



# Business environment's impact on female students' entrepreneurial intentions: Gender analysis

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**Purpose:** This study investigates how the business environment affects the entrepreneurial intentions (EIs) of female university students in Saudi Arabia. Specifically, the research examines the role of perceived social norms (PSNs) as a mediator and self-efficacy as a moderator.

**Design/methodology/approach:** Data were gathered electronically from universities in Saudi Arabia using university-endorsed email. The survey questionnaire was formed based on rigorous literature and pre-tested and validated by two professors who specialise in entrepreneurship and four students from four different universities. A total of 300 usable responses were collected and partial least squares structural equation modeling (PLS-SEM) was used for data analysis.

**Findings/results:** The study's findings indicate that PSN indirectly influence EI through other antecedents rather than directly. Moreover, the study confirms that self-efficacy moderates the relationship between personal attitude and EI. The results also demonstrate that the business environment significantly contributes to female students' EIs.

**Practical implications:** By incorporating the business environment into the Theory of Planned Behaviour (TPB) framework, this study offers a more profound insight into the determinants influencing EIs. In addition, the study proposes a revised TPB model that considers the mediating role of self-efficacy and personal attitudes and the moderating role of self-efficacy. Overall, this study is ground-breaking in this area of research.

**Originality/value:** This article fulfils an identified need to study which factors influence females' intention to be an entrepreneur in a country that is strongly anchored in religion and tradition.

**Keywords:** entrepreneurial intention; theory of planned behaviour; business environment; perceived social norms; self-efficacy; personal attitudes; religious beliefs; steeped traditions.

## Introduction

Entrepreneurship plays a crucial role in mobilising a country's resources, generating employment, driving innovation, utilising resources productively, adding social value and ultimately improving the standard of living (Gaweł, 2010). Furthermore, there is a growing recognition that female entrepreneurs are the 'emerging stars' of economies, an untapped source of sustainable economic progress and development (Xavier et al., 2013) and a key stage in women's participation in economic development (Brush & Cooper, 2012). Governments, business sectors, educational institutions, researchers and policymakers acknowledge the importance of promoting female entrepreneurship, but many countries have a shortage. Given the vital role of entrepreneurs in a country's economic development, factors that influence the progress of these entrepreneurs have long been an area of research that has resulted in several approaches to studying entrepreneurship. These include the demographic, trait, behavioural and sociocultural approaches. However, because of the complexity of entrepreneurship, a more comprehensive approach is necessary. This study focuses on entrepreneurial intention (EI), which guides attention and leads to action towards achieving a goal (Miranda et al., 2017). Furthermore, entrepreneurship is viewed from a holistic point of view through the entrepreneurship event approach (Churchill & Bygrave, 1989) and the multidimensional approach to entrepreneurship focuses on four factors: aim, individual, context and network (Gartner, 1985). This study aims to uncover personal, environmental and sociocultural aspects that could influence the entrepreneurial initiative of female university students from a Saudi Arabian perspective. The research examines the role of the business environment, the mediating role of perceived social norms (PSNs) and the moderating role of self-efficacy on the EIs of female university students in Saudi Arabia, with an emphasis on the

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influence of cultural factors such as religious beliefs and steeped traditions. By taking a comprehensive approach to understanding entrepreneurship, this study provides a more nuanced understanding of the factors that shape EIs among female university students in Saudi Arabia.

Entrepreneurship is a deliberate behaviour that requires careful thought and planning (Dabić et al., 2021), making intention an integral stage in the process is crucial while initiating a business (Shook et al., 2003). Recognising this, scholars have emphasised the importance of studying the determinants that influence EI (Wong et al., 2005), and the theory of planned behaviour (TPB) developed by Ajzen (1991) has been widely used to explain and predict this intention among students (Ferri et al., 2018; Liñán, 2008; Liñán & Chen, 2006; Fenech et al., 2019). Theory of planned behavior highlights on personal attitude (PA), PSN and self-efficacy (SE) as primary determinants of behavioural intention. Ajzen (1991) acknowledged the uncertainty regarding the precise nature of the relationships among PA, self-efficacy, PSN and EI, emphasising the empirical nature that depends on the specific context of reference. Later, Ajzen (2002) expanded the TPB theory by incorporating demographic, personal and environmental factors, which could potentially influence entrepreneurial behaviour (Sivarajah & Achchuthan, 2013). Despite TPB's widespread use in predicting EI among female students, to our knowledge, the efficacy of TPB has not been examined with these additional factors. Furthermore, there is no available information on the effectiveness of TPB among female university students in Saudi Arabia. Consequently, this study seeks to assess the efficacy of the extended TPB, aiming to identify the significant factors influencing the EI of female university students in Saudi Arabia towards entrepreneurship.

