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# Drivers of Startups in Healthcare Sector: Evidence from Kingdom of Saudi Arabia

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***Abstract***

*The Kingdom of Saudi Arabia is embarking on an ambitious journey towards economic diversification and a knowledge-based economy. Fostering a vibrant startup ecosystem is a key pillar of this transformation, with the healthcare sector presenting fertile ground for innovation. This research delves into the intricate web of factors that shape the creation of healthcare startups within the unique Saudi context. Drawing on empirical data and insights specific to the Saudi Arabian landscape, the study aims to shed light on the challenges and opportunities that healthcare startups encounter. It goes beyond simply identifying these factors; a nuanced analysis is conducted to understand the interplay between various influences. This multifaceted approach can provide invaluable knowledge for aspiring healthcare entrepreneurs, policymakers, and stakeholders invested in propelling the Saudi healthcare startup ecosystem forward. The research findings can empower key players to develop targeted support systems and initiatives. These can equip healthcare startups with the tools they need to navigate the intricacies of the Saudi market, fostering a new wave of innovation that ultimately improves healthcare delivery and accessibility for the region. By unveiling the complex landscape that shapes the Saudi healthcare startup scene, this research can serve as a valuable roadmap for stakeholders to cultivate a thriving ecosystem that fosters groundbreaking advancements in healthcare for the benefit of the Kingdom and beyond.*

***Keywords:*** *Healthcare Startups, Kingdom of Saudi Arabia, Startup Ecosystem, Innovation, Entrepreneurship, Public Health.*

## Introduction

Healthcare startups play a crucial role in economic growth by driving innovation, job creation, and regional development. These startups contribute to the digitization of healthcare, introducing disruptive technologies and solving important social problems (Rinsche, 2017; Yaşar, 2024). They foster innovation through partnerships and attract investment in underdeveloped areas, supporting broader economic development (Yaşar, 2024). In emerging markets, healthcare startups have gained policy focus, especially following the COVID-19 pandemic (Mukherjee, 2021). Public healthcare entrepreneurship has been found to positively impact economic growth through increased productivity, although this relationship is non-linear (Rastoka, 2023). Despite their potential, healthcare startups face challenges such as high failure rates, limited access to capital, and regulatory hurdles (Yaşar, 2024). To maximize their impact on local, national, and international economies, governments and stakeholders should address these challenges through strategic initiatives and supportive ecosystems (Yaşar, 2024; Mukherjee, 2021).

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Recent research highlights the growing potential for healthcare entrepreneurship in Saudi Arabia, driven by Vision 2030's focus on privatization and public-private partnerships (Alasiri & Mohammed, 2022). While the entrepreneurial ecosystem is still developing, government reforms are creating opportunities (M. Khan, 2013). Healthcare students show positive intentions towards entrepreneurship, influenced by traits like proactiveness, innovativeness, and autonomy (Mohamed et al., 2023). However, challenges remain, including the need for effective revenue cycle management and ensuring access to quality healthcare for vulnerable populations (Alasiri & Mohammed, 2022). Female entrepreneurship is on the rise, with more women establishing small and medium-sized businesses despite societal and institutional barriers (Danish & Smith, 2012). To foster entrepreneurship growth, interventions are needed at strategic, institutional, and enterprise levels (M. Khan, 2013). Overall, Saudi Arabia's healthcare sector is undergoing significant transformation, presenting both opportunities and challenges for entrepreneurs.

Recent research highlights critical factors affecting healthcare startups. Key success elements include technical skills, marketability, entrepreneurial capacity, and funding (Lee et al., 2019). Studies emphasize the importance of actor's knowledge, service value, technological infrastructure, revenue generation, and regulatory compliance (Chakraborty et al., 2023). Environmental factors, such as demographic and economic variables, also influence new business formation in private healthcare (Skica et al., 2018). Heathcare startups face challenges like regulatory hurdles and high capital requirements, with crowdfunding and venture capital emerging as crucial funding sources (Kalinowska-Beszczyńska & Prędkiewicz, 2024). Collaboration among universities, industry, and government is vital for successful commercialization (Kalinowska-Beszczyńska & Prędkiewicz, 2024). While research has predominantly focused on the USA, there's a need for more geographically diverse studies (Kalinowska-Beszczyńska & Prędkiewicz, 2024). Understanding these factors can guide entrepreneurs, policymakers, and stakeholders in fostering successful healthcare startups (Chakraborty et al., 2023). Therefore this study is conducted to understand what motivate or discourage Saudi Arabians to start a venture in healthcare sector.

While Saudi Arabia has made notable progress in fostering a startup-friendly ecosystem, limited research exists on the specific factors influencing startups in healthcare sector. Specifically, how social capital and human capital motivates and discourage entrepreneurs create a venture in healthcare sector. This research aims to bridge this knowledge gap by systematically investigating:

- What factors drive individuals to start healthcare ventures in Saudi Arabia?
- What challenges deter potential entrepreneurs from entering the healthcare industry?
- How do social capital, human capital and financial capital affect them start business in healthcare business?

By addressing these questions, this study will contribute to a deeper understanding of the entrepreneurial landscape in Saudi Arabia’s healthcare sector, ultimately guiding policy recommendations to support sustainable startup growth.

The literature that is currently available on entrepreneurship frequently examines topics including team dynamics, training, and skill development (Chatterjee et al, 2012; Cooper and Dunkelberg 1987; Cooper et al 1994). However, by concentrating only on seasoned business owners and excluding up-and-coming entrepreneurs who can propel future expansion, these

studies usually suffer from hindsight and survival biases (Datta and Gailey 2012). Additionally, although entrepreneurship has been studied using a variety of frameworks, new developments suggest integrating theories, especially those that focus on cognitive and social capital, to obtain a more thorough understanding of venture initiation processes (Chatterjee et al, 2012; Davidsson and Honig 2003; De Carolis and Saparito 2006; De Vita et al., 2014; DeTienne and Chandler 2007). This study adds to the body of knowledge already available on entrepreneurship with a particular emphasis on the healthcare industry. It highlights the distinct regional variables that impact entrepreneurial behavior by turning the focus from Western contexts to Saudi Arabia, a country experiencing revolutionary socio-cultural and economic transformations under Vision 2030.

