

Ahmad, Shabir

Article

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THE IMPACT OF PRODUCT INNOVATION ON FEMALE ENTREPRENEURSHIP SUCCESS: A CASE OF SAUDI ARABIA

S. AHMAD

Shabir Ahmad

College of Business, Al Khobar, Al Yamamah University, Kingdom of Saudi Arabia

<https://orcid.org/0000-0002-0523-6536>, E-mail: s_ahmad@yu.edu.sa

***Abstract:** Recent reforms in Saudi Arabia granted empowerment to women, opening new entrepreneurial avenues for them. This study aims to assess the influence of product innovation on the success of female entrepreneurs in Saudi Arabia. Employing a quantitative approach, data was collected through a survey questionnaire. The primary data set included responses from 256 Saudi female entrepreneurs. SmartPLS was utilized for analysis, employing the PLS-SEM statistical technique. The results revealed a positive overall effect of product innovation on female entrepreneurs and their intentions. The study offers practical insights for female entrepreneurs and the Saudi government to address challenges faced by Saudi women. Recommendations include the formulation of policies that provide sustained support for women entrepreneurs. Additionally, the study suggests potential avenues for future research in this domain.*

***Keywords:** Product Innovation, Innovation Creed, Innovation Conviction, Innovation Mindset, Female Entrepreneurship, Saudi Arabia*

INTRODUCTION

In the current business environment, the entrepreneurial population of female ventures is growing rapidly, which holds huge potential for making a major contribution towards wealth creation, innovation, and employment generation around the world (Demartini, 2018). Innovative businesses have created prominent opportunities for female entrepreneurs to enhance their competitiveness. Because trends in female entrepreneurship are growing around the world, the representation of female entrepreneurs is still quite low in comparison with male entrepreneurs. As mentioned in the study of Al-Kwafi et al. (2020), the unequal status of women compared to men in most developing countries is a major factor that restricts women from carrying out their entrepreneurial activities. Particularly in the context of the Middle Eastern region, unequal status for women is regarded as one of the major challenges to women's entrepreneurship. However, most countries have now recognized the important role of women entrepreneurs in economic well-being, so they are making efforts to harness equality and open up the opportunity for women to practice their entrepreneurial activities (Ahmad & Bajwa, 2022; Ahmad & Bajwa, 2021).

Saudi Arabia is one of the countries recently acknowledging the importance of prioritizing entrepreneurship and encouraging women's involvement in these endeavors to realize economic prosperity and growth (Bereczki, 2015; Danish & Smith, 2012). Female entrepreneurs, similar to their male counterparts, are now considered catalysts for innovation

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and job creation. The government's efforts to transform women's status in society by creating different opportunities for them (Welsh et al., 2014). However, despite different reforms and initiatives from the KSA government, women entrepreneurs are still faced with an apparent form of discrimination when taking part in entrepreneurial activities. According to (Bulsara et al., 2014), innovation works as an instrument or catalyst for entrepreneurship to achieve its main goals; thus, an effective entrepreneurial society requires continuous and steady development of innovation and entrepreneurship. Similarly, Peter Ducker, one of the most prominent authors and educators of management studies, has stated that innovation is a particular feature of entrepreneurship, that bestows resources with a new capacity to generate wealth (Agarwal, 2019). As per (Dastourian et al., 2017), in the evolution from an industrial society to a knowledge and information society, the component of innovation and product development plays a crucial role in providing a distinctive advantage to entrepreneurs. While innovation positively influences different entrepreneurial activities, it eases up the attainment of resources, and the appropriate application of new knowledge and ideas tends to reduce risk, improve learning levels, and simplify different entrepreneurial activities.

Though research investigating the impact of product development on entrepreneurship in general is ample (Lee et al., 2016; Nambisan et al., 2018; Ressin, 2022), evidence of the impact of product innovation on women's entrepreneurship is scarce. Women's empowerment remained one of the understudied research areas in Saudi Arabia. Recent reforms empowering Saudi women across diversified domains, it attracted researchers' attention in recent years (Alotaibi, 2020). However, women's entrepreneurship is a relatively less explored area. Particularly, its relationship with product innovation and how it is influenced by that is almost unexplored in Saudi Arabia. Though evidence from other geographical contexts has generally provided a positive relationship, both variables have been studied from different perspectives, as discussed in the literature review. By addressing prevailing gaps, this study aims to contribute to the body of knowledge in the following ways:

Firstly, while previous studies mainly focused on product development, this research shifts the focus to product innovation. product innovation has been conceptualized with three dimensions: innovation convention, innovation mindset, and innovation creed.