Alalsheikh et al. (2022) argue that the business environment, especially for women entrepreneurs in Saudi Arabia, plays a significant role in personal decision-making because of the country's strong religious and traditional roots. The business environment is defined as the external factors and conditions that impact a business's operations, performance and decision-making processes. It comprises a broad spectrum of elements, including economic, social, political, legal and cultural factors. Brush et al. (2009) assert that it involves policies, strategies, laws and influences at the national level, encompassing aspects such as support policies, services and initiatives, while Ozaralli and Rivenburgh (2016) treat the business environment as a societal factor. Therefore, this study considered the political, economic and cultural environment as a business environment and as antecedents of EI, along with the three attitudinal antecedents of the TPB. Considering these dimensions collectively, the TPB framework offers a comprehensive approach to studying the EI of female students towards entrepreneurship.

Brush et al. (2009) emphasises its impact on gender socialisation and social norms, including media representations of female entrepreneurs. These factors play a significant role in shaping decision-making contexts. The

social, cultural and institutional arrangements influence how women perceive opportunities and make strategic decisions in entrepreneurship (Brush et al., 2009). The overall significance of the business environment is emphasised by Aldrich and Wiedenmayer (1993), who argue that the socio-economic, socio-political and cultural environment of a country can be so powerful that it may either stimulate or hinder EI. Other studies have also suggested that the business environment is an important predictor of an individual's EI and success (Chowdhury et al., 2012; Ozaralli & Rivenburgh, 2016). However, the suggested relationships between the business environment and EI in the TPB are not well tested and still not clearly understood. Therefore, the primary objective of this study is to bridge the existing research gap in entrepreneurship literature by addressing the following research questions using an extended version of the TPB that incorporates the business environment factor. We used partial least squares (PLS) analysis to achieve our objectives, which is perhaps the most appropriate method for clarifying the respective properties:

Q1: Can the business environment be considered a predictor of EI among female university students in Saudi Arabia?

Q2: How does perceived social norm impact the EI of female students in Saudi Arabia, and what role do PA, self-efficacy and business environment play in mediating this relationship?

Q3: What role does self-efficacy play in mediating the relationship between PA, PSN and EI among female students in Saudi Arabia?

This study makes two significant contributions to the entrepreneurship literature. Firstly, it expands the conceptual framework of the theory of planned behaviour (TPB) by including business environmental factors in the context of Saudi Arabia, which is deeply rooted in religion and tradition, thus offering a better understanding of the mechanisms that drive EIs. Secondly, it restructures the TPB model by incorporating the mediating role of self-efficacy and PAs, as well as the moderating role of self-efficacy. Most previous research on the TPB model has focused on straightforward antecedents of EI. Therefore, this study is considered pioneering in its approach.

## Literature review

### Entrepreneurial intention

Entrepreneurial intention plays a vital role in entrepreneurial engagement, as individuals with high entrepreneurial ambition are more likely to initiate a business than those with low intention (Thompson, 2009). Krueger and Carsrud (1993) defined EI as the mental alertness that leads an individual to consider entrepreneurship as a profession and ultimately leads to the clear intention of establishing a new venture. However, venturing into business is not an impulsive decision, as it requires creativity, identifying opportunities, generating ideas, mobilising resources and thoughtful planning, along with a lot of passion, as entrepreneurship involves risk and complexity. An individual with a strong EI is more likely to take the necessary steps leading to the formation of a new venture (Liñán et al., 2013). The Theory of

Planned Behaviour (TPB) developed by Ajzen (1991) has been the most widely used model to describe EI since its emergence in the 1930s.

