execution risk in delivering healthcare services. An appropriate firm-level strategic perspective is therefore required to address these risks (Morande *et al.*, 2020).

3. Methodology

3.1 Bibliometric evaluation

Pritchard (1969) established bibliometric analysis, which has acquired popularity as a tool for scientifically analyzing the historical evolution of a study subject from a comprehensive standpoint (Tandon *et al.*, 2021). The discovery of prominent authors, the drawing of its limits and the development of fresh study avenues are all made easier by bibliometric analysis (Kessler, 1963; Khanra *et al.*, 2020). Scholars from a variety of fields have used this method, including those in "manufacturing," "arts-based management," "marketing," "social media or network," "finance," as well as "technology and innovation" (Caviggioli and Ughetto, 2019; Ferreira, 2018; Tandon *et al.*, 2021; Corbet *et al.*, 2018).

The capability of the bibliometric approach to demonstrate the cognitive framework of an area without personal bias was what led to its selection (Khanra *et al.*, 2020). According to Ferreira (2018), bibliometric techniques are a cross-disciplinary approach that makes it possible to effectively map the paths and issues covered during the growth of a field of study. Consequently, our research focuses on knowing the future of health-tech start-ups.

3.2 Sources of data

For this literature review, we accumulated 314 pieces of published literature relevant to healthcare start-ups from Scopus until 2022. We utilized the search terms TITLE-ABS-KEY [("healthcare start-ups") OR ("health tech start-ups") OR ("Artificial intelligence and Healthcare Start-ups")] in the abstract to guarantee that pertinent articles were incorporated. From there, the keywords TITLE-ABS-KEY (Healthcare Start-ups) give 287 documents; TITLE-ABS-KEY (Health tech start-ups) gives ten documents (after exclusion); TITLE-ABS-KEY [(Artificial intelligence) and TITLE-ABS-KEY (healthcare start-ups)] gives 14 documents (after exclusion); and TITLE-ABS-KEY [(Artificial Intelligence) and TITLE-ABS-KEY (Health tech start-ups) and TITLE-ABS-KEY (India) gives one document. Here we have excluded the papers that did not have these keywords and papers that were of non-English language.

3.3 SPAR-4-SLR

Creating a protocol is essential to conducting systematic literature reviews because it promotes thorough planning, uniform execution and openness that allows for replication. In other words, a procedure gives researchers the capacity to foresee issues, lessen the uncertainty, encourage accountability and maintain the integrity of their research. Because of its rigor, we chose the SPAR-4-SLR review procedure over others like the PRISMA protocol, which was developed in the field of pure science. SPAR-4-SLR is divided into three stages: assembling (involves "identification" and "acquisition" stages), arranging (involves "organization" and "purification" stages) and assessing (involves "evaluation" and "reporting" stages) (Figure 1) (Raman *et al.*, 2022).

3.4 Bibliometric analysis (biblioshiny)

Biblioshiny was used for this study. Massimo Aria from the University of Naples Federico created the Java program Biblioshiny for bibliometrics. Biblioshiny integrates the bibliometrics package's capability with the web app's user-friendliness while using the Shiny package environment in R programming (Srisusilawati *et al.*, 2021). For integrating bibliographic data, conducting "bibliometric analysis" and creating a data matrix for "co-citation," "coupling," "scientific collaboration analysis" and "co-word analysis," use the Bibliometrix software. Additionally, at the intersections of structural and temporal development, new information consistently appears in fields like "network analysis,"