Secondly, current studies investigate the role of product innovation in entrepreneurship in general, whereas this study primarily focuses on female entrepreneurship. Female entrepreneurship is conceived with three dimensions: perseverance, a need for achievement, and risk-taking behavior.

Thirdly, this study provides empirical evidence of women's entrepreneurship from Saudi Arabia, where women have recently been empowered. Therefore, the body of knowledge on this novel area is very limited.

Lastly, this study contributes to the global body of knowledge with relatively novel insights on how innovation conventions, innovation creeds, and innovation mindsets can lead women to entrepreneurial success. The expected findings hold important implications for Saudi female entrepreneurs, the government, society, and future researchers, as discussed in the end.

LITERATURE REVIEW

Entrepreneurship and Female Entrepreneurs' Success

The term 'entrepreneurship' refers to the process of establishing a new business venture by bearing all risks associated with it to generate a substantial profit (Ramadani et al., 2015; Syed et al., 2019). Radovic-Markovic and Salamzadeh (2012) defined entrepreneurship as the process of creating new value by entrepreneurs through the investment of their financial resources, time, and efforts to attain greater monetary profits and success in the corporate sector. However, due to the lack of a universal definition of entrepreneurship, numerous definitions highlight the different perspectives (Burns, 2016; Drucker, 2014).

However, a successful entrepreneur needs analytical thinking, expertise, creativity, and competitiveness that enable the individual to take the lead in the market regardless of their gender, identity, and background (Goby & Erogul, 2011; Terjesen & Lloyd, 2015). In the current era, the world is moving towards modernization, where males and females are at an equal pace with each other to attain success and take the lead in a professional environment. In this regard, female entrepreneurs are those women who intend to and possess the potential to start their business venture either based on innovation (Danish & Smith, 2012). According to Arab News (2017), there were 37% of female entrepreneurs in Saudi Arabia in 2017, compared to 35% in 2016.

Female entrepreneurship success refers to the ability of a woman to successfully initiate and manage an entrepreneurial startup that shows financial resilience, survives, and sustains in the long run. A successful female entrepreneur possesses a clear vision for the business and the resilience to overcome obstacles along the way. They exhibit perseverance to pursue their goals despite facing gender biases and systemic barriers in society. In addition, they are high-risk takers and possess a higher need for achievement. These components are elaborated on in the following sections.

Perseverance

The term perseverance refers to the phenomenon of the persistence of an individual to achieve a certain goal by remaining adhered to the plan (Manzanera-Román & Brändle, 2016). Noguera et al. (2015) stated that perseverance plays an imperative role in successful entrepreneurship because it motivates individuals to keep trying and remain focused on goals by overcoming all the obstacles that stand in their way. In the competitive era, being a successful business leader in a dynamic market is highly difficult, and most people tend to give up in the initial stage without striving further for success (Radovic-Markovic & Salamzadeh, 2012). For female entrepreneurs, perseverance is important because social obstacles and a lack of support greatly hinder their journey to becoming successful entrepreneurs. Al-Kwifí et al. (2020) implied that the culture of the Kingdom of Saudi Arabia (KSA) specifies that females of the country should head towards running the business and refrain from communicating with the opposite gender due to societal, religious, and cultural norms. Similarly, Meyer and Mostert (2016) asserted that the structure of society and the male dominance concept confine females to the home and create a barrier for women who intend to work professionally.

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Need for Achievement

The concept of a need for achievement is defined as the inner desire and source of motivation of the individual to achieve excellence and take the lead in a competitive environment. Tanveer et al. (2013) asserted that the need for achievement can be considered the motivating factor for entrepreneurs that urges them to stand firm against all barriers and fill the market void. However, Poggesi et al. (2016) argued that the need for achievement reflects the competitive behavior of an individual that motivates them to move in a smooth forward direction. McClelland's need for achievement theory states that a person motivated by a high achievement orientation does not get easily influenced by monetary benefits or other external factors (Khurana & JOSHI, 2017). Similarly, Lai et al. (2010) advocated the need for achievement as the principle of motivation and consistency in attaining success. The phenomenon of the need for achievement can be different for both male and female entrepreneurs, depending on their requirements (Barba-Sanchez & Atienza-Sahuquillo, 2011). Furthermore, for female entrepreneurs, the need for achievement can be related to competing with the main players in the market at an equal level, standing strong in a dynamic environment, and making an impact on different segments of the state's economy (Popescu et al., 2015).