Given the peculiar circumstances of Saudi Arabia, the combination of cognitive and social capital frameworks is especially pertinent. Cultural norms and the changing status of women in Saudi society have a substantial impact on cognitive capital, which includes risk perception and entrepreneurial self-efficacy. In a society where prospects are greatly influenced by family and tribe loyalties, social capital—represented by networks and community support—is essential. This research offers a comprehensive knowledge of how socio-cultural and structural elements either facilitate or impede venture development by utilizing these frameworks to examine the entrepreneurial experiences of Saudi women. These understandings are essential for creating and carrying out interventions and policies that successfully assist female entrepreneurs and take into account regional circumstances.

In line with Saudi Vision 2030, this study provides practical advice for encouraging women to start their own businesses by tackling perceptual and structural obstacles such social network constraints and risk perception. These results guide the creation of evidence-based policies that support inclusive growth and long-term economic empowerment. Methodological rigor and generalizability are ensured by using a logistic regression analysis with Global Entrepreneurship Monitor (GEM) data from more than 15,000 Saudi entrepreneurs. This research emphasizes how women entrepreneurs may achieve sustainability via long-term growth, economic participation, and equal opportunity.

This paper's remaining sections are organized as follows: The theoretical framework and hypotheses are covered in the following section; the research methodology, including the variables chosen and the analytical method, is covered in Section 3; the results and hypothesis testing are presented in Section 4; the findings and their implications are discussed in Section 5; and concluding remarks are presented.

## Literature Review:

### Cognitive Theory of Entrepreneurship

Making the choice to start a new business is a crucial part of entrepreneurship and requires a lot of mental processing (Gartner 1989). Entrepreneurs' thought processes have been the main focus of research on cognition in entrepreneurship (Baron 2004; Baron 2007; Douglas et al., 2021; Mitchell et al., 2007). More specifically, the cognitive frameworks that entrepreneurs use to analyze, interpret, and decide on things like opportunity assessment, venture decisions, and growth strategy implementation.

In the beginning, researchers studying entrepreneurship looked at personal qualities and attributes including locus of control, inclination for taking risks, and other motivating elements [Gartner 1989; Jennings and Zeithaml 1983; McClelland 1961]. Many researchers have now

combined these characteristics with demographic data (Arafat et al., 2020), which has resulted in a more sophisticated understanding of how characteristics and demography affect entrepreneurial activity. Not all entrepreneurship academics, however, agree with this method of elucidating venturing elements. While some have questioned its predictive value, others have voiced reservations about its technique (Krauger Jr. et al., 2000).

Meanwhile, because it could explain mental processes like perception and attitude, the cognitive theory of entrepreneurship acquired a lot of traction (Krueger 2003). Through cognitive processing, entrepreneurs find, assess, and seize chances to make money (Shane 2000) (Baron 2007). Important insights on comprehending entrepreneurs have been obtained from the study of perception (Krueger 2003; Liñán and Chen 2009). According to Liñán and Chen (2009), perception is a personal interpretation of reality that is impacted by one's upbringing and surroundings. It lacks objectivity and is a subjective perception of a real-life circumstance (Liñán et al 2011). Four major perception categories—perceived opportunity, perceived capabilities, perceived risk, and attitude—are used in this study since it is believed that these factors have a big impact on Saudi Arabian women entrepreneurs.

**Perceived Opportunity**

People with an entrepreneurial attitude are better at seeing business possibilities and seizing them (Klyver et al., 2017). Entrepreneurship, according to Shane (2000), is the process of identifying, evaluating, and seizing opportunities. Accordingly, one of the most important aspects of entrepreneurial activity is spotting chances (Kuckertz et al., 2017). Conceptually, theoretically, and logically, there is a strong correlation between a person's capacity for opportunity recognition and their propensity to launch a firm in Saudi Arabia's healthcare industry. From a conceptual standpoint, Saudi Arabia's healthcare industry is expanding and changing dramatically due to the government's Vision 2030 project, which intends to modernize healthcare infrastructure and diversify the economy. From specialist medical services to digital health solutions, this fosters an atmosphere that is conducive to entrepreneurship. Because they can see gaps in the market, comprehend changing customer wants, and predict regulatory changes, people who are able to see these new possibilities are more likely to believe that the industry is feasible and appealing for entrepreneurship.

Theoretically, this relationship is supported by frameworks such as the Entrepreneurial Opportunity Recognition Theory, which highlights the critical role of identifying and exploiting opportunities in entrepreneurial behavior. This aligns with the Resource-Based View (RBV), which suggests that individuals with unique capabilities, such as opportunity recognition, are more likely to leverage these skills to create new ventures. Additionally, the Theory of Planned Behavior (TPB) reinforces this connection by emphasizing that perceived opportunities influence entrepreneurial intentions, which in turn drive entrepreneurial actions. In the context of Saudi Arabia's healthcare sector, these theories collectively explain why individuals who recognize opportunities are more likely to form the intention to start a business and take concrete steps toward entrepreneurship.

H1: Individual with ability to recognize opportunity are more likely to start a business in healthcare sector in Saudi Arabia.