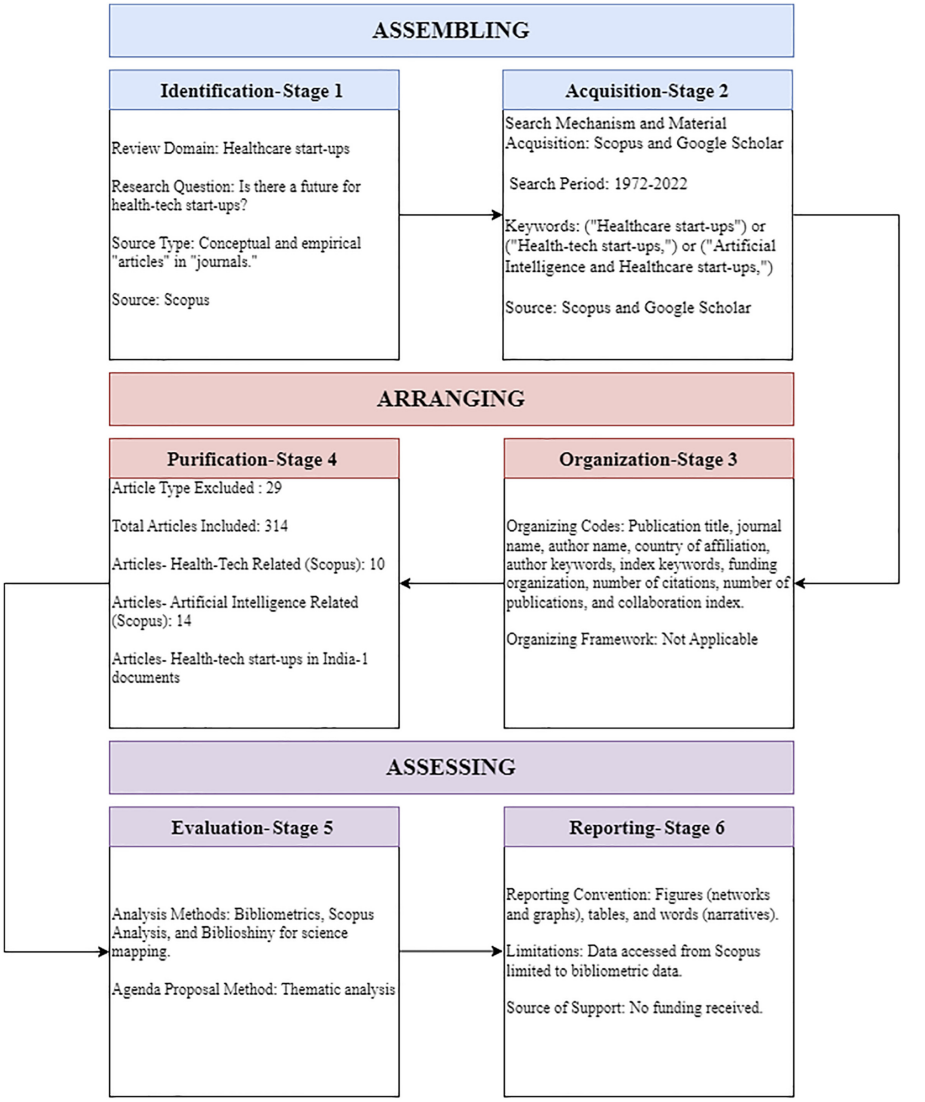

Figure 1.
SPAR-4-SLR stages

"factorial analysis" and "thematic mapping." Take note that the Biblioshiny app can be used to display these results. And the outcomes will be presented in the next section.

A best practice for systematic literature reviews is to use a review protocol since it encourages openness and reproducibility of review results. We have also adopted the "Scientific Procedures and Rationales for Systematic Literature Reviews (SPAR-4-SLR) protocol," which is discussed in the next section.

4. Results

4.1 Documents by year, country or territory, author and subject area

Healthcare start-up literature expanded gradually throughout the course of its first two decades, from 1972 to 2022, with a more pronounced increase between 2007 and 2018

(Figure 2). The highest number of documents published in the healthcare sector was in the year 2018, with 56 documents (Figure 3). The highest number of publications based on the country was from the USA, with 405 documents, followed by the UK with 86 documents. The least documents were from France and Spain with 20 documents each, and India with zero documents (Figure 4). The highest number of documents published on the healthcare start-ups was by Seeff, L.C. with six documents (Figure 5). When we look at the subject area, the highest number of documents were from medicine, followed by social sciences with 608 and 85 documents, respectively (Figure 6).

4.2 Bibliometric mapping

The word cloud in Figure 6 visualizes the most commonly used words in publications on the healthcare start-up. "Healthcare," "Start-up" and "cost" were the most often used terms, followed by "implementation," "patient" and "development." The word cloud shows words in different sizes based on how many times they occur. The word arrangement is a little haphazard, but the most important words are in the center to make them more obvious due to