Risk-Taking Behaviour

In entrepreneurship, risk and uncertainties are major factors that are directly associated with the new business idea or venture because competition and a dynamic environment can impact the particular business negatively or positively (Yordanova & Alexandrova-Boshnakova, 2011). It is essential for entrepreneurs to always prepare themselves to bear any sort of risk in newly established businesses because, without taking the risk, they cannot accelerate in a forward direction (Bolton & Lane, 2012). Eroglu and Picak (2011) defined risk as the attribute that can cause loss or failure in certain ventures and drag the organization into crises. Makhbul and Hasun (2011) implied that it is evident that where the rate of profits and success is greater, the number of risks associated with it is also high. The risk-taking behavior reflects the potential, willingness, and persistence of entrepreneurs to achieve new heights and set unique milestones (Sánchez, 2011). According to Makhbul and Hasun (2011), the risk-taking behavior of female entrepreneurs depends on their general attitude, and they depend on a substantial amount of strategic planning before adopting any risk associated with their business venture.

Product Innovation

The term innovation has multiple definitions and concepts that vary according to the perception and knowledge of every individual (Bucherer et al., 2012). De Medeiros et al. (2014) defined innovation by highlighting that it is the process of presenting a new creative idea regarding the establishment of certain products or services that can help create a competitive advantage and a firm position. Furthermore, Evanschitzky et al. (2012) advocated that innovative ideas can help fill the void in the market and can be generated from experience, problem-solving skills, and the creative thinking process. However, Hughes et al. (2012) advocated the concept of innovation by stating that it involves making new changes and incorporating creativity into existing products or services. product innovation refers to the development and establishment of a product by introducing a product that does not exist in the

market already or possesses some creative feature that adds to the uniqueness of the product and encourages the consumers to purchase that certain product (Berends et al., 2014; Galanaki & Papalexandris, 2017; Zivanovic et al., 2023). In a complex business environment, innovation helps entrepreneurs compete with key players in the market, establish their position, and effectively attract consumers' attention toward new ventures (Lai et al., 2010). However, the likelihood of failure of a certain innovative product is always high because of the resistance of the target audience to new changes (Slater et al., 2014).

Innovation Conviction

The term innovation conviction (ICN) refers to the attitude towards commitments and achieving a certain goal (Lai et al., 2010). Every entrepreneur tends to establish their business venture with some mission and vision statement they intend to address in the future (Waychal et al., 2011). However, over time, the goals do not align with the actual practices and activities of the organization. Some entrepreneurs lack the ability to deliver specified commitments due to the absence of determination and motivation (McAdam et al., 2014). Conviction is necessary to transform the innovative idea into a real-world entity, and it keeps the entrepreneurs motivated toward their goal of achieving success through an innovative idea (Romero & Martínez-Román, 2012). Motivation and determination are two major components that act as the driving source for innovation conviction because the sole attitude of the entrepreneur toward innovation cannot bring success if motivation is absent (Waychal et al., 2011). Furthermore, a lack of innovation conviction among entrepreneurs also affects the behavior of their employees in the workplace, because when they experience the non-alignment of the mission statement of the organization and business activities, negative perceptions are created for their employer (Popescu et al., 2015).

Innovation Mindset

The innovation mindset (IMT) reflects the attitude and approach of entrepreneurs towards innovation and new business ventures. In general, there are two different types of people: first, they always seek to follow the conventional pursuit and refrain from innovation (Abu-Saifan, 2012; Lai et al., 2010). Whereas, some individuals are flexible towards new changes and innovation. (Gundogdu, 2012) advocated that for the success of an organization that follows the innovation pursuit, its employees must possess a positive mindset and be flexible enough to embrace it.

Similarly, (Secundo et al., 2015) claimed that if entrepreneurs manage to change the attitude of the employees towards the adoption of innovation in a positive way, then they are quite close to success because, in dynamic and competitive environments, creativity and uniqueness can help them to accelerate smoothly. However, Israel and Johnmark (2014) specified that strategic changes and uniqueness in product or service characteristics are required to encourage and motivate employees towards innovation in a positive manner. If entrepreneurs tend to follow conventional pursuits from scratch and intend to transform them into an innovation mindset, suddenly they might need to face resistance from their employees (Durkin & Gunn, 2016).