### Female entrepreneurship in Saudi Arabia

Saudi Arabia is currently undergoing a complex transition from a factor-driven economy to an efficiency-driven economy (Mazharul Islam & Alharthi, 2020). However, the influence of religion and tradition on social norms, family values, governmental policies, educational systems and the economy of Saudi society cannot be overlooked (Iqbal et al., 2012). In Saudi Arabia, Islam is the dominant religion, and while it allows both men and women to access wealth and education, narrow interpretations of Islamic rules and regulations have historically hindered women's interest in business, employment and other opportunities to participate in the economy (Nieva, 2015). Over the last few decades, various factors, such as male guardianship, limited government support, obstacles in business licensing and regulations, a lack of clear policies and targets, restricted mobility for women, gender inequality, unsupportive political and social environment and a lack of business experience have limited female entrepreneurship in Saudi Arabia (Spencer, 2016). As a result, the female labour force participation rate is only 15.8%, which is a quarter of the male participation rate (World Bank, 2019). In addition, only a small percentage of women (around 4%) in Saudi Arabia own their businesses, which is among the lowest rates globally (World Bank, 2019). Hence, a notable disparity persists between the number of female university graduates and their workforce participation rates, especially within the entrepreneurial sector. This suggests a concerning return on investment in education and a significant waste of human capital.

The issue of limited female entrepreneurship in Saudi Arabia has been acknowledged by the government, and various measures have been implemented to encourage female participation in the economy. Saudi Vision 2030, launched in 2016, places entrepreneurship at the forefront of Saudi Arabia's economic strategy and aims to promote the role of women in the economy by creating job and entrepreneurship opportunities. To achieve this, the government has removed restrictions such as the ban on women driving and the requirement for a male guardian to access government services. However, female participation in these initiatives is still low, and there is a need to investigate the effectiveness of programmes, policies and strategies that have been implemented to promote female entrepreneurship (Aleidi & Chandran, 2018). Spencer (2016) suggests conducting an empirical study to identify the key factors that influence female students' intentions to become entrepreneurs. This research is essential to develop policies that can assist young Saudi females who intend to be entrepreneurs.

Studies of female entrepreneurs need to be performed in Saudi Arabia because of several reasons. Firstly, the female involvement rate in entrepreneurial activity is usually less than that of men (Kelley et al., 2015). Secondly, the female participation rate in business activity is the lowest in the

world (World Bank, 2019), and finally, there are different business environments, social structures and cultural norms (Danish & Smith, 2012). Furthermore, Saudi society is reflected as a collectivist society where PSN and the business environment play a decisive role in personal decision-making (Alalsheikh et al., 2022). It is not only useful but also timely to explore the factors influencing female students' EIs because Saudi Arabia's Vision 2030 focuses on fostering the role of females in the economy by creating opportunities for employment and entrepreneurship. Therefore, this research aims to assess the components influencing the EIs of female students by applying an extended form of TPB by adding business environment factors. Considering these ideas theoretically and contextually from a Saudi perspective, this study investigates the EIs of Saudi female students to gain knowledge about the key aspects that affect and shape a person's intentions when deciding to start an enterprise. In addition, this study provides some suggestions to the relevant authorities that can help to develop policies to assist young Saudi females who intend to be entrepreneurs.

### Theoretical background and research framework

Entrepreneurial theories provide a valuable framework for understanding the factors that influence individuals' decisions to start a business. In the literature, two main models of EI have been identified. Firstly, the 'Entrepreneurial Event Model' (Shapiro, 1975), which conceptualises EI as a desire or wish to engage in entrepreneurship. Secondly, the TPB (Ajzen, 1991), which includes PAs, PSN and self-efficacy as important factors that influence an individual's intention to perform a specific behaviour. The TPB model has been widely used in previous studies to predict entrepreneurial behaviour. This study also draws on Ajzen's (2002) TPB model to investigate the factors that influence individuals' intentions to start a business. Personal attitude, which refers to an individual's overall evaluation of entrepreneurship as a promising or unfavourable career path, plays a significant role in shaping intention. Individuals' attitudes towards entrepreneurship are influenced by their perceptions of the potential outcomes of their behaviour (Ajzen, 2002). Positive expectations of financial benefits, autonomy, social status and security are likely to increase the intention to start a business, while negative expected outcomes can decrease it (Vanevenhoven & Liguori, 2013). Perceived social norms are other important factors that influence EI. They refer to an individual's perception of the acceptance or rejection of entrepreneurship as a career option by family, friends and relatives. When an individual perceives widespread acceptance and support for starting a business within their social network, their inclination and intention towards entrepreneurship become notably higher and significantly positive.

