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Examining the Entrepreneurial Revolution in Healthcare

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This special issue focuses on a specific sector of business activity which has been under great pressure during COVID pandemic, and which has led an entrepreneurial revolution. We thank all companies in healthcare services which save lives and make our lives better daily. Whilst in this Special Issue we could only highlight a limited number of issues, and we hope that articles in this special issue will raise awareness and offer opportunities for further contributions in this emerging field.

Introduction

Until a few years ago, entrepreneurship in healthcare was not recognized as something possible. The dissonance between entrepreneurship activities and healthcare (Phillips & Garman, 2006) was derived from a set of economic, organizational and behavioral barriers.

More precisely, the healthcare industry was mainly influenced by the public interest; the allocation of resources was controlled far more by external forces than other types of enterprises; roles and responsibilities were subject to governmental regulations, standards and traditions that resulted in limited competition among participants. In other terms, the structure of the healthcare system impeded a fertile environment for entrepreneurship, based on the ability of individuals to act upon the opportunities in a strong competitive environment (Miller & French, 2016; Brandt & Znotka, 2021).

Over the last 20 years, the healthcare industry has been set on a path of rapid changes and new discoveries (Marques & Ferreira, 2020) - telemedicine, robotics, IoT, AI, cloud computing and wearables, gene therapy, personalized healthcare and medicine and blockchain - innovating the care delivery models (Ćwiklicki, Klich & Chen, 2020). Kraus et al., 2021 provided an overview of benefits induced by digital and technology adoptions: quality of care and operational efficiency, internal processes improvement, personalized care, re-positioning of patients in the healthcare system and inclusion of new players (e.g., digital companies). Mainstream literature about the healthcare revolution strictly focuses on technology, i.e., how the latest implemented technologies influenced clinical practice (Aquino et al., 2018; Ćwiklicki, Klich & Chen, 2020). A complimentary stream of literature extends the focus of technological application to the entire healthcare system. They explore how the various players of a healthcare ecosystem (patients, pharmaceutical companies, hospitals, public agencies, and many more) exploit digital technologies and means to the quality of care, value creation, and many more managerial issues (Borkowski & Gordon, 2006; Chang, Chen & Kuo, 2009; Kraus et al., 2020).

A less dominant stream of publications emphasizes the role of entrepreneurship in providing innovative solutions to the healthcare system. However, healthcare industry has the potential to act as a fertile ground for entrepreneurship (Garbuio & Lin, 2018). The digital transition and transformation, sustainable challenges and the Covid-19 pandemic have created and augmented opportunities for emerging and existing entrepreneurs. Although events bring about uncertainty, entrepreneurial activities have grown during these uncertain times (Vecchiarini & Mussolino, 2013; Muñoz et al., 2020). Just look at the rapid growth of medical crowdfunding (Bassani, Marinelli & Vismara, 2019) or the number of healthcare deals reported

by the Startup Health Insight Reports (2021). Startup Health Insight researchers declare numbers are record-breaking: \$44 billion being invested into health innovation funding globally, recording more than 20 times increase in 10 years.

Garbuio and Lin (2019) show that an increasing number of entrepreneurs entering the health care space are harnessing old and new technologies in the development of solutions they take to the marketplace. These include several digital solutions related not only to patient care but also, for instance, tracking apps (Davalbhakta et al., 2020), as well as a new digitized sector focussing on well-being. Beyond offering the ways to run businesses (Kulkov, 2021), these solutions are changing the future healthcare scenario dramatically in terms of how we prevent, diagnose, and cure health conditions. Indeed, many companies are moving into healthcare or healthcare-adjacent fields, driven by entrepreneurs who see the value of this emerging and burgeoning market. For instance, new entrants are even represented by patient innovators (Schiavone et al., 2020).

In addition, new entrepreneurial profiles emerge in healthcare systems, such as sustainable healthcare entrepreneurs that contribute to addressing sustainability challenges such as the aging population, incurable illnesses, unhealthy environments (Janssen & Moors, 2013), characterized by a specific set of competencies (Amini, Arasti & Bagheri, 2018). Therefore, it appears that entrepreneurship and healthcare are linked and will continue to be connected for some time.

Despite some literature emerging sporadically on the topic, there exists a lack of wellintegrated theory linking healthcare management, entrepreneurship and innovation. In the studies of entrepreneurship, little is known about what characterizes entrepreneurship in the healthcare industry, who are the entrepreneurs in this sector, and how they develop start-ups and how they scale up their firms within this specific context.