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Innovation Creed

The phenomenon of innovation creed (ICD) is closely related to the concept of innovation conviction because ICD reflects the beliefs of entrepreneurs that are derived from their attitudes (Lai et al., 2010). If entrepreneurs possess a strong belief in their innovative ideas, it would work as a source of motivation for them to pursue and transform their innovative ideas into a successful reality (Schaltegger & Wagner, 2011). Rettberg (2016) asserted that personal beliefs can help entrepreneurs withstand their innovation convictions firmly and struggle to achieve success through continuous motivation. The study accumulated by Evanschitzky et al. (2012) highlighted that a lack of belief and confidence in an innovative idea can demotivate entrepreneurs to step back due to uncertainties and a lack of motivation.

Impact of Product Innovation on the Success of Female Entrepreneurship

Entrepreneurs do not solely depend on innovation to seek opportunities and achieve success; sometimes innovation is derived from the need for a certain product or service in the market (Brush & Cooper, 2012). Innovation is a significant prospect for successful entrepreneurship. The phenomenon of successful entrepreneurship can be different for both males and females because obstacles and barriers in their way of success are also different, which leads to a difference in attitude, mindset, and belief of the individual towards innovation (Noguera et al., 2015). For female entrepreneurs, cultural, financial, and societal pressures are major barriers that hinder their way of attaining success, specifically in Middle Eastern countries such as KSA (Danish & Smith, 2012). According to the study accumulated by Al-Kwafi et al. (2020), in KSA, despite the numerous initiatives of the government, female entrepreneurs have to face strong setbacks and discrimination when they struggle to contribute to the economic development of the country. However, innovation conviction, which is their firm belief in their innovative idea, and a positive attitude can help them remain motivated towards the achievement of success (Valdivia, 2015). Subsequently, the study assembled by (Lai et al., 2010) asserted that for women entrepreneurs, continuous motivation is necessary to remain intact with their goal and lessen the influence of external pressure on them. This discussion led us to the following hypotheses:

H1: Innovation conviction positively impacts female entrepreneurship success.

H1a: Innovation conviction positively impacts the need for achievement.

H1b: Innovation conviction positively impacts perseverance.

H1c: Innovation conviction positively impacts risk-taking behavior.

H2: Innovation mindset positively impacts female entrepreneurship success.

H2a: Innovation mindset positively impacts the need for achievement.

H2b: Innovation mindset positively impacts perseverance.

H2c: Innovation mindset positively impacts risk-taking behavior.

H3: Innovation creed positively impacts female entrepreneurship success.

H3a: Innovation creed positively impacts the need for achievement.

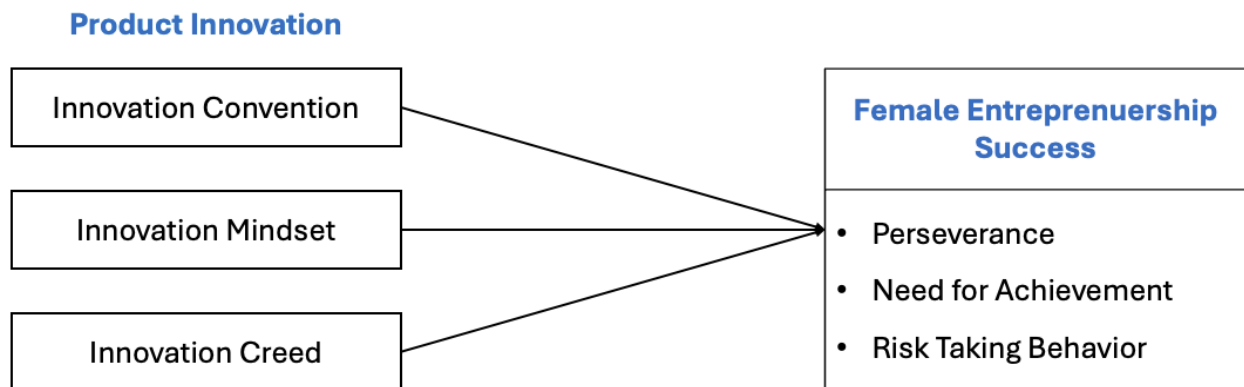
H3b: Innovation creed positively impacts perseverance.

H3c: Innovation creed positively impacts risk-taking behavior.

Based on these hypotheses, the conceptual framework of the study is presented in Figure 1. The framework highlights innovation conviction, innovation mindset, and innovation creed (three facets of product innovation) as independent variables that positively influence

female entrepreneurship success. Female entrepreneurship success is a dependent variable with three dimensions: perseverance, the need for achievement, and risk-taking behavior.