**Perceived Capabilities**

The relationship between perceived capabilities, or entrepreneurial self-efficacy, and the likelihood of starting a business in Saudi Arabia's healthcare sector is conceptually, theoretically,

and logically well-founded. Conceptually, entrepreneurial self-efficacy—defined as an individual's belief in their ability to perform entrepreneurial tasks such as identifying opportunities, managing resources, and overcoming challenges (Bandura, 1997)—plays a critical role in the context of Saudi Arabia's rapidly growing healthcare sector, driven by Vision 2030 initiatives, population growth, and increasing healthcare demands (Alshumaimeri et al., 2020). Individuals with high entrepreneurial self-efficacy are more likely to perceive themselves as capable of navigating the sector's complexities, such as regulatory barriers and high capital requirements, and are thus more inclined to pursue opportunities like telemedicine, specialized clinics, or health-tech solutions (Aloulou, 2021). Theoretically, this relationship is supported by Bandura's Self-Efficacy Theory (1997), which highlights the role of self-belief in goal-setting and persistence, and Entrepreneurial Self-Efficacy (ESE) (Chen et al., 1998), which links self-efficacy to entrepreneurial behavior. Additionally, the Theory of Planned Behavior (TPB) (Ajzen, 1991) emphasizes that perceived behavioral control, including self-efficacy, directly influences entrepreneurial intentions and actions. Logically, the healthcare sector's opportunities and challenges create a dynamic environment where individuals with high self-efficacy are more likely to mobilize resources, build networks, and overcome barriers, thereby increasing their likelihood of starting a business, while those with low self-efficacy may perceive the same challenges as insurmountable, leading to inaction (Bandura, 1997; Aloulou, 2021). Thus, entrepreneurial self-efficacy positively impacts the likelihood of starting a business in Saudi Arabia's healthcare sector, supported by conceptual, theoretical, and logical reasoning.

H2: Perceived capabilities or entrepreneurial self-efficacy has a positive impact on the likelihood of starting a business in healthcare sector among the Saudi Arabians

**Attitude**

The relationship between entrepreneurial attitude or desirability and the propensity to start a business in Saudi Arabia's healthcare sector is conceptually, theoretically, and logically well-founded. Conceptually, entrepreneurial attitude refers to the degree to which an individual holds a positive or favorable evaluation of entrepreneurship, including the desirability of starting and running a business (Ajzen, 1991). In the context of Saudi Arabia's healthcare sector, which is experiencing rapid growth due to Vision 2030 initiatives, population growth, and increasing healthcare demands, individuals with a strong entrepreneurial attitude are more likely to view entrepreneurship as an attractive and viable career path (Aloulou, 2021). The sector's expansion creates opportunities for innovative ventures, such as telemedicine, specialized clinics, and health-tech solutions, which align with the aspirations of individuals who find entrepreneurship desirable (Alshumaimeri et al., 2020). Theoretically, this relationship is supported by the Theory of Planned Behavior (TPB) (Ajzen, 1991), which posits that attitudes toward a behavior, such as starting a business, significantly influence intentions and subsequent actions. Additionally, Entrepreneurial Event Theory (EET) (Shapero & Sokol, 1982) suggests that the perceived desirability of entrepreneurship is a key factor in triggering entrepreneurial intentions and actions. In Saudi Arabia's healthcare sector, where the government is actively encouraging private sector participation, individuals with a positive attitude toward entrepreneurship are more likely to perceive the sector as an attractive opportunity and take steps to start a business (Aloulou, 2021). Logically, the relationship follows a cause-and-effect progression: a favorable attitude toward entrepreneurship increases the likelihood of recognizing opportunities, forming entrepreneurial intentions, and taking action, especially in a sector with high growth potential and government support. Conversely, individuals with a negative or neutral attitude may lack the motivation to pursue entrepreneurial activities, even in a promising sector like healthcare.

Thus, entrepreneurial attitude or desirability has a significant positive influence on the propensity to start a business in Saudi Arabia's healthcare sector, supported by conceptual, theoretical, and logical reasoning. Therefore, we propose:

H3: Entrepreneurship desirability has a significant positive influence on the propensity to start a business in healthcare sector.

**Perceived Risk**

According to a number of academics, entrepreneurs are not naturally risk averse because of the nature of their work, which is vital to the advancement of society and the economy. Risks and the potential for failure are inherent in the identifying and exploitation of opportunities. As a result, those who are making business decisions must carefully weigh these odds (Al-Mamary and Alshallaqi, 2022). The assessment of risks to a person's capacity to accomplish significant objectives is linked to risk perception (Dinur 2011). It is an emotional reaction associated with making business decisions. Risk perception influences entrepreneurial behaviors, as several research have shown (Cacciotti et al., 2016).

In the research currently in publication, risk perception has been defined as unpleasant feelings (Gimenez-Jimenez et al., 2022), a sense of guilt, an incapacity to meet goals (Noguera et al., 2013), or an attitude toward risk (Shinnar et al., 2012). These results imply that an emotional reaction to a perceived danger is what causes risk perception. Cognitive theory defines a threat as any circumstance in which the possible consequences are viewed as unfavorable (Mitchell et al., 2007). According to a substantial amount of entrepreneurship research, the possibility of starting a new business is increased when risk perception is reduced (Arafat et al., 2020). We develop the following hypothesis in light of these findings:

H4: Perceived risk has a significant negative influence on individuals' propensity to start a business healthcare sector of Saudi Arabia.

**Social capital theory of entrepreneurship**

**Social Capital Theory**

In recent decades, there has been widespread recognition of the importance of social capital in explaining entrepreneurial activity (Afandi et al., 2017; Davidsson and Honig 2003; De Carolis and Saparito 2006; Tsai and Ghoshal 1998). Social capital makes it easier for business owners to obtain the essential resources needed to start a new company (Dimitriadis 2021). Given the importance of social capital, this study concentrates on two important aspects: social networks and angel investors. According to several studies (Amini Sedeh et al., 2021; Arafat et al., 2020; Pindado and Sánchez, 2017; Pindado et al., 2018), these characteristics are good in forecasting entrepreneurial activity.