The continued evolution of TPB encompasses its role as a theoretical framework for elucidating and forecasting human behaviour across diverse decision-making processes (Taufique & Vaithianathan, 2018). For instance, TPB has extended in a quest to understand consumers' intentions in very diverse contexts such as intention to the home-based

accommodation (Meng & Cui, 2020), adoption of self-service technologies (Lien et al., 2021), smartcards (Belanche et al., 2019), mobile payment (Flavian et al., 2020) and established that the extended TPB model is more robust in comparison to the original TPB model. Abbasi et al. (2021) and Montes de Oca Munguia et al. (2021) stated that TPB is actually a psychological theory that explores the psychological underpinnings of human behavioural intention. They extended TPB model with additional variables, that is, perceived behavioural control, perceived value, destination image and satisfaction to understand how external influences affect an individual adopter's internal decision-making process. They claimed that these external factors significantly influence individual adopter's internal decision-making process. Yoo (2021) also asserted that intention is founded on three key antecedents: attitude, subjective norms and perceived behavioural control in the TPB paradigm. All the above-mentioned scholars empirically established that the extended TPB model has better predictive power than the original TPB model. The TPB addresses cases where people do not have complete control over their behaviour, subjective norms, desire to use and actual use, which are different TPB frameworks (Kamble et al., 2019).

Liñán (2008) suggests that the impact of PSNs on an individual's intention and behaviour can be uncertain. Self-efficacy, on the other hand, refers to an individual's self-confidence and belief in their ability to perform a specific task, and it has been found to significantly influence entrepreneurial behaviour (Krueger et al., 2000). Ajzen (1991) observes that self-efficacy has the potential to influence PAs and the intention to engage in a specific behaviour. Therefore, entrepreneurial self-efficacy may not only exert a direct impact on EI but could also serve as a moderator in the relationships between PA, PSN and EI. Liñán (2008) also suggests that PSNs may indirectly influence an individual's intention through their impact on PAs and self-efficacy. In more recent studies, Ozaralli and Rivenburgh (2016) suggest that external factors, such as political, economic and cultural environments, can also be a predictor of an individual's EI and success. These external factors may influence an individual's perception of the potential outcomes of starting a business, as well as their belief in their ability to navigate the challenges and uncertainties of entrepreneurship. Overall, understanding the complex interplay of individual and external factors that influence EI and behaviour is essential for developing effective strategies to support and promote entrepreneurship.

According to Vanevenhoven and Liguori (2013), a realistic attitude towards entrepreneurship involves perceiving it as a profession that offers self-satisfaction, autonomy and personal growth. Numerous studies have found that attitude towards entrepreneurship significantly influences students' EI, regardless of their country or region (Fenech et al., 2019; Ferri et al., 2018). Personal attitude is a crucial aspect of youth EI and is strongly and significantly associated with it. However, existing research on the relationship between PSNs, self-efficacy and EI is contradictory. While some

studies have found a positive and significant impact of self-efficacy on EI, others have found a negative or insignificant impact, depending on gender and other factors. In addition, students' reliance on their families for financial security and their tendency to respect their families' wishes have been found to influence their EI. Perceived social norms have also been identified as a significant factor in promoting EI, with family, friends and relatives' support being positively correlated with the preference for entrepreneurship as a future occupation. However, some studies have found no or insignificant correlation between PSNs and EI. In the TPB, PSNs and self-efficacy are commonly regarded as the principal predictors of intention.

While the TPB proposes that perceived attitude (PA) and PSN are direct factors of EI, it does not directly designate self-efficacy (SE) as a factor of EI. Instead, SE is considered a moderator of the relationships between PA and EI and PSN and EI (Ajzen, 1991). However, in many studies that use the TPB to predict intentions, SE is treated as an ancillary factor of EI rather than as a moderator of the PA and EI and PSN and EI associations (Rich et al., 2015). The moderating effects of SE on the relationships between PA, PSN and EI in the TPB model have been sparsely investigated and are not well-understood (Tsai et al., 2016). Despite numerous studies exploring the moderating effects of SE on the relationships between PA and EI and PSN and EI, the results have been inconsistent (Doanh, 2021). As a result, there is no clear consensus in the current research literature as to whether these moderating effects are supported. It is also unclear whether researchers are unaware that the TPB proposes collective effects or whether they have examined moderating effects but have failed to draw definitive conclusions or have deemed them unimportant to investigate.