Figure 1
Conceptual framework of the study



METHODS

The population of this study includes women entrepreneurs in Saudi Arabia, as the study aims to examine the role of product innovation in women's entrepreneurship success. An exclusive list of women entrepreneurs' population is not available. To determine the minimum sample size, we followed the 10:1 rule proposed by [Hair et al. \(2021\)](#), where ten responses are required for each indicator. The questionnaire includes 24 indicators, thus requiring a minimum sample size of 240.

Since the exact population size is not known, this study employed the snowball sampling technique to reach out to the desired respondents from across Saudi Arabia. The authors initially sent the online survey link through personal contacts to female entrepreneurs and requested them to snowball it to their contacts. A total of 489 responses were received. However, 233 responses were incomplete or unengaged, which were dropped from the analysis. A total of 256 complete responses were considered for final data analysis, yielding a 52% response rate. The majority of the female entrepreneurs (44%) were aged between 26 and 40 years, followed by around 28% between 41 and 55 years. 64% of the entrepreneurs had a graduate degree, followed by secondary education (17%), and a minor percentage (1%) had no formal education, while 10 percent had a master's or higher degree.

The survey questionnaire was designed with due care and following the guidelines outlined by [Saunders et al. \(2016\)](#). It was structured to gather data for the six latent constructs of this study using Likert scales, alongside collecting anonymous demographic details. Respondents' responses were collected using a 5-point Likert scale, with 1 representing strong disagreement and 5 representing strong agreement.

To operationalize the study variables, we utilized pre-validated measurement instruments for product innovation from [Lai et al. \(2010\)](#), and for women entrepreneurship success from [Gupta and Mirchandani \(2018\)](#) and [Abd Rani and Hashim \(2015\)](#). To ensure the suitability of these measurement scales for this study, reliability was ensured through confirmatory factor analysis and Cronbach's alpha. Additionally, the scales underwent testing

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for convergent and discriminant validities, as well as face and content validity with input from three experts.

The final data was analyzed using SmartPLS 4 statistical software, employing a partial least squares (PLS) approach of structural equation modeling (SEM). This approach was mainly used due to non-normal data distribution and reflective nature of study constructs, as used by other similar recent studies such as [Bajwa et al. \(2023\)](#), [Mahmood et al. \(2022\)](#), and [Ahmad and Iqbal \(2022\)](#). Following [Hair et al. \(2021\)](#) guidelines, the analysis was conducted in two stages: the first stage involved assessing the validity and reliability of the latent variables, while the second stage focused on evaluating the structural model to test the research hypotheses.

RESULTS

Measurement Model Specifications

The foremost prerequisite for the primary quantitative investigation is to assess the reliability of the designed instrument. In general, reliability is used to evaluate internal consistency in the responses that are measured through instruments; specifically, when the construct produces consistent results, this implies that the instrument is accurately designed and is reliable to be used for survey questionnaires. Similarly, a second important prerequisite for the analysis is the validity of the construct; the validity of the construct refers to the extent to which an instrument measures what it was intended (planned) to measure. To assess the reliability of the scales, [Hair et al. \(2021\)](#) recommended factor loading scores above 0.60 and Cronbach's alpha values above 0.60.

As shown in Table 1, factor loadings for all the items of the latent variables are greater than 0.60, which has been used as a rule of thumb to accept the factor into the SEM modeling. Any items loaded below the 0.60 threshold were excluded from the analysis. For instance, one item for perseverance had a value of 0.249; hence, it was dropped from the final dataset. For the acceptable value of Cronbach's alpha and composite reliability, scholars recommend a value greater than 0.60 and 0.70, respectively. As the value of all six constructs for Cronbach's alpha and composite reliability exceeded the threshold, there is enough empirical evidence to claim that measurement instruments for all latent variables are reliable.

Table 1
Reliability and validity results

	Factor Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Innovation Creed		0.835	0.892	0.677
ICD1	0.650			
ICD2	0.864			
ICD3	0.844			
ICD4	0.767			
Innovation Conviction		0.790	0.865	0.617
Icon1	0.884			
Icon2	0.895			

ICon3	0.858			
ICon4	0.624			
Innovation Mindset		0.766	0.852	0.592
IM1	0.649			
IM2	0.803			
IM3	0.845			
IM4	0.766			
Need for Achievement		0.864	0.908	0.712
NA1	0.833			
NA2	0.877			
NA3	0.908			
NA4	0.750			
Perseverance		0.707	0.831	0.585
P1	0.863			
P2	0.906			
P3	0.249 (Dropped)			
P4	0.843			
Risk-Taking Behavior		0.846	0.895	0.682
RTB1	0.753			
RTB2	0.839			
RTB3	0.866			
RTB4	0.841			

To assess the convergent validity of the measurement scales, scholars have suggested three conditions: 1) the average extracted variance (AVE) value should be greater than 0.5, 2) CR values should be greater than 0.7, and 3) the CR value should be greater than the AVE value. As shown in Table 1, all AVE and CR values significantly exceeded their respective thresholds, and all CR values were greater than their corresponding AVE values. Hence, it is evident that the instrument measures what it is designed to measure.