**Family Social Capital**

Family social capital highlights how important the family is as a basic structure for transferring social capital, which is the ability to benefit from social ties. Relationships and social structures include social capital, which makes it possible for these networks to take action. It supports both instrumental objectives, like better job prospects, and expressive outcomes, like life happiness. A unique type of social capital, family capital develops from interactions inside the family and promotes solidarity and mutual reliance. According to research, family capital has a greater impact on professional results than non-family social capital (Abu Bakar et al., 2017; Cetindamar

et al., 2012). Family members become dependable partners for jobs involving danger or confidentiality because it gives them access to labor and builds confidence in group situations.

Research on entrepreneurship shows that family capital has a major role in fostering entrepreneurial endeavors. Indian weavers, for instance, have successfully used family money to spur innovation and credit recovery. Consequently, family wealth is essential for fostering entrepreneurship in developing nations.

H5: Family social capital has a significant positive impact on women's entrepreneurial intentions in Saudi Arabia.

**Social Networks**

When launching a new company, entrepreneurs may gain a great deal from the experiences of previous entrepreneurs. Making connections with other business owners cultivates an entrepreneurial attitude and improves a person's capacity to handle the difficulties that come with being an entrepreneur (Krueger and Carsrud 1993). The idea that networking can facilitate entrepreneurial activity has been experimentally validated by a number of studies (Arafat et al., 2020; Shane and Cable, 2002). Using role theory as support, Shepherd and associates (Shepherd et al., 2021) contended that connections with other business owners raise the possibility of starting a new endeavor. According to Tsai & Ghoshal (1994), social capital bridges facilitate the diffusion of new information. Knowledge improves a person's capacity to spot possibilities, which in turn leads to the establishment of new businesses (Kimjeon and Davidsson 2022).

According to entrepreneurship scholarship, connections among entrepreneurs make it easier to obtain new ideas, which in turn makes it easier for people with large networks to launch new businesses (Pindado et al., 2018). According to Davidsson & Honig (2003), social capital makes it easier to get support and resources for entrepreneurs. Consequently, we speculate:

H6: Networking has a significant positive influence on individuals' propensity to start a business in healthcare sector of Saudi Arabia.

**Cognitive Social Capital**

Human interactions frequently present opportunities because of the unequal distribution of information among people. The cognitive dimension of social capital in this knowledge-sharing process through social connections stands for the common values and vision of the participants (Tsai and Ghoshal 1998). These common ideals provide social support, which improves communication between people. Furthermore, these widely used contextual perception techniques help people evaluate new information (De Carolis and Saparito 2006). People are more aware of their entrepreneurial potential and are thus inspired to pursue entrepreneurship as a result of society's belief that it is a desirable career choice. Prior research has indicated that the business practices of younger Saudi Arabian women are influenced by their ideological frameworks (Arafat et al., 2020). These efforts may be hampered by the perception of modern agricultural and business practices as retrograde by earlier generations of women who have been subjected to restricted production rules. As a result, we suggest:

H7: Social desirability towards entrepreneurship has a significant positive influence on individuals' propensity to start in healthcare sector in Saudi Arabia.

### Informal Investors

Angel investors and those who have previously invested in businesses run by family members or friends are far more likely to start new projects. A more positive attitude toward entrepreneurship is typically fostered by earlier experience as informal or angel investors, according to several research (Arafat et al., 2020; Klyver et al., 2017). Whether via investment or informal funding of other businesses, the presence of business angels or informal investors in early decision-making processes encourages people to take more risks than those who have no such experience. New businesses are often started or supported by angel investors (Qin et al., 2022). Additionally, according to role theory, angel investors learn about the backgrounds and experiences of other business owners.

As a result, their firsthand experiences, intimate connections, and increased awareness reveal the success narratives of other entrepreneurs, thereby fostering confidence in their own capacity to effectively launch new enterprises.

Network theory asserts that individuals who have informally participated in or supported other enterprises as angel investors are more likely to obtain the resources and essential information required for launching and maintaining a firm. An empirical study indicates that female corporate leaders are less inclined to employ both internal and external resources. Social capital and the external institutional environment affect the inclination for internal finance both adversely and favorably (Wang et al., 2021). Consequently, the subsequent hypothesis is posited:

H8: Prior informal investments in other businesses have a significant positive influence on healthcare startups in Saudi Arabia.

## Methodology

### Theoretical Framework

This study utilizes cognitive and social capital frameworks to analyze significant entrepreneurial actions and decisions in Saudi Arabia. The selected variables, namely "Perceived capabilities" and "Social networks," correspond directly to the notions of cognitive and social capital, respectively. These variables include the interaction between personal confidence, social support networks, and entrepreneurial decision-making, especially within the framework of Saudi Arabia's distinct socio-cultural dynamics. This integration guarantees a culturally attuned application of theoretical frameworks to the data collection.