Furthermore, the current literature indicates that the PSN component of EI can play an indirect role in the formation of intentions across various research contexts. Perceived social norms have been found to influence attitudes towards behaviour (Liñán et al., 2013) and they can also have a strong impact on self-efficacy to execute a particular behaviour, according to Miranda et al. (2017). Several studies, including Cooper (1993) and Mathews and Moser (1995), suggest that the moral standards set by reference people can lead to a more positive self-efficacy perception. Additionally, Liñán and Chen (2006) argue that PSNs have a causal effect on PA and self-efficacy antecedents. They also propose that a person's intention is indirectly inspired by PSN, with their core impact being applied through its effects on PA and SE. Therefore, investigating the mediating effects of PA and SE on the association between PSN and EI is crucial. Based on the existing literature and grounded theory, we propose the following hypotheses:

- H<sub>1</sub>: Entrepreneurial intention is positively and significantly influenced by attitude towards entrepreneurship.
- H<sub>2</sub>: Entrepreneurial intention is positively influenced by perceived social norms.

H<sub>3</sub>: Entrepreneurial intention is positively influenced by self-efficacy.

H<sub>4</sub>: Entrepreneurial intention is positively influenced by the business environment.

H<sub>5</sub>: The relationship between perceived social norms and entrepreneurial intentions is mediated by other three antecedents such as personal attitude, self-efficacy and business environment.

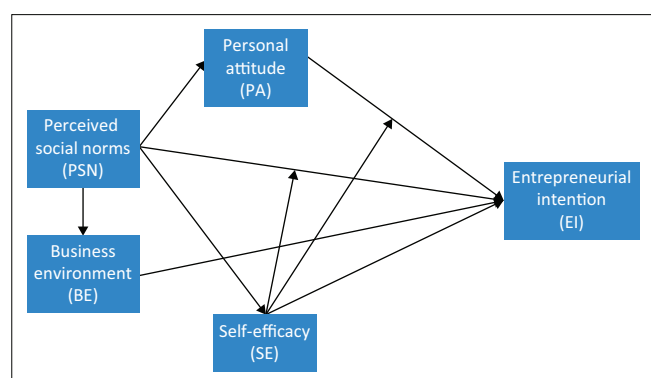
H<sub>6</sub>: The relationship between personal attitude, perceived social norms and entrepreneurial intention is moderated by self-efficacy.

Based on the aforementioned observations and theoretical considerations, we have developed an integrated conceptual model, as illustrated in Figure 1. The conceptual foundation of this study is rooted in the TPB.

## Methodology

### Participants and procedure

A methodological approach was applied to conduct this empirical study as suggested by Flynn et al. (1990). According to their prescribed methodology, the author first lays down the conceptual basis for the study that identified the problem of the study. Then data were collected through a survey by questionnaire, which is suitable for both the problem and theoretical foundation because questionnaires are often used in empirical research about the attitude or beliefs (McMurray et al., 2010). The survey questionnaire was formed based on rigorous literature and pre-tested and validated by a focus group comprising six individuals. The focus group is composed of two professors who specialise in entrepreneurship and four students from four different universities. The survey questionnaire was modified based on the pre-test responses before the survey questionnaire was distributed. The survey was performed to collect data in both English and Arabic versions.



**FIGURE 1:** Graphical presentation of the hypothesised links between influencing factors and entrepreneurial intentions.

**TABLE 1:** Distribution of samples.

Region	NU†	%	SU	%	Respondents	%	NPD (%)
Central Region	12	33	3	33.3	88	29.3	29.5
West Region	10	27	3	33.3	97	32.3	32.0
Eastern Region	5	14	1	11.1	46	15.3	15.1
Southern Region	5	14	1	11.1	46	15.3	15.5
Northern Region	4	14	1	11.1	23	7.8	15.5

NU, number of universities; SU, sample universities; NPD, national population distribution.

†, Data from Ministry of Education (2019). *Universities in the Kingdom of Saudi Arabia*. Retrieved from <https://www.moe.gov.sa/en/pages/default.aspx>.

The survey questionnaire consisted of six main sections, namely the respondent's profile, the respondent's intention towards entrepreneurship, the respondent's attitude towards EI, the respondents' self-efficacy towards EI and the respondents' PSN. The final section contained questions covering the business environment that influences EI. To measure the respondent's perception, we used a five-point Likert scale in this research. The responses were varying from 'strongly disagree (1)' to 'strongly agree (5)'. The data were gathered electronically or 'online survey' from 01 October 2020 to 30 December 2020 from different universities in Saudi Arabia. University-endorsed email was used to circulate the survey to 500 female students and collect the data. There were 300 usable responses that yielded a 60% response rate, which is acceptable for such surveys (Hair et al., 2007). The project leader has evaluated and monitored a minimum of 15% of completed observations in real time. The recipients of the survey were the students who had finished at least first year of their programme in any discipline as they can effectively evaluate their experience with their study programme. The project leader encouraged potential participants to complete the survey through reminder emails three weeks after questionnaire distribution. Population representativeness was also taken into account as the survey tried to comprise both public and private universities from all regions. The sample distribution is presented in Table 1. Therefore, we can claim that the ratio of respondents to this survey nearly depicts the national distribution of the population.