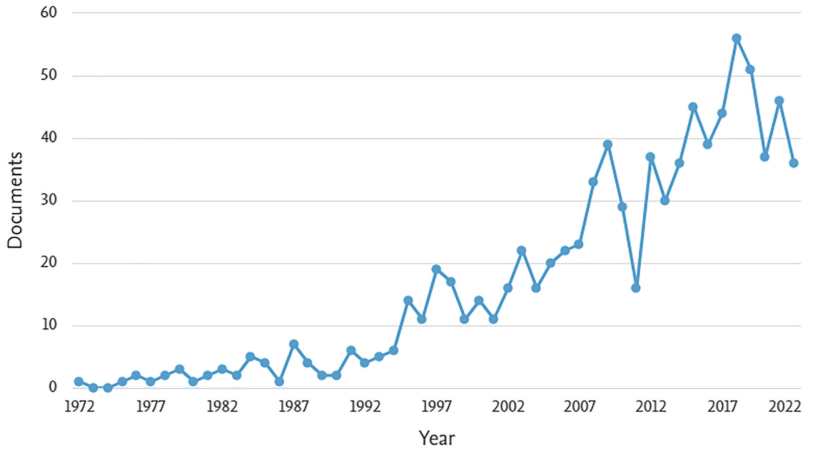

Figure 2.
Documents by year

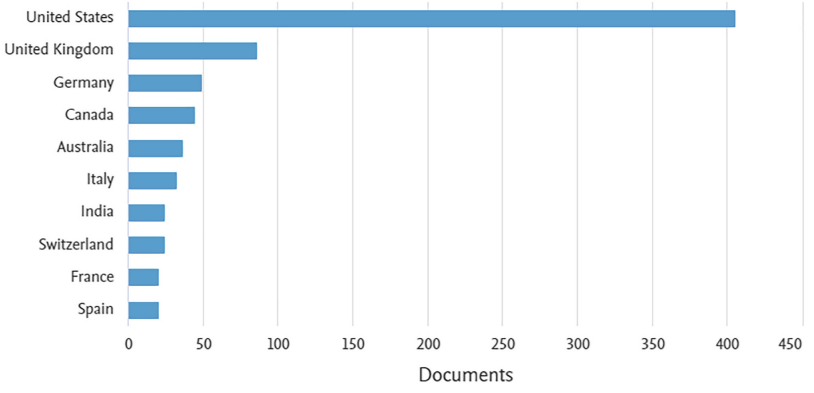

Figure 3.
Documents by country/ territory

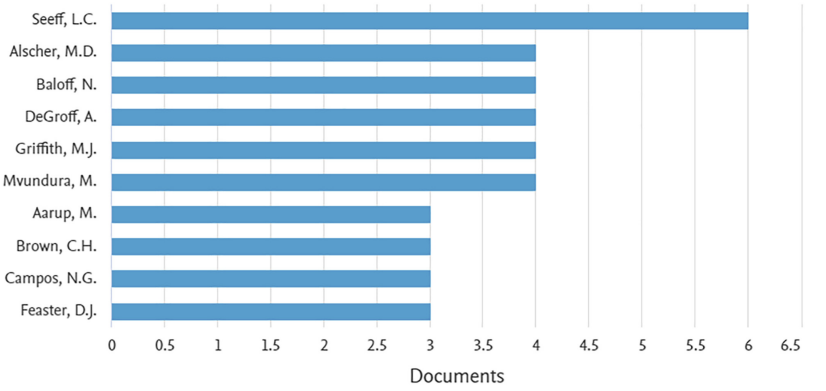

Figure 4.
Documents by authors

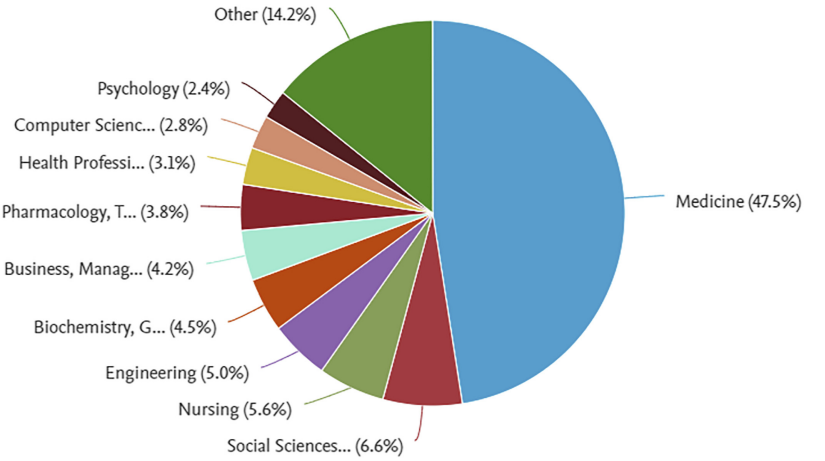

Figure 5.
Documents by subject area

Figure 6.
Word cloud

their enormous size. The hierarchical order and connection among the keywords produced by hierarchical clustering are represented by the topic dendrogram in Figure 7. Investigating and interpreting the various clusters is made easier by the vertical lines and cut in the picture. To make subsequent discussion easier, Figure 7 estimates the estimated number of clusters rather than trying to determine the exact amount of linkages between clusters. As shown in Figure 8, an evaluation of themed maps was conducted in this study, which is centered on centrality and density, and was separated into four topic quadrants. This result is obtained using a semi-automatic method that examined the title of all citations to the study object and added pertinent terms other than the author's keywords to allow for deeper variances.