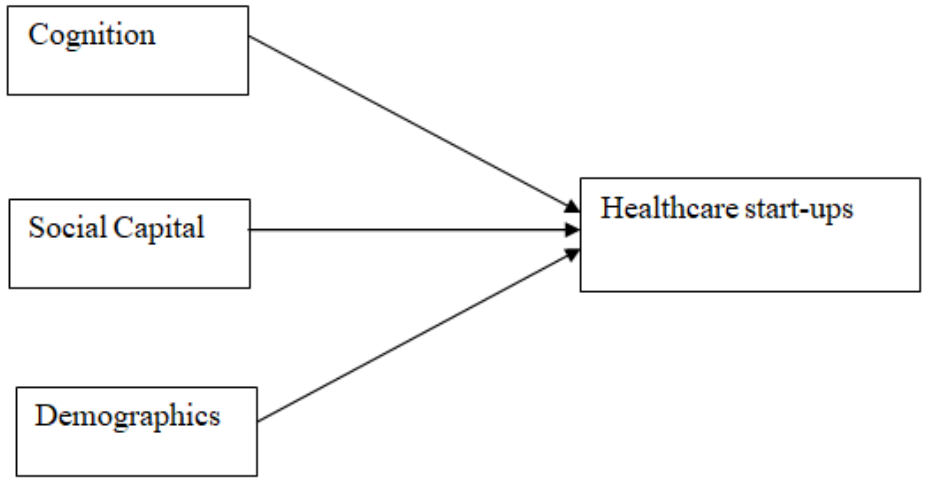


Figure 1. Conceptual Framework

Source: Authors

**Data Source**

The research utilized data from the 2020 Adult Population Survey (APS) of the Global Entrepreneurship Monitor (GEM) Database. The GEM functions as a globally acknowledged authority in comprehensive survey-based research on entrepreneurship, including attitudes, behaviors, and entrepreneurial ecosystems. Details concerning the data collection methodology are available at (https://www.gemconsortium.org/wiki/1599, accessed January 11, 2025). The GEM framework was notably improved by the contributions of Reynolds et al. [78], facilitating the measurement and analysis of multiple aspects of the entrepreneurship phenomenon. Numerous studies demonstrate that GEM provides a comprehensive theoretical framework for gathering diverse, substantial, reliable, and comparable data regarding the entrepreneurial environment and activity.

The APS-2020 data was obtained from the GEM website, focusing on the 2020 dataset because of the three-year delay in the public release of GEM APS data (further information can be found at https://www.gemconsortium.org/data, accessed November 03, 2024). The APS dataset includes 141,403 total responses, of which 4,027 are from Saudi Arabia. Additionally, data from the healthcare sector was selected and extracted into a separate file utilizing SPSS version 27.0. From the APS-2020 dataset, 469 variables were available, of which 12 were selected for their direct relevance to the study's objectives. The variables encompass essential elements including perceived opportunities, risk, and social capital, which are fundamental to comprehending entrepreneurial behavior in the Saudi context. The variable selection process aligned with the study's theoretical frameworks and hypotheses, as outlined in Table 2.
The GEM database offers a globally standardized and inclusive framework for nascent entrepreneurial activities, serving as a robust and impartial basis for this research. The capacity to identify individuals at different stages of entrepreneurship reduces selection bias, thereby enhancing the reliability and generalizability of the findings.

GEM classifies entrepreneurs into three categories based on the stage of their entrepreneurial activities. Total early-stage entrepreneurial activity (TEA) refers to individuals engaged in the initiation of a new business or those who are owners of a nascent enterprise [78]. Secondly, established business EB owners are individuals who have founded and sustained enterprises that have issued compensation or salaries for a duration exceeding 42 months. Third, intentional entrepreneurs are defined as individuals who are either in the process of launching a business at the time of the interview or are actively considering the establishment of a firm within the next three years.

| **Variable** | **Description** |
|---|---|
| | **Dependent variable** |
| Healthcare startup | Binary variable which takes the value of 1 for healthcare entrepreneurs, those who are actively involved in starting a business and belongs to category "GOVERNEMENT, HEALTH, EDUCATION, SOCIAL SERVICES" and 0 otherwise. This sector includes:<br>• Hospitals<br>• Medical and dental practices<br>• Residential care activities<br>• Social work activities without accommodation (e.g., home healthcare services)<br>(The definition of the healthcare sector follows the International Standard Industrial Classification (ISIC) – Revision 4.) |
| | **Independent variables** |
| Opportunities | "where the individual who sees good opportunities to start a firm in the area is denoted by the value 1." |
| Risk | "if she indicates that fear of failure would prevent them from starting up a business, then this case is denoted by 1 value." |
| Capabilities | "if she has the adequate knowledge, essential skills and minimum experience to set up a business, it is denoted by value 1 and 0 in the other case." |
| Attitude | "In your country region, most people believe that starting up a business is an<br>attractive profession." |
| Family capital | "Number of family members living in a residence" |
| Networking | "if the individual personally knows someone who has started up their own business in the last 2 years, it is denoted by the value of 1 and 0 in the other case." |
| Cognitive social capital | "In your country region, a person who successfully starts up a new business gains high social status and prestige." |
| Informal Investment | "which takes value 1 if the individual has provided personal funds to help other people start a business in the past 3 years, excluding investment in Bonds shares or mutual funds, 0 in the other case." |
| Age | "Age of individual" |
| Education | "if the individual has primary education or less, it is denoted by the value of 1 and 0 in the other case" |

| | |
|---|---|
| Income | "The response categories were "lowest 33, middle, and upper 33 percentile. The first income group was considered for reference category." |

Table 2. Description of Variables and Measures

The GEM database provides multiple benefits compared to the collection of new data for our study. GEM represents a highly comprehensive and standardized global database. The dataset comprises uniform data types across various countries, establishing it as a genuinely global resource. The GEM collects data on individuals' current business ventures and includes a variety of explanatory factors that illuminate different entrepreneurial phenomena. GEM identifies individuals in the early stages of entrepreneurship, thus reducing selection bias that occurs when studies rely on data excluding entrepreneurs who may have prematurely ended their efforts during the data collection phase. We assert that the GEM database is appropriate for this investigation.