The papers included in this special issue should contribute to the definition of the entrepreneurial processes in healthcare, highlighting the variety of conceptualizations representing new entrants to incumbent companies. This work is necessary, as this special issue aims to provide a more comprehensive view of sophisticated interactions between economic and healthcare actors and healthcare entrepreneurs. Furthermore, it will be important to see the submissions that focus on the growing practices of healthcare

entrepreneurs and specifically to shed further light on the configuration of healthcare startups and scale-ups.

There are several implications of examining healthcare entrepreneurship. This special issue can support managers of new organizations in the planning and implementation of the winning solutions for the healthcare environment and those of existing organizations (e.g., familyowned healthcare organizations; entrepreneurial hospitals) in embracing entrepreneurial habits as a means of survival in such a complex arena.

We now focus on individual papers in this special issue and the contributions they make.

Summary of Papers included in this Special Issue

In the paper entitled “How healthcare entrepreneurship enhances ecosystem outcomes: the relationship between venture capital-funded start-ups and county-level health”, the authors Yunwei Gai, Alia Crocker, Candida Brush and Wiljeana Jackson Glover present a study that explores the impact of venture capital (VC)-funded healthcare service start-ups on countylevel health outcomes in the U.S. from 2010 to 2019. It is conducted using data from PitchBook and the County Health Rankings and Area Health Resources Files, and the research employs panel models with two-way fixed effects and Propensity Score Matching to control for various factors. The findings of the study reveal that an increase in VC-funded healthcare start-ups is significantly associated with improved health metrics, including decreases in diabetes prevalence, HIV cases, obesity rates, and binge drinking, though no impact on hospital utilization was found. Contributing to our special issue, this research highlights the positive social outcomes of healthcare start-ups and emphasizes the need for comprehensive evaluation metrics for VC investments and better integration of healthcare services within entrepreneurial ecosystems.

In the second paper in the special issue entitled “Exploring the ascendancy of social capital in entrepreneurial behavior: new insights from mix model perspective in digital healthcare”, the authors Azfar Anwar, Abaid Ullah Zafar, Armando Papa, Thi Thu Thuy Pham, Chrysostomos Apostolidis present an investigation into the role of social capital in driving entrepreneurial behavior within the digital healthcare sector, a field which is gaining attention for its potential

to provide quick and effective healthcare solutions. Using the social capital theory and health belief model, the researchers propose a novel model to understand the factors influencing entrepreneurial intentions and behaviors, moderated by trust in digitalization and entrepreneurial efficacy. Data was collected from 280 experienced respondents in China and were analyzed using partial least square structural equation modeling. The findings of this article reveal that social capital significantly impacts monetary attitudes and perceived risk but has little effect on perceived usefulness. Monetary attitudes and perceived usefulness are crucial for entrepreneurial activities, while perceived risk minimally affects entrepreneurial intentions. The authors find that entrepreneurial efficacy and trust in digitalization strongly influence entrepreneurial behavior and moderate the relationship between intention and behavior. This study therefore contributes new insights and practical guidelines for policymakers and practitioners to foster entrepreneurship in the digital healthcare sector.

In the third paper in the special issue entitled “Beyond the land of the living death: earlystage transformational entrepreneurs in digital healthcare as liminality navigator”, the authors Edoardo Trincanato and Emidia Vagnoni examine the use of the Lean Startup Approach (LSA) by early-stage entrepreneurs in the digital healthcare sector, particularly focusing on the "pivot" as one of the key strategies. Addressing the lack of research on startups and scale-ups in healthcare, this investigation uses a grounded approach to analyze the experiences of cofounders of a rapidly growing Italian e-health startup. The study organizes these experiences into three pivoting phases: before the pivot, its enactment, and its aftermath, based on the data collected over a year. The findings of the article indicate that pivoting in digital healthcare is a liminal process marked by high levels of regulation, multiple stakeholders, technological and symbolic challenges, resource demands, and institutional influences, leading to information overload and certain levels of uncertainty. This study thus introduces a process model of transformational information crafting, emphasizing the importance of entrepreneurs' transformational roles and platform-mediated solutions in firm's strategy formation. This research contributes valuable insights for entrepreneurs and institutional actors navigating societal challenges in regulated markets.