### Measurement variables

Nunnally (1978) stated that multi-item scales are more reliable than single-item ones. Consequently, this study mainly used the validated and recognised existing scales from previous studies where all constructs are assessed by applying multi-items. This study applied the six items EI scale, five items PA scale, six items SE scale and three items PSN scale developed by Liñán and Chen (2006). They applied aggregate measures for measuring PA, self-efficacy, PSN and EI scales as Ajzen (1991) claimed it more applicable than other measures. These scales have been shown to have acceptable internal consistency reliability (Cronbach's alpha coefficients for EI, PA, SE and PSN are 0.95, 0.91, 0.89 and 0.76, respectively) and evidence of content and construct validity (average variance extracted [AVE] for EI, PA, SE and PSN are 0.793, 0.721, 0.656 and 0.734, respectively) (Liñán & Chen, 2006). In addition, because of the lack of availability of a published validated BE measure, the 9-item Societal Factor scale developed by Ozaralli and Rivenburgh (2016) was

utilised in this study as a proxy measure of BE. This scale has been shown to have acceptable internal consistency reliability (Cronbach's alpha coefficients 0.89) and evidence of content and construct validity (AVE > 0.50 for each scale).

## Data analysis

We used partial least squares structural equation modeling (PLS-SEM) approach for data analyses of this study as it is better-grounded than other models such as covariance-based structural equation modeling (CB-SEM) with analysis of moment structures (AOMS), regression and correlation for forecast-based empirical study with a small sample size (Walczuch et al., 2007). This choice was made due to the clear advantage of PLS-SEM in emphasising prediction, a crucial aspect often overlooked by CB-SEM approaches in experimental research. Employing CB-SEM is inappropriate if the model lacks a conceptual foundation and the path relationships between constructs cannot be described through SEM (Hair et al., 2021). Hair et al. (2021) also stated that regression and correlation models manage just the observed variables and concern a one-directional effect. However, the PLS model used a least-squares estimation method that works with complex structural models. Consequently, Hair et al. (2021) stated that the PLS model is highly effective at the beginning stage of theory development and validation. This study also applied the bootstrapping method (with  $n = 5000$ ) to understand whether the sample distribution was approximately normal.

## Ethical considerations

An application for full ethical approval was obtained from the King Abdulaziz University Human Research Ethics Committee on 18 March 2020.

## Results

The study's findings are interpreted through three distinct steps. The steps are measurement model valuation, structural model valuation and model robustness, respectively.

### Measurement model

The PLS-SEM software was used to examine the psychometric properties, and results are presented in Table 2. The analysis confirmed the validity and reliability of the EI, PA (except for one item as the outer loading value was < 0.70), PSN and SE (except for three items as their outer loading values were < 0.70). The analysis also confirmed the validity and reliability of BE dimensions (except for three items as their outer loading value was < 0.70). The AVE values are more than 0.50 and larger than the square of any correlation among any pair of latent constructs. Thus, according to Hair et al. (2021), all constructs in this study were found to be valid and acceptable through assessments of convergent validity, discriminant validity and reliability.

The findings of the nature and level to which respondents pleased with EI and its shaping factors are shown in Table 3.