**Analysis of Binary Logistic Regression**

Binary logistic regression is a prominent statistical method used for modeling binary outcome variables, such as success versus failure or yes versus no. Additionally, it predicts the probability of an event, providing both categorical predictions and insights into the likelihood of various outcome variables (Kleinbaum et al., 2002). This method creates a linear association between predictor variables and the log-odds of the outcome, facilitating a clear understanding of how predictors affect the probability of events (Hosmer et al., 2013).
The primary advantage of binary logistic regression lies in its ability to accommodate multiple predictors, including continuous, categorical, and interaction terms. In contrast to linear regression, it does not presuppose normality of predictors, thereby exhibiting robustness to non-normal distributions. The analysis utilizes maximum likelihood estimation (MLE) and incorporates the Omnibus test and pseudo-R-square to evaluate model fit (Menard 2001). Binary logistic regression is specifically designed for binary outcome variables, effectively preventing issues such as predictions that fall outside the 0–1 range, a problem that can arise with linear regression (Agresti, A., 2012). The results are analyzed using odds ratios, elucidating the impact of predictors. It achieves a balance between simplicity and flexibility by allowing for transformations and interactions without the risk of overfitting, in contrast to more complex models like neural networks (Allison, P., 2012). Logistic regression is typically supported by all statistical software, making it accessible and easy to implement (Allison, P., 2012). We utilize SPSS version 27.0 to conduct binary logistic regression analysis, given that our dependent variable is binary, while the other variables include binary, categorical, and continuous types.

## Results

The result section is divided into four parts, namely descriptive statistics see table 3, correlation see table 4, Model fitness see table 5 and 6, and binary logistic regression.

**Descriptive statistics**

We employed descriptive statistics to contextualize the research findings and provide a detailed profile of the study sample.

| **Variables** | **N** | **Min** | **Max** | **Mean** | **S.D.** |
|---|---|---|---|---|---|
| Healthcare startup | 381 | 0 | 1 | 0.30 | 0.46 |

| Variables | N | Min | Max | Mean | S.D. |
|---|---|---|---|---|---|
| Age | 381 | 18 | 64 | 36.50 | 10.70 |
| Work status | 381 | 10 | 30 | 15.10 | 6.10 |
| Income | 381 | 33 | 68100 | 25900 | 31900 |
| Education | 381 | 0 | 1720 | 730 | 640 |
| Perceived opportunity | 381 | 1 | 5 | 4.10 | 1.07 |
| Perceived capabilities | 381 | 1 | 5 | 3.95 | 1.15 |
| Perceived benefits | 381 | 1 | 5 | 4.30 | 0.98 |
| Perceived risk | 381 | 1 | 5 | 3.20 | 1.39 |
| Family size | 381 | 2 | 12 | 5.05 | 1.48 |
| Social desirability | 381 | 1 | 5 | 4.34 | 0.91 |
| Networking | 381 | 0 | 3 | 0.92 | 0.99 |
| Angel investor | 381 | 0 | 1 | 0.13 | 0.35 |
| Valid N listwise | 381 | | | | |

Table 3. Descriptive Statistics

The descriptive statistics of variables related to healthcare startups, based on a sample of 381 respondents, provide key insights into the characteristics, perceptions, and resources of the participants. The data indicate that 30% of respondents are involved in a healthcare startup, with a mean value of 0.30 and a standard deviation of 0.46, suggesting moderate variability in startup participation. The average age of respondents is 36.50 years (S.D. = 10.70), covering a broad range from 18 to 64 years, which highlights the participation of both young and older individuals in the entrepreneurial landscape.

Work experience among respondents varies considerably, with an average of 15.10 years (S.D. = 6.10), ranging from 10 to 30 years, reflecting a mix of early-career professionals and seasoned workers. Educational attainment follows a similar pattern of disparity, with an average education level of 730 units (S.D. = 640), ranging from 0 (no formal education) to 1720 (advanced education or certifications).

In terms of entrepreneurial perceptions, respondents demonstrate a high perception of opportunities (Mean = 4.10, S.D. = 1.07) and strong confidence in their entrepreneurial capabilities (Mean = 3.95, S.D. = 1.15). The perceived benefits of entrepreneurship are notably high, with a mean of 4.30 and a standard deviation of 0.98, suggesting a general consensus on its advantages. However, perceptions of risk vary widely (Mean = 3.20, S.D. = 1.39), indicating diverse views on the uncertainties associated with entrepreneurship.

Family size among respondents averages 5.05 members per household (S.D. = 1.48), ranging from 2 to 12 members, signifying a trend toward medium to large-sized families. Social desirability is also a key factor, with a mean score of 4.34 and a standard deviation of 0.91, indicating a strong inclination toward socially favorable behaviors. Networking opportunities appear somewhat limited, with a mean of 0.92 (S.D. = 0.99), suggesting varied levels of access to professional networks. Finally, involvement with angel investors is relatively low, with only

13% of respondents having access to such funding (Mean = 0.13, S.D. = 0.35), highlighting the challenges entrepreneurs face in securing financial backing.

Overall, these findings offer a comprehensive understanding of the entrepreneurial environment in the healthcare sector, emphasizing both opportunities and challenges that influence startup participation. The variability in factors such as income, education, risk perception, and networking underscores the diverse backgrounds and experiences of aspiring entrepreneurs in this domain.

**Correlation**

The correlation matrix gives initial support for the hypotheses we proposed and provides a preliminary sustenance for regression analysis, as the r value is less than 0.6; hence, multicollinearity is not a problem. Table 4 shows the relationships between variables related to women's entrepreneurship and factors like age, work status, income, education, perceptions, family size, and networking.