In the fourth paper entitled “Customer search strategies of entrepreneurial telehealth firms – how effective is effectuation?” the authors Susanna Pinnock, Natasha Evers and Thomas

Hoholm explore how entrepreneurial digital healthcare firms, particularly in the telehealth sector, search for and acquire early customers in the complex and regulated healthcare market. Utilizing a qualitative, longitudinal multiple-case design, the researchers examine four Nordic telehealth firms through in-depth qualitative interviews with founders and senior managers with data collecting lasting over 27 months. Findings indicate that these firms use effectual logic to generate customer demand when buying conditions are flexible but they switch to a more causal approach under constrained buying conditions. The study contributes theoretically to the effectuation literature by showing how customer buying conditions affect decision-making and to the entrepreneurial resource search literature by detailing how firms search for customers beyond their networks in the healthcare sector. The paper highlights the importance for managers to understand target buying environments, particularly how healthcare customer access to funding can influence their engagement in demand co-creation.

In the fifth paper in the special issue entitled “Stand-alone or run together: artificial intelligence as an enabler for other technologies” the authors Ignat Kulkov, Julia Kulkova, Daniele Leone, René Rohrbeck and Loick Menvielle scrutinise the transformative role of artificial intelligence (AI) in the healthcare sector, focusing on its contribution to entrepreneurship and value creation, particularly when combined with other technologies like cloud computing, blockchain, IoMT, additive manufacturing, and 5G. Using an exploratory qualitative methodology, the research analyzes 22 case studies from various regions, including the US, EU, Asia, and South America, sourced from public and specialized podcast platforms. The findings highlight that integrating AI with other technologies can provide a competitive edge for technology entrepreneurs and facilitate the transition from basic consumer devices to actionable healthcare applications. This study identifies three main areas of entrepreneurship: analytics (staff reduction, patient prediction, decision support), security (cyberattack protection, detection of atypical cases), and performance optimization (reducing medical procedure time and costs, staff training, capital cost reduction, market expansion) and synthesises a conceptual framework as a typology, "AI facilitators – AI achievers," and offers theoretical and practical insights into technology entrepreneurship and management in healthcare.

In the sixth paper entitled “Resource allocation in healthcare entrepreneurial ecosystems:

the strategic role of entrepreneurial support organizations”, the authors Valérie Mérimol and David W. Versailles investigate the strategic role of entrepreneurial support organizations (ESOs) in resource allocation within healthcare entrepreneurial ecosystems (EEs). Addressing the gap in literature regarding the dynamics of network orchestration in EEs, the research distinguishes between sponsored and non-sponsored ESOs and their impact on resource distribution. Using an explanatory, exploratory, and theory-building approach, the study analyzes seven French healthcare ESOs through semi-structured interviews conducted from 2016 to 2022. The findings of this study reveal that no single resource allocation model dominates; instead, a multi-polar coordination approach is prevalent, with significant differences between top-down and bottom-up strategies employed by sponsored versus non-sponsored ESOs. The study highlights the unique challenges and roles of these organizations in overcoming barriers and supporting entrepreneurs’ access to technological and cognitive resources, providing valuable insights for ESO managers, entrepreneurs, and policymakers.

In the seventh paper entitled “Healthcare entrepreneurship: Current trends and future directions”, the authors Weng Marc Lim, Maria Vincenza Ciasullo, Octavio Escobar and Satish Kumar provide a comprehensive overview of current trends and future directions in healthcare entrepreneurship through a systematic review of existing research, utilizing the SPAR-4-SLR protocol and bibliometric analysis. Findings of the paper indicate that healthcare entrepreneurship research is robust, with significant contributions from a diverse array of authors, institutions, and countries, supported by various funders and journals. The major themes identified include innovation and leadership, disruption and technology, entrepreneurship models, education and empowerment, systems and services, orientations and opportunities, choices and freedom, and policy and impact. The study underscores the potential of healthcare entrepreneurship to advance healthcare and establishes it as a promising field for both academic research and professional practice.

In the eighth paper entitled “Times of crisis and new entrepreneurial opportunities in highly regulated environments: the case of mRNA-biotechs during COVID-19 pandemic”, the authors Yann Truong, and Yosr Ben Tahar investigate the strategic responses of small mRNA-based biotechnology firms to the highly regulated pharmaceutical sector during the COVID-19 crisis. Although the sector is characterized by historically stringent regulations, the urgency to

develop effective and safe drugs during the pandemic has presented unprecedented opportunities, which makes this empirical context unique. Through the qualitative semistructured interviews with 21 managers from four mRNA biotech firms, the research identifies the use of rhetorical strategies and institutional actions as key mechanisms for leveraging these opportunities. The findings of the paper reveal that heightened media attention, increased receptiveness of state agencies, and public acceptance of novel treatments have collectively facilitated this strategic repositioning. The study also underscores that crises can enable smaller firms to effect substantial changes within highly regulated environments, provided they adeptly utilize strategic actions to exploit the resulting institutional shifts.