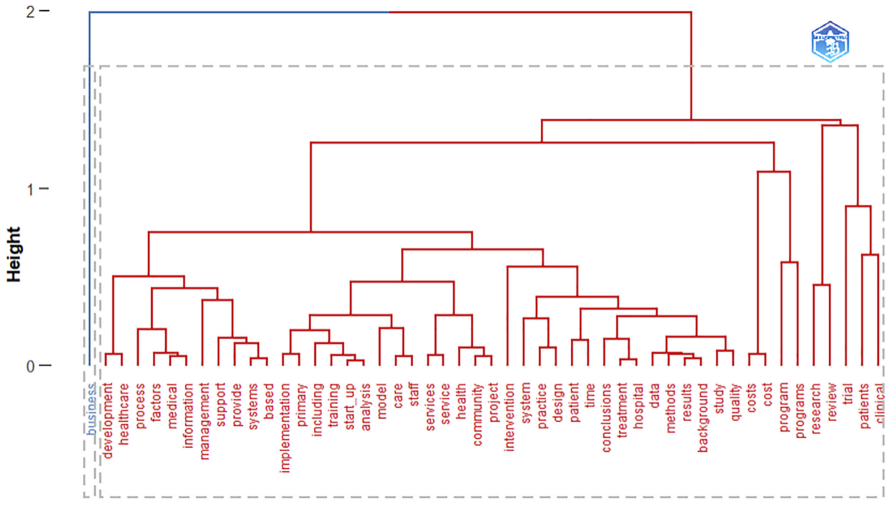

Figure 7.
Topic dendrogram

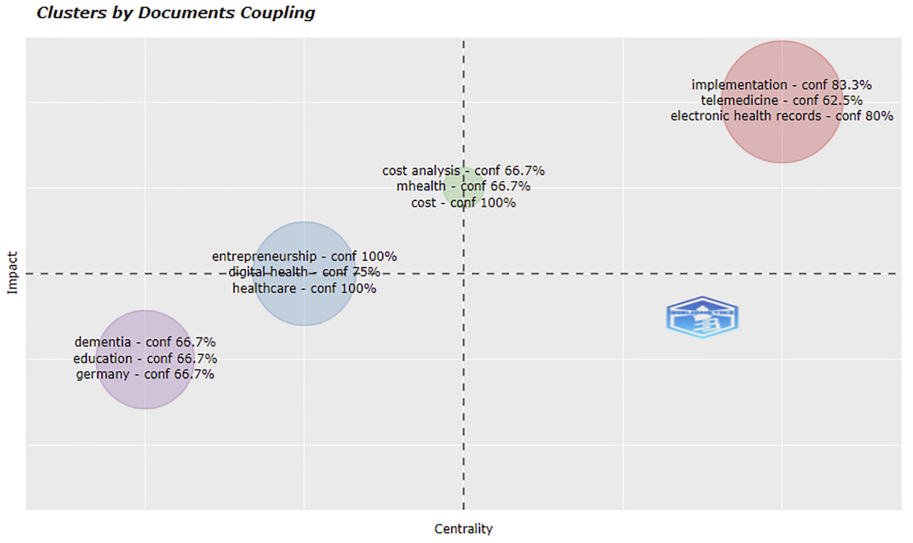

Figure 8.
Thematic map

As a propelling topic with "high centrality and density" in the upper-right quadrant, it has to be expanded and is crucial to be researched further. They are "telemedicine," "implementation" and "electronic health records." Additionally, a unique and distinct theme is present in the upper-left quadrant, yet it also exhibits significant development. They are "entrepreneurship," "digital health" and "healthcare." Elements with a long history of use but a clear declining trend and low centrality are located in the lower-left quadrant, while a fundamental theme in the lower-right quadrant has a high centrality but low density. Because they are broad subjects that are frequently discussed, these themes should be covered in the study. The three-field plot in Figure 9 is a diagram with three components: the sources, authors and keywords. A gray plot that is related to the three components links them together. The sources are followed by the list of the regular contributors to each one, followed by a list of the keywords on which each contributor frequently conducts research on concepts related to healthcare start-ups. The rectangle's size demonstrates the significant number of publications linked to each of these components.

The number of research papers published by each journal is then displayed in Figure 10 based on how closely they relate to healthcare start-ups. When compared to the line of other journals, "Modern Healthcare" is the journal with the highest amount of published documents – more than nine documents – shown in a dark blue circle. This is so because the journal has bearing on the subject matter covered. Word growth is a component of this research as well, and Figure 11 provides an overview of how each word has changed over time with respect to the division per year. Such that it is clear which topics have been utilized recently and which ones have been used for a long period. Figure 12 depicts the theme's development over time. By mapping the connection between one term and another through spatial mapping, a conceptual structural map (Figure 13) was created, comprising a depiction of the contextual structure of each term that occurred frequently in research articles on healthcare start-ups. The red area and the blue area are the two sections of the area that are separated in these data. Each section contains terms that are linked to the other.