Discriminant validity, on the other hand, ensures that the measures that are theoretically expected to be unrelated are indeed not strongly correlated. There exist several methods to assess the discriminant validity of the scales. While Fornell and Larcker (1981) and cross-loading have been the traditional methods to ensure discriminant value, the Heterotrait-Monotrait (HTMT) ratio of correlations is the most recent, stringent, and recommended method. As per Henseler et al. (2015), the value of HTMT should be less than 0.9 to confirm that the two measures are distinct conceptually. As presented in Table 2 the HTMT ratio between the constructs is less than the threshold of 0.9; thus, it can be claimed that there is discriminant validity and that the constructs being used in the paper measure different concepts and are unrelated as well.

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Table 2
Discriminant validity by HTMT ratio

	Innovation Conviction	Innovation Creed	Innovation Mindset	Need for Achievement	Perseverance
Innovation Conviction					
Innovation Creed	0.587				
Innovation Mindset	0.812	0.722			
Need for Achievement	0.494	0.471	0.559		
Perseverance	0.695	0.515	0.795	0.691	
Risk-Taking Behaviour	0.808	0.613	0.706	0.687	0.856

Structural Model Specifications

In structural equation modeling (SEM) the explanatory power of the model is discussed to evaluate the extent to which the observed variable is being explained by the regressors of the model. For this purpose, the coefficient of determination (R-squared) for each observed value is used to assess the explanatory power of the model (Sarstedt et al., 2017). This study has only one dependent variable i.e. Women entrepreneurship success which is a higher-order construct with three dimensions including the need for achievement, perseverance, and risk-taking behavior. However, in this study, it has been examined in first order with the independent variables. Table 3 illustrates the specifications of the revised model after dropping one factor from perseverance.

Table 3
Model specifications

Dependent Variables	R Square	R-Square Adjusted
Need for Achievement	0.262	0.253
Perseverance	0.365	0.358
Risk-Taking Behavior	0.547	0.542

Therefore, the three observed variables are the need for achievement, perseverance, and risk-taking behavior and have R-squares of 0.262, 0.365, and 0.547, respectively. As shown in Figure 2, it is found that the regressors of the model, which include innovation conviction, innovation creed, and innovation mindset, can explain 26.2% of the variability of the need for achievement, 36.5% of the variability of perseverance, and 54.7% of the variability of risk-taking behavior, respectively. It infers that there is residual in the model, and residual is explanatory power that has not been explained by regressors, and residual can only be estimated and explained by variables that are not included in the model. Thus, the inclusion of the other variables in the model could explain the residual variable and further strengthen the model. Meanwhile, it can also be interpreted that other regressors could be used to predict the need for achievement, perseverance, and risk-taking behavior among the women entrepreneurs in Saudi Arabia.

Table 4 provides the results of hypotheses testing using path coefficient (β). The table infers that if there is one unit of positive variation in the innovation conviction, then it will

affect the need for achievement, perseverance, and risk-taking by 0.181 [$p = 0.023$], 0.239 [0.001], and 0.523 [0.00], respectively. This clarifies that innovation conviction has a significant and positive impact on the need for achievement, perseverance, and risk-taking; this means women entrepreneurs' determination and readiness to accept innovation and sincerity to deliver commitments are the innovation factors that lead to the success of the business.