**TABLE 2:** Item's outer loadings, construct reliability, internal validity and discriminant validity.

Constructs	Item	Constructs	OL	CA	rho_A	CR	AVE	r <sup>2</sup>
Entrepreneurial Intention (EI)			-	0.924	0.925	0.930	0.727	0.441
	EI <sub>1</sub>	I'm ready to do anything to be an entrepreneur.	0.784	-	-	-	-	-
	EI <sub>2</sub>	My professional goal is to become an entrepreneur.	0.843	-	-	-	-	-
	EI <sub>3</sub>	I will make every effort to start and run my firm.	0.793	-	-	-	-	-
	EI <sub>4</sub>	I'm determined to create a firm in the future.	0.934	-	-	-	-	-
	EI <sub>5</sub>	I have very seriously thought about starting a firm.	0.876	-	-	-	-	-
	EI <sub>6</sub>	I've got the firm intention to start a firm someday.	0.876	-	-	-	-	-
Perceived Social Norms (PSN)			-	0.734	0.841	0.843	0.643	0.063
	PSN <sub>1</sub>	If I decide to build a firm, my family and kinsman will support and accept my choice.	0.893	-	-	-	-	-
	PSN <sub>2</sub>	If I decide to build a firm, my buddies will support and accept my choice.	0.751	-	-	-	-	-
	PSN <sub>3</sub>	If I decide to build a firm, my colleagues and mates will support and accept my choice.	0.753	-	-	-	-	-
Personal Attitude (PA)			-	0.880	0.900	0.917	0.735	0.536
	PA <sub>1</sub>	A career as an entrepreneur is attractive to me.	0.915	-	-	-	-	-
	PA <sub>2</sub>	Among various options, I would rather be an entrepreneur.	0.879	-	-	-	-	-
	PA <sub>3</sub>	Being an entrepreneur implies more advantages than disadvantages to me.	0.859	-	-	-	-	-
	PA <sub>4</sub>	Being an entrepreneur would entail great satisfaction for me.	0.770	-	-	-	-	-
Self-Efficacy (SE)			-	0.888	0.889	0.930	0.816	0.536
	SE <sub>1</sub>	I'm prepared to start a viable firm.	0.908	-	-	-	-	-
	SE <sub>2</sub>	If I tried to start a firm, I would have a high probability of succeeding.	0.895	-	-	-	-	-
	SE <sub>3</sub>	I know how to develop an entrepreneurial project.	0.907	-	-	-	-	-
Business Environment (BE)			-	0.911	0.932	0.930	0.689	0.140
	BE <sub>1</sub>	Female entrepreneurs' role in the economy is generally valued in my country.	0.800	-	-	-	-	-
	BE <sub>2</sub>	The culture in my country is favourable towards female entrepreneurial activity.	0.806	-	-	-	-	-
	BE <sub>3</sub>	Most people in my country consider it acceptable to be a female entrepreneur.	0.780	-	-	-	-	-
	BE <sub>4</sub>	In my country, female entrepreneurial activity is considered to be worthwhile.	0.834	-	-	-	-	-
	BE <sub>5</sub>	The high unemployment rate encouraged me for starting a new business.	0.897	-	-	-	-	-
	BE <sub>6</sub>	The current political environment of my country now is better for females for starting a new business.	0.857	-	-	-	-	-

OL, Outer Loadings; CA, Cronbach's alpha; CR, composite reliability; AVE, average variance extracted; r<sup>2</sup>, correlation coefficient square.

The outcomes revealed that students reported a high level of EI (mean = 4.46) and a positive influence on PA (mean = 4.20), personal capacity (SE) (mean = 4.13), PSN (mean = 3.70) and business environment (BE) (mean = 3.48) towards being an entrepreneur. The values of the heterotrait-monotrait ratio of correlation (HTMT) presented in Table 3 are below the threshold of 0.90, confirming the establishment of discriminant validity between the two reflective constructs, as per the criteria set by Henseler et al. (2015).

### Assessment of structural model

The structural model assessment is widely used for examining the collinearity, path coefficients,  $R^2$ , effect size and  $Q^2$ . Table 4 showed that the variance inflation factor (VIF) values of the predictor variables ranged between 1.107 and 2.275 and are less than the proposed limit 5.0 (Hair et al., 2021). So, collinearity problem is not present in the model.

A summary of the hypothesis testing results is presented in Table 5 and displayed in Figure 2. The results revealed that PA, SE and BE antecedent variables have a significant positive ( $\beta = 0.521, p < 0.01$ ;  $\beta = 0.439, p < 0.05$ ;  $\beta = 0.163, p < 0.01$ , respectively) relationship with EI, which is strongly supported for  $H_1, H_3$  and  $H_4$ . The study also found that PSN have powerful impacts on PA towards entrepreneurship, self-efficacy and business environment ( $\beta = 0.225, p \leq 0.001$ ;  $\beta = 0.214, p \leq 0.001$  and  $\beta = 0.269, p \leq 0.001$ , respectively). Moreover, this study showed that PSN does not have any direct and significant effect on EI, but they indirectly influenced EI through PA, self-efficacy and business environment ( $\beta = 0.117, p \leq 0.05$ ;  $\beta = 0.094, p \leq 0.05$ ;  $\beta = 0.044, p \leq 0.05$ ). These results also provide strong support for  $H_5$ , which states that PA, SE and BE have significantly mediated the relationships between PSN and EI. Regarding the moderating function of self-efficacy in the association between PA, PSN and EI, the research reveals that the association between PA and EI is significantly moderated by self-efficacy ( $\beta = -0.139, p \leq 0.05$ ). But results showed an

insignificant ( $\beta = 0.078, p > 0.05$ ) moderating role of self-efficacy on the relationship between PSN and EI. This result provides partial support for  $H_6$ .