4.3 Country collaboration map

Figure 14 shows the international partnerships. The map's blue color symbolizes international research collaboration. The amount of the authors' collaboration is also

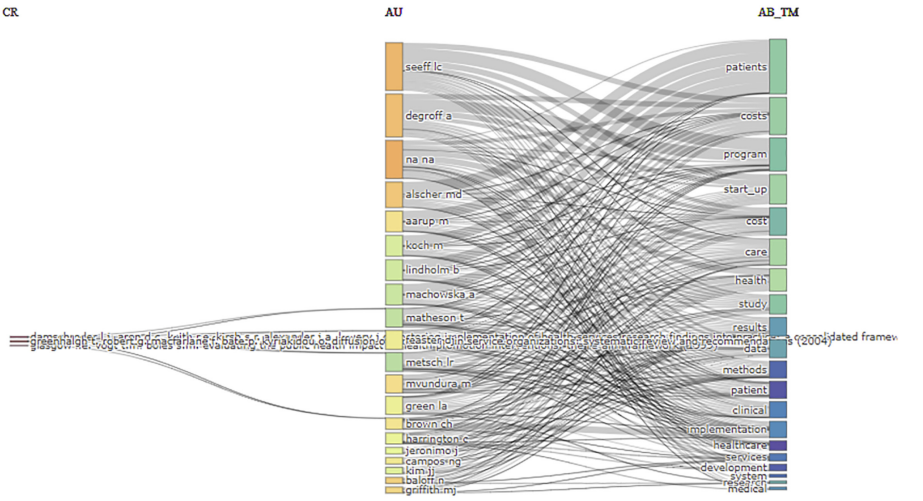

Figure 9.
Three field plot

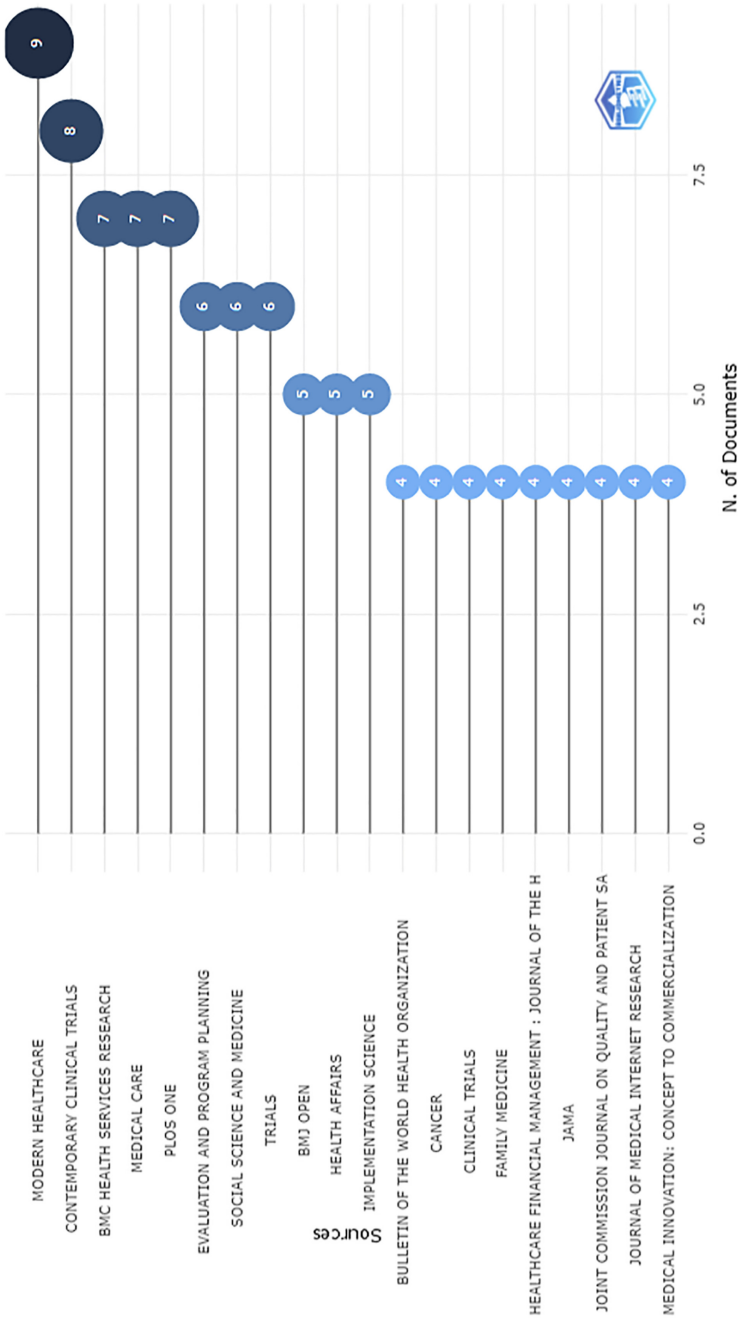

Figure 10.
Most relevant sources

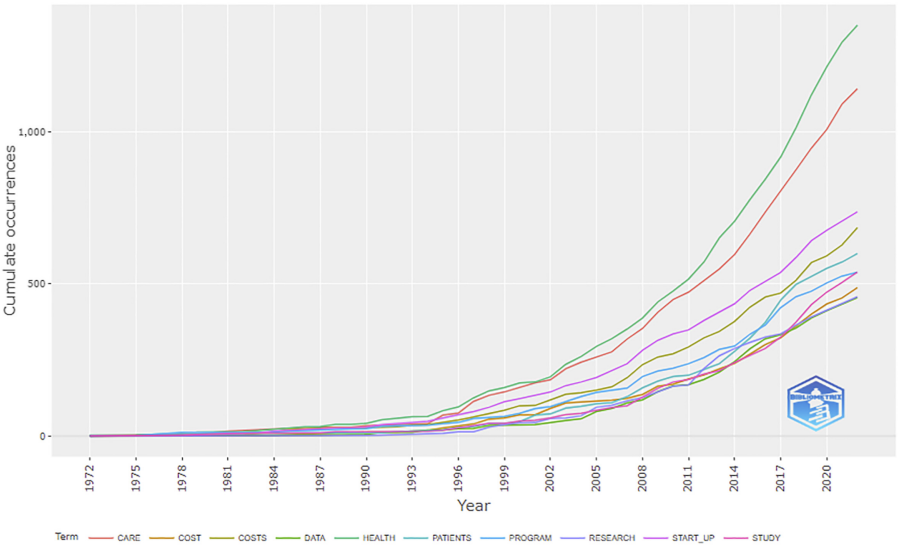

Figure 11.
Word growth

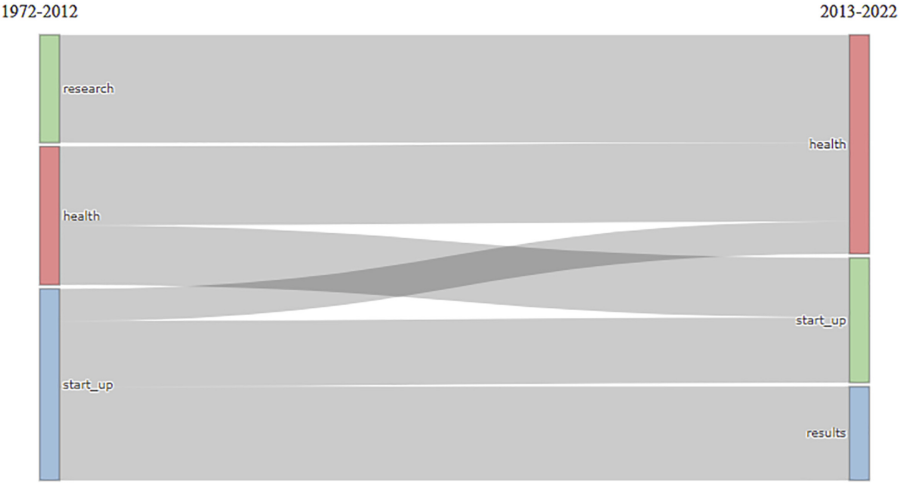

Figure 12.
Thematic evaluation

indicated by the pink border separating the states. It's interesting to see how these partnerships have developed in the nations with the most publications on healthcare start-ups. Although Australia, Canada and China have participated in the largest partnerships with nations that are occasionally geographically far apart and have thus failed to develop the topic, the collaboration can result in the exchange of policies and market cooperation.