| **Variables** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Healthcare startup** | 1 | | | | | | | | | | | | |
| **2. Age** | **-0.053** | 1 | | | | | | | | | | | |
| **3. Work status** | **-0.110** | 0.010 | 1 | | | | | | | | | | |
| **4. Income** | **0.001** | 0.051 | 0.033 | 1 | | | | | | | | | |
| **5. Education** | **-0.041** | -0.005 | -0.111 | 0.025 | 1 | | | | | | | | |
| **6. Perceived opportunity** | **0.027** | 0.023 | 0.022 | 0.040 | -0.069 | 1 | | | | | | | |
| **7. Perceived capabilities** | **0.046** | 0.004 | -0.092 | 0.037 | -0.045 | 0.280 | 1 | | | | | | |
| **8. Perceived benefits** | **0.039** | 0.007 | 0.004 | 0.042 | -0.086 | 0.355 | 0.261 | 1 | | | | | |

| **Variables** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **9. Perceived risk** | **-0.086** | 0.001 | 0.066 | 0.011 | -0.023 | 0.093 | 0.015 | 0.097 | 1 | | | | |
| **10. Family size** | **-0.021** | 0.132 | 0.087 | 0.092 | -0.046 | 0.049 | 0.013 | 0.018 | 0.002 | 1 | | | |
| **11. Social desirability** | **0.067** | 0.018 | -0.018 | 0.069 | -0.099 | 0.274 | 0.257 | 0.354 | 0.085 | 0.015 | 1 | | |
| **12. Networking** | **0.132** | 0.020 | -0.078 | 0.083 | -0.011 | 0.020 | 0.062 | 0.022 | 0.046 | -0.018 | 0.017 | 1 | |
| **13. Angel investor** | **0.043** | 0.011 | -0.052 | 0.051 | 0.030 | 0.045 | 0.046 | 0.025 | 0.003 | 0.026 | 0.030 | 0.004 | 1 |

Table -4:

The correlation matrix shows that networking has highest correlation with women entrepreneurship, age, work status, education, family capital and risk have a negative correlation with the entry of women in entrepreneurship.

**Model Fitness and Summary**

Omnibust Test of Model Fitness

We ran Omnibus test to check the model fitness. The table 5 shows that model is a good fit as p value is less 0.000.

| **Step** | **Chi-square** | **df** | **Sig.** |
|---|---|---|---|
| Step | 215.892 | 12 | 0.000 |
| Block | 215.892 | 12 | 0.000 |
| Model | 215.892 | 12 | 0.000 |

Table 5. Omnibus Tests of Model Coefficients

The **p-value (0.000)** indicates that the model is statistically significant, confirming that the independent variables contribute meaningfully to explaining variations in healthcare startup participation.

**Model summary**

In table 6, the value 1679.036 indicates the fit of the logistic regression model to the data.

A smaller value of -2 Log Likelihood suggests a better fit of the model. The results indicate that the logistic regression model explains a modest amount of variability in the dependent variable 19.2% using Nagelkerke $R^2$.

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 1579.036 | .138 | .198 |

Table 6. Model Summary

**Binary Logistic Regression and Hypotheses Testing**

This logistic regression model examines the factors influencing healthcare startup involvement, categorizing them into three primary dimensions: Social Capital, Cognition, and Demographics. The statistical indicators, including the Wald statistic, p-values (Sig.), and odds ratios (Exp(B)), help determine the significance and direction of influence for each variable.

| | B | S.E. | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| **Social capital** | | | | | | |
| Networking | -.363 | .416 | .763 | 1 | .382 | .695 |
| Family capital | .065 | .217 | .090 | 1 | .764 | 1.067 |
| Social status | **-1.082** | **.532** | **4.136** | **1** | **.042** | **.339** |
| Business angel | -.273 | .938 | .085 | 1 | .771 | .761 |
| **Cognition** | | | | | | |
| Opportunity | **1.480** | **.419** | **12.493** | **1** | **.000** | **4.391** |
| Entrepreneurial Ability | **.981** | **.429** | **5.229** | **1** | **.022** | **2.668** |
| Perceived Desirability | -.394 | .438 | .811 | 1 | .368 | .674 |
| Perceived Risk | -.466 | .333 | 1.961 | 1 | .161 | .627 |
| **Demographics** | | | | | | |
| Age | **-.092** | **.045** | **4.109** | **1** | **.043** | **.912** |
| Gender | .149 | .769 | .037 | 1 | .847 | 1.160 |
| Income | **.000** | **.000** | **4.469** | **1** | **.035** | **1.000** |
| Education | .000 | .001 | .287 | 1 | .592 | 1.000 |
| Constant | -14.326 | 8157.626 | .000 | 1 | .999 | .000 |

Table 7

Social capital plays a crucial role in entrepreneurial engagement, yet its specific components yield varied influences. Networking (B = -0.363, p = 0.382, Exp(B) = 0.695) and Family Capital (B = 0.065, p = 0.764, Exp(B) = 1.067) exhibit insignificant impacts, suggesting that neither networking opportunities nor family support strongly determine involvement in healthcare startups. Surprisingly, Social Status (B = -1.082, p = 0.042, Exp(B) = 0.339) has a significant negative effect, indicating that individuals from lower social status groups are more likely to engage in healthcare entrepreneurship, possibly as a means of economic mobility or necessity-driven entrepreneurship. Meanwhile, Business Angel Support (B = -0.273, p = 0.771, Exp(B) = 0.761) remains an insignificant factor, suggesting that access to angel investors does not strongly influence startup decisions in the healthcare sector.

Cognitive factors emerge as the strongest predictors of healthcare startup involvement. Perceived Opportunity (B = 1.480, $p < 0.001$, Exp(B) = 4.391) stands out as the most influential variable, with entrepreneurs who perceive greater market opportunities being 4.39 times more likely to establish a healthcare startup. This underscores the importance of a favorable business environment and perceived market potential in driving entrepreneurial activity. Similarly, Entrepreneurial Ability (B = 0.981, p = 0.022, Exp(B) = 2.668) demonstrates a significant positive effect, indicating that individuals confident in their entrepreneurial skills are 2.67 times more likely to pursue healthcare startups. In contrast, Perceived Desirability (B = -0.394, p = 0.368, Exp(B) = 0.674) and Perceived Risk (B = -0.466, p = 0.161, Exp(B) = 0.627) do not show statistical significance, indicating that subjective risk perception and personal inclination towards entrepreneurship do not strongly influence startup decisions.