Critical considerations emanating from the articles

The papers included in this special issue provide a multifaceted exploration of healthcare entrepreneurship and innovation management, each focusing on distinct aspects and implications within the field. In fact, studies underscore the positive impact of venture capital (VC)-funded healthcare start-ups on health outcomes, emphasizing reductions in diabetes prevalence, obesity rates, HIV cases, and binge drinking, despite no observable effect on hospital utilization. VC can be an important driver for the entrepreneurial growth of this industry, especially in those countries in which healthcare is dominated by private companies and the role of public health is minor. Furthermore, the research into social capital in digital healthcare reveals its significant role in shaping entrepreneurial behaviors and intentions, mediated by trust in digitalization and entrepreneurial efficacy. This evidence is relevant since shed lights on the need for industry stakeholders to find new avenues for the construction of social capital and trust, with patients and caregivers. Nowadays, the adoption and diffusion of robots in healthcare is spreading. But are these medical technologies really able to build social capital and “humanize” care?

Moreover, investigations into the Lean Startup Approach highlight its application and challenges in navigating the highly regulated digital healthcare sector, particularly through strategic pivoting. This approach should be largely adopted among entrepreneurial start-ups operating within healthcare, an industry facing significant resource constraints and budget reductions all around the world since many years. In addition, studies on customer acquisition

strategies in telehealth emphasize the adaptability of firms using effectual logic under varying buying conditions. This evidence shows digital health, in order to create value for companies, needs to be designed and managed with a customer-centric orientation and by implementing marketing logics and strategies in shows.

Besides, the integration of artificial intelligence with other technologies in healthcare underscores its transformative potential across analytics, security, and performance optimization domains. This evidence, however, opens the risks for potential issues and concerns, for instance about the privacy of users, that need to be considered before applying artificial intelligence and other data-driven digital technologies in healthcare. Furthermore, the research on entrepreneurial support organizations (ESOs) elucidates their pivotal role in resource allocation within healthcare ecosystems, highlighting the nuanced approaches and strategies of sponsored versus non-sponsored entities. These players are important for the general efficiency of the healthcare system and, may critically contribute to the value creation dynamics and strategies of many industry stakeholders.

Finally, the systematic review included in this special issue outlines current trends in healthcare entrepreneurship, identifying key themes such as innovation, technology disruption, and policy impact, thereby affirming its critical role in advancing healthcare practices. Such insights are extremely relevant for scholars in the fields of management, innovations and entrepreneurship that want to discover new evidence and develop new theories about healthcare empirical setting.

Future Research Agenda

These studies prompt several avenues for future research. Firstly, exploring the long-term impacts of digital healthcare start-ups on broader healthcare systems and patient outcomes could provide deeper insights into their sustainability and scalability. An appealing avenue for new research could focus on this assumption and analyse how such digital healthcare startups contribute in practice to efficiency and efficiency of the whole industries.

Secondly, investigating the optimal integration strategies for AI and emerging technologies to maximize their value in healthcare innovation remains crucial. Various variables and conditions (patients segments, patient journeys, medical domain and so on) can affect the combination of such strategies. Development of new insights, via models and

framework, and their combinations would form an important knowledge base for supporting the practice of healthcare entrepreneurship.

Thirdly, understanding the adaptive strategies of healthcare entrepreneurs during crises, such as COVID-19, and their implications for regulatory frameworks and institutional dynamics could result in practical guidelines for resilience-building. For instance, Bastone and her co-workers (2023) recently outlined how the need of national healthcare systems to shorten the processes of development and approval of new drugs can be an important source of value and entrepreneurship. In line with this point, further research into the role of entrepreneurial support organizations (ESOs) in fostering entrepreneurial ecosystems, particularly in diverse regulatory environments, globally, would enrich understanding of their operational effectiveness and strategic impact. These inquiries collectively contribute to advancing knowledge and practice in healthcare entrepreneurship, guiding future initiatives and policy frameworks in the evolving healthcare landscape and driving new revolutions and evolutions in this sector.

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