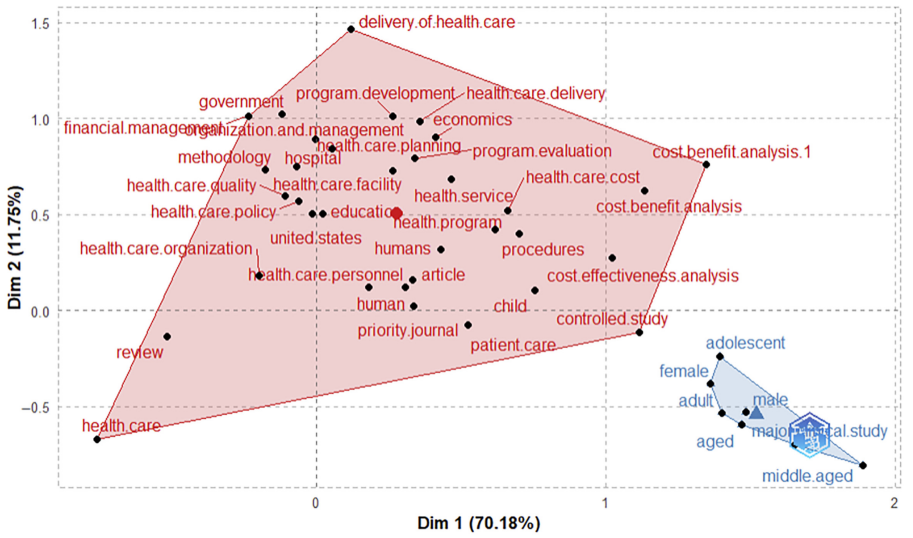

Figure 13.
Conceptual structure map

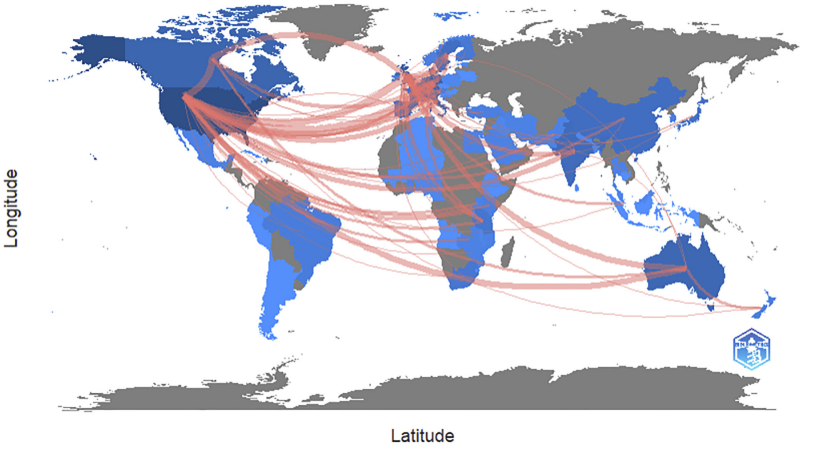

Figure 14.
Country collaboration map

5. Discussion and future research directions

A few entrepreneurial approaches are suggested based on the published literature that may help healthcare entrepreneurs build and exploit opportunities in their start-ups. Developing technology is widely used, and from an innovation perspective, a start-up should focus on innovation by employing the technology and offering a revolutionary healthcare service. Entrepreneurs should develop internet infrastructure to improve service delivery and upend the healthcare market (Chakraborty *et al.*, 2021). The impact of technology on entrepreneurial factors for start-up establishment in a developing country was underlined by Westhuizen and Goyayi (2020). They further note that technology boosts an entrepreneur's trust and sense of self-efficacy, which helps start-ups. The validated health-tech start-up model is still

inadequate to guide the entrepreneurial healthcare approach. Review articles identified a handful of strategies based on qualitative evaluation and stressed the need for sound business plans before the launch of health IT firms. However, earlier research on various topics, including "fintech and e-commerce," highlighted the "lean start-up methodology" (Mansoori *et al.*, 2019). According to the literature review, the "build-measure-learn cycle" of a lean start-up can be helpful for the health-tech entrepreneurship process and new businesses' sustainability in healthcare.

There is a critical need for favorable environments for health-tech entrepreneurship in developing nations. The literature emphasizes the need for appropriate government decisions and guidance for long-term entrepreneurial endeavors in the health field. The national digital health mission was established by the Indian government to create an integrated digital health infrastructure (Chakraborty *et al.*, 2021). The government introduced many policies, like tax breaks for new businesses, stage-based funding and others, to strengthen the start-up environment. Similar results have been achieved in Vietnam, particularly with the explosive growth of the digital health sector (Morande *et al.*, 2020). To build and maintain a new enterprise, lasting health-tech start-ups need the deep commitment of numerous stakeholders. A developing market's sector-specific environment can benefit from a start-up's organizational platform's emphasis and evolution (Chakraborty *et al.*, 2021).