Figure 2
Final measurement model

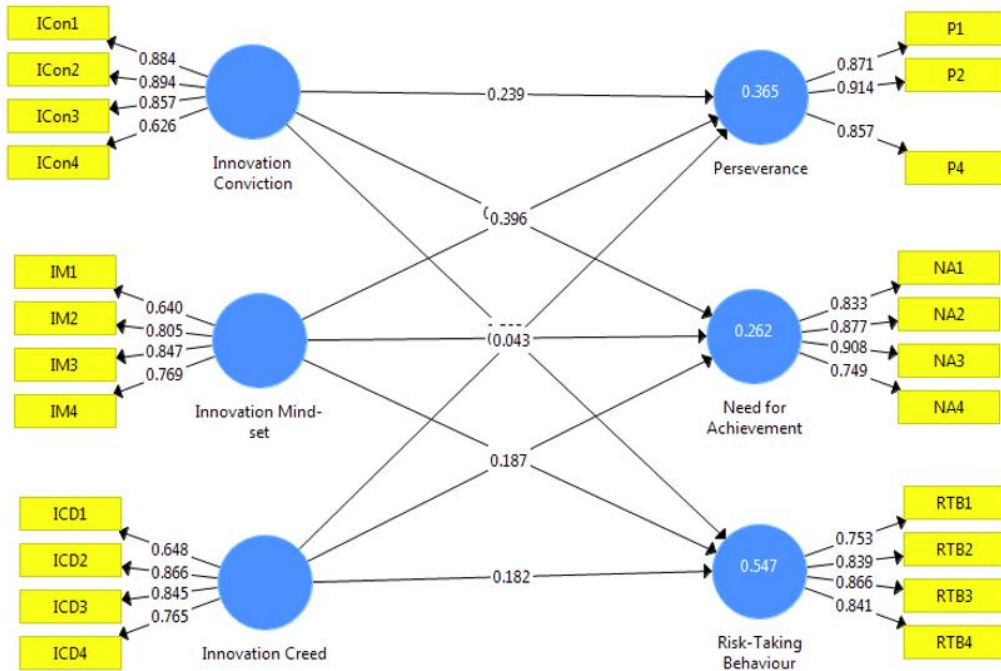


Table 4
Model coefficients estimation output

Path	Path Coefficient	T Statistics	P Values
Innovation Conviction -> Need for Achievement	0.181**	2.288	0.023
Innovation Conviction -> Perseverance	0.239***	3.448	0.001
Innovation Conviction -> Risk-Taking Behaviour	0.523***	8.982	0.000
Innovation Creed -> Need for Achievement	0.187***	2.611	0.009
Innovation Creed -> Perseverance	0.043	0.758	0.449
Innovation Creed -> Risk-Taking Behaviour	0.182***	3.395	0.001
Innovation Mindset -> Need for Achievement	0.238***	2.663	0.008
Innovation Mindset -> Perseverance	0.396***	5.833	0.000
Innovation Mindset -> Risk-Taking Behaviour	0.148**	2.362	0.019

***: showing significance at 1%; **: showing significance at 5%

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On the other hand, if there is one unit of change in the innovation creed, then it is expected that needs for achievement, perseverance, and risk-taking will change by 0.187 [$p = 0.009$], 0.043 [$p = 0.449$], and 0.182 [$p = 0.001$], respectively. This implies that innovation positively and significantly affects the need for achievement and risk-taking behavior, but perseverance is being affected insignificantly. Therefore, it implies that women entrepreneurs's beliefs and motivations for innovation play an important role in the success of their businesses, but this belief does not influence their perseverance. This can be interpreted as a sign that entrepreneur women do not believe that facing adversity can significantly contribute to the success of the business.

In addition to this, a single unit of variance in the innovation mindset would change the need for achievement, perseverance, and risk-taking by 0.238 [$p = 0.008$], 0.396 [$p = 0.000$], and 0.148 [$p = 0.019$], respectively. Therefore, it can be determined that all regressors have a positive and significant impact on the observed variables. Meanwhile, this can also be translated into that an innovation mindset means envisioning and projecting the future positively influencing the success of the business and significantly affecting the need for achievement, perseverance, and risk-taking behavior. Following the path assessment, the summary of hypotheses is presented in Table 5.

Table 5
Summary of hypotheses

Hypotheses	Results
H1: Innovation convention positively impacts female entrepreneurship success.	Accepted
H2: Innovation mindset positively impacts female entrepreneurship success.	Accepted
H3: Innovation creed positively impacts female entrepreneurship success.	Accepted

DISCUSSION AND IMPLICATIONS

In the contemporary business environment, women seek equal rights in every aspect of life, including business, which has led to significant growth in female-led ventures around the world (Demartini, 2018). Meanwhile, the competitiveness of men or women lies with the approach and characteristics of the entrepreneurs, and it has been determined by Lee et al. (2016), Provasnek et al. (2017), and Nambisan et al. (2018) that the characteristics of the men and women entrepreneurs tend to differ based on the gender difference. However, the phenomenon of factors affecting the success of the business remains uniform in either condition. In addition, the equal status of women in the Western world has not been completely adopted in the eastern countries (Ghita, 2015), specifically Middle Eastern countries, including Saudi Arabia. However, recent developments have suggested that female entrepreneurship in the Middle East has been stimulated by the government's support and changing perceptions within the region, and this has provided numerous opportunities for women (Danish & Smith, 2012). In contrast to governmental support and societal change, women have been facing discrimination while pursuing entrepreneurship in the country.