### Robustness of the model

The coefficient of determination ( $R^2$ ) revealed that the four antecedent variables of EI collectively explained 43% of the variance in EI as illustrated in Figure 2, which is acceptable (Cohen, 2013). Then, we calculated the effect size ( $f^2$ ) to measure the practical significance of this relationship. As shown in Table 5, the  $f^2$  values of four antecedent variables of EI are above 0.02. Thus, these paths were at least practically significant (Cohen, 2013).

The findings presented in Table 6 demonstrate a significant relationship between the current economic, political conditions and cultural valuation of the country and its EI. Consequently, the business environments in Saudi Arabia exert a notable influence on the decision-making of female students aspiring to become entrepreneurs.

### Discussion

According to the study, female students in Saudi Arabia have demonstrated a strong inclination towards starting their own businesses. This is a positive finding, as it suggests that Saudi

**TABLE 3:** Results of descriptive and discriminant validity analysis.

Constructs	Mean	SD	EI	PA	SE	PSN	BE
EI	4.46	0.71	-	-	-	-	-
PA	4.20	0.83	0.604	-	-	-	-
SE	4.13	0.86	0.651	0.828	-	-	-
PSN	3.70	0.98	0.281	0.255	0.239	-	-
BE	3.48	0.99	0.352	0.316	0.372	0.309	-

SD, standard deviation; EI, entrepreneurial intention; PSN, personal social norms; PA, personal attitude; SE, self-efficacy; BE, business environment.

**TABLE 4:** Variance inflation factor test result.

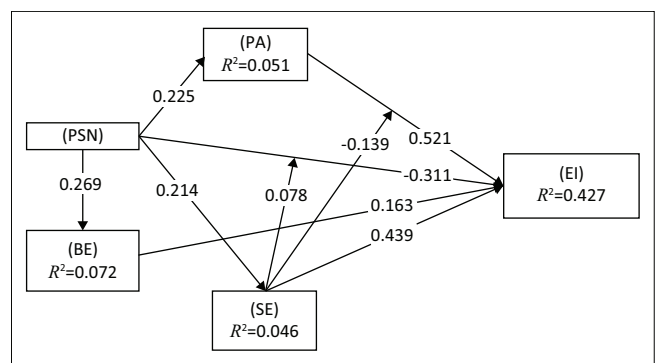
Constructs	BE	EI	PA	PSN	SE
BE	-	1.196	-	-	-
EI	-	-	-	-	-
PA	-	2.205	-	-	-
PSN	1.000	1.107	1.000	-	1.000
SE	-	2.275	-	-	-

EI, entrepreneurial intention; PSN, personal social norms; PA, personal attitude; SE, self-efficacy; BE, business environment.

**TABLE 5:** The results of testing the research hypotheses.

Relationships	Beta	p	Confidence intervals		$f^2$	Decision
			LLCI	ULCI		
PA -> EI	0.521	0.003	0.115	0.954	0.051	Supported
PSN -> EI	-0.311	0.162	-0.756	0.105	0.021	Rejected
SE -> EI	0.439	0.016	0.084	0.901	0.026	Supported
BE -> EI	0.163	0.004	0.053	0.278	0.037	Supported
PSN -> PA -> EI	0.117	0.020	0.026	0.306	-	Supported
PSN -> SE -> EI	0.094	0.049	0.015	0.201	-	Supported
PSN -> BE -> EI	0.044	0.024	0.012	0.089	-	Supported
SE*PA -> EI	-0.139	0.040	-0.267	-0.003	0.023	Supported
SE*PSN -> EI	0.078	0.100	-0.014	0.173	0.016	Rejected
PSN -> PA	0.225	0.000	0.100	0.347	0.053	-
PSN -> SE	0.214	0.001	0.082	0.345	0.048	-

EI, entrepreneurial intention; PSN, personal social norms; PA, personal attitude; SE, self-efficacy; BE, business environment; LLCI, lower