Big data appears to be the component of digital health that is most important, and it is crucial to making a decision using data (Bates *et al.*, 2018). Researchers and medical professionals can better comprehend diseases on the one hand and patient behavior on the other by combining data analytics. Patients might receive the appropriate therapy sooner with this insight than they do now. Big data facilitates the implementation of real worth healthcare in hospitals. The transition from a volume-driven to a real-worth healthcare system is anticipated to be facilitated by advancements in openness, transparency and economic productivity. Data analytics may provide the doctor with either short- or long-term feedback on his/her choices and even enable the recognition and compensation of high and growing quality. One of the most important applications of "virtual reality" and "medical technologies" is "robotic surgery." With the help of this technology, doctors might be able to carry out sophisticated minimally invasive procedures in a more exact and regulated manner than is now possible with traditional surgery. The physician can see inside the body more clearly with the help of "virtual reality" and "continuous imaging technology." The biggest drawback is that because surgical robots are now quite expensive, they are mostly used in affluent, cutting-edge facilities.

From the past literature, it is evident that there is virtually hardly any information available yet about how digital technologies are being used in healthcare in India. Furthermore, it is unclear how they evaluate the dangers of applying these technologies. The effectiveness of technology for information and communication in healthcare has significantly increased in recent years. Technology has already begun to permeate the healthcare market from other fields and industries. One way that the internet will help the industry evolve is by integrating digital health into daily life. Global markets will be transformed by digital health, which is predicted to dictate the rate of development and implementation of new medical applications. More people will be able to obtain healthcare services because of this technology. Therefore, this leads to a future research direction to do a case study or to model the study to know more about the health-tech start-ups in India.

6. Conclusion

A strong entrepreneurial and learning mindset can help health-tech businesses in underdeveloped nations penetrate the market for healthcare services. Evidence suggests

that health-tech companies enter the market for healthcare services with certain technological advancements that either change how services are delivered or participate in developing new products to support the current services (Carroll *et al.*, 2016). According to the literature, health-tech businesses might tap into developing markets like India. By looking for opportunities, launching new services and anticipating potential healthcare market requirements may result in new healthcare delivery paradigms. However, to generate and acquire market value, health-tech start-ups must overcome various obstacles, including the risk of dying out (Vannieuwenborg *et al.*, 2017). Innovative methods of patient care must be established alongside innovative solutions. Given that finance and healthcare handle credibility products, it is possible that the fintech sector can teach the healthcare sector a thing or two. Healthcare digitalization is a relatively recent development. The art of providing healthcare will alter as a result. In line with this tendency, start-ups in the field of digital health will advance technology faster than that offered by established businesses. The triple aim of healthcare – *"greater quality, better patient experiences, and reduced costs"* – might be partially solved by start-ups. Start-ups have significance beyond the healthcare system regarding economic and job growth. In summary, legislation must be amended to encourage innovation from digital healthcare start-ups and other businesses working on digitizing the health system to achieve healthcare digitalization and improve care in India.

Although it has been around for a while, the study on electronic healthcare service delivery by health-tech firms is still in its infancy. Healthcare service delivery holds significant promise for health-tech firms, but the available research lacks the necessary insights. To better map advances and possibilities within healthcare start-up research, this study undertakes a bibliometric analysis, and a methodical and technology-facilitated approach is employed to assess literature produced between 1972 and 2022. Human and non-human actors produce digital innovation. Patients are examples of human actors, while technologies are examples of non-human actors. When interacting with patients, technological actors adjust and configure themselves based on the information they gather.

A significant constraint of this study is the paucity of relevant literature in reputable publications of health and information systems. One of the potential causes in the context of developing nations may be the inability of scholars to contact prestigious journals. To obtain additional in-depth information in this area, a thorough database-based literature analysis that goes beyond the Scopus database may be helpful. Another restriction was that gray literature – which excluded any health-related magazines and newspapers – was not considered when discussing health-tech businesses and service provision. Trade press could provide important insights into the world of health IT start-ups because there is a lag in academic journals. The assessment is unable to analyze the business models of health-tech firms due to a lack of sufficient evidence, particularly in the setting of a developing nation. There is still time to investigate the business plans of active health-tech businesses. Although earlier literature did not specifically address specific issues, such as policy or regulations affecting the introduction of electronic health services in existing organizations, health-tech companies and established healthcare organizations encounter legal challenges. Research on the legal obstacles that health-tech businesses must overcome is also lacking. The legal aspects of supplying electronic healthcare services by start-up companies or established businesses may be the subject of future study.

Upcoming research has the potential to address the following issues: "Whether founders of heath-tech startups different from other sectors? How?"; "What are the factors involved in a health-tech start-up's value creation in healthcare sectors?"; "How does the healthcare industry influence the success or failure of a health-teach start-up?" "What is the strength, weaknesses, opportunities, and threats faced by health-tech startups in developed and developing nations (especially for a highly populated country like India)?" "How does the health-tech start-up business model differ from developed to developing countries?"

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Further reading

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