Apart from this, product innovation has been studied to determine how certain characteristics of women have been affecting the success of entrepreneurship, and it has been found that innovation conviction and innovation mindset have been affecting the need for achievement, perseverance, and risk-taking behavior significantly and positively. This implies that sincerity in conveying commitments and a positive attitude toward innovation affect the success of entrepreneurship. In contrast, the innovation creed has been found to have a statistically insignificant effect on perseverance, which means that belief and motivation for innovation do not influence success even after facing adversity in business. Meanwhile, based on the current findings of the study, it can be stated that women's entrepreneurship in Saudi Arabia has been growing, but product innovation can significantly influence the success of entrepreneurship; it is also critical that women have achievement, perseverance, and risk-taking behavior. It is because the need for achievement enables women to consistently work in a direction that is aligned with the mission statement and are eager to achieve something, irrespective of hardship. Similarly, perseverance has also been found critical, along with risk-taking behavior, where both factors have been significantly affected by product innovation. These findings have important practical implications as discussed below.

Towards government and regulatory authorities, there is still a long way to go to bring gender equality in businesses specifically and in society generally. Although Vision 2030 emphasizes innovation and gender equality in society, its implementation will take its due course. Our findings highlight the importance of cultivating innovation conviction, mindset, and creed in women entrepreneurs to be successful in their entrepreneurial ventures. In this regard, the government can take several practical steps to promote women's entrepreneurship and remove the barriers that hinder women's participation in entrepreneurship in the country.

The government needs to implement legal and regulatory reforms to create gender equality, simplify the business registration process, provide equal access to financial resources, and provide dedicated funding programs, loans, and financial incentives for women entrepreneurs. In addition, the government may enhance entrepreneurial skills and foster acumen for innovation in women by developing educational and training programs and even including courses at the school and university levels.

Likewise, the government needs to facilitate networking events, industry-specific forums, and mentorship programs that connect women entrepreneurs with experienced mentors, industry leaders, and potential collaborators. These platforms can provide valuable guidance, support, and access to networks and resources. In addition, innovation and entrepreneurship can be encouraged through incentives, grants, and support for research and development initiatives. Other than that, the government can launch awareness campaigns to promote the benefits of women's entrepreneurship by highlighting the success stories of women entrepreneurs and showcasing their achievements.

Overall, this requires building a supportive ecosystem for women entrepreneurs by investing in infrastructure, such as co-working spaces, incubators, and accelerators, that provide access to facilities, resources, and support services. Additionally, fostering partnerships between government, the private sector, academia, and civil society organizations can create a collaborative environment conducive to entrepreneurship.

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LIMITATIONS AND FUTURE RESEARCH DIRECTION

In this study, the impact of product innovation on the success of female entrepreneurs in KSA has been analyzed with the help of quantitative data gathered through the surveys. Therefore, the findings are limited to the quantitative assessment. However, future researchers can extend this study by incorporating and investigating the qualitative information that can help them compare both findings and explore the phenomenon further in detail. Moreover, future researchers can identify numerous other factors to investigate the impact of product innovation on female entrepreneurs's success in Saudi Arabia and beyond. In addition, they can also investigate the challenges and barriers faced by women in Saudi Arabia and other countries that hinder their way of attaining entrepreneurial success.

CONCLUSIONS

Innovation is considered a vital component for the success of a business venture because it allows the creation of a competitive advantage and takes the lead in a complex business environment. However, from the analysis carried out in this research, it was determined that the beliefs, attitudes, and mindsets of individuals play a central role in keeping entrepreneurs motivated toward innovation and objectives. For female entrepreneurs, motivation is considered the driving force that allows them to adhere to their business goals and accelerate in a forward direction, standing firm against all barriers and challenges. Furthermore, empirical results suggest that perseverance, the need for achievement, and risk-taking behavior are imperative determinants that reflect the success of women entrepreneurs in KSA. In this regard, the impact of innovation, such as innovation convention, innovation creed, and innovation mindset, was tested over perseverance, need for achievement, and risk-taking behavior. Every determinant of innovation has a positive impact on women's entrepreneurship success in KSA. Considering this aspect, the research has certain implications for the government of KSA, which needs to create opportunities to support women and promote the ones already in business.

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