Demographic characteristics reveal mixed effects on healthcare startup involvement. Age (B = -0.092, p = 0.043, Exp(B) = 0.912) demonstrates a significant negative relationship, suggesting that younger individuals are more inclined to enter the healthcare startup space, likely due to greater risk tolerance and innovative outlooks. Gender (B = 0.149, p = 0.847, Exp(B) = 1.160) does not significantly impact startup participation, indicating that male and female entrepreneurs engage in healthcare startups at comparable rates. Income (B = 0.000, p = 0.035, Exp(B) = 1.000), while statistically significant, shows a negligible effect, implying that financial standing alone is not a decisive factor in entrepreneurial entry. Finally, Education (B = 0.000, p = 0.592, Exp(B) = 1.000) is insignificant, suggesting that formal educational attainment does not play a major role in healthcare startup decisions.

Among all factors, perceived opportunity emerges as the strongest predictor of healthcare startup involvement, emphasizing that entrepreneurs with a clear recognition of market potential are significantly more likely to initiate a business. Additionally, entrepreneurial ability plays a pivotal role, highlighting that individuals with strong self-efficacy in business skills are more likely to succeed.

Contrary to expectations, networking and family capital do not significantly impact healthcare startup involvement. Instead, lower social status is associated with a higher likelihood of entrepreneurial participation, reflecting a necessity-driven entrepreneurial trend where individuals from disadvantaged backgrounds use startups as a means of upward mobility.

Demographic influences on startup involvement appear limited. Younger individuals are more likely to engage in entrepreneurship, possibly due to their higher adaptability and risk-taking tendencies. However, income and education do not significantly predict startup involvement, reinforcing the idea that entrepreneurship in healthcare is more driven by market perception and self-confidence than financial or academic background.

The findings highlight that cognitive factors, particularly perceived opportunity and entrepreneurial ability, are the strongest drivers of healthcare startup involvement. Social status also plays a role, indicating that necessity-driven entrepreneurship is common among those with lower socio-economic standing. Surprisingly, networking, family capital, and financial backing do not significantly influence startup decisions, suggesting a gap in leveraging external resources. These insights underscore the importance of entrepreneurial education, market awareness, and strategic support systems to foster successful healthcare startups.

## Discussion

This research contributes to the literature by identifying cognitive factors, particularly perceived opportunity and entrepreneurial ability, as key drivers of healthcare startup involvement. It challenges conventional wisdom by demonstrating that networking, family capital, and business angel support do not significantly impact entrepreneurial engagement, suggesting a need for alternative startup support models. Additionally, this study highlights the role of social status in necessity-driven entrepreneurship, offering new perspectives on how economic mobility influences startup behavior.

The findings highlight the need for policies that foster a supportive environment for healthcare startups. Given that perceived opportunity is the strongest predictor of entrepreneurial involvement, governments should focus on creating market awareness programs, regulatory incentives, and financial schemes that help aspiring entrepreneurs identify and capitalize on healthcare opportunities. Additionally, since social status negatively impacts startup involvement, targeted interventions such as funding schemes, mentorship programs, and business incubators for individuals from lower socio-economic backgrounds can encourage necessity-driven entrepreneurs to scale their businesses effectively. Policymakers should also reconsider existing networking and investment facilitation programs, as they currently do not significantly impact startup involvement, indicating a possible mismatch in resource allocation.

Entrepreneurs and industry practitioners can leverage these findings to refine their strategies. Entrepreneurial ability significantly influences startup success, emphasizing the importance of training programs that enhance business skills, financial literacy, and decision-making capabilities. Institutions such as business incubators, accelerators, and training centers should prioritize hands-on learning experiences, mentorship, and exposure to real-world challenges. Given that younger individuals are more likely to start healthcare businesses, universities and vocational institutes should integrate entrepreneurship education into their curricula, enabling students to gain confidence in their startup potential. Moreover, since networking and business angel support do not significantly impact startup involvement, entrepreneurs may need to explore alternative support structures, such as peer mentorship, industry collaborations, and community-driven funding models.

## Conclusion

The study underscores that perceived opportunity and entrepreneurial ability are the strongest predictors of healthcare startup involvement, indicating that individuals who recognize market potential and have confidence in their business skills are far more likely to start a healthcare business. Contrary to expectations, networking, family capital, and financial backing do not significantly impact startup decisions, suggesting that aspiring entrepreneurs may not be fully leveraging available support systems. Moreover, lower social status is associated with higher entrepreneurial participation, highlighting a necessity-driven entrepreneurship trend where individuals from disadvantaged backgrounds view startups as a pathway for economic growth.

These insights emphasize the importance of entrepreneurial education, market awareness, and strategic support systems in fostering successful healthcare startups. Governments, educational institutions, and industry stakeholders must work together to create an ecosystem that nurtures entrepreneurial talent, provides accessible funding mechanisms, and ensures that emerging healthcare entrepreneurs can translate opportunities into sustainable businesses. Future research

should explore the evolving landscape of healthcare startups, examining how these factors influence long-term success and scalability.

### Limitations and Future Recommendations

This study, while comprehensive, has some limitations. The reliance on self-reported data may introduce response bias, as individuals may overestimate or underestimate their entrepreneurial ability or market perception. Additionally, the dataset may not fully capture regional or cultural variations, which could influence startup dynamics differently across various contexts. Future research should delve deeper into why social capital factors like networking and family support fail to significantly influence healthcare startup involvement. Exploring qualitative insights through interviews and case studies could uncover underlying barriers, such as trust issues, access to the right networks, or regional differences in business support systems.

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### Authors Contribution

All the Authors involved in the research contributes equally and all the authors read and approved the final research article.

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### Informed Consent Statement

The respondents were informed about the motive of the study and their consent was taken in context of information provided by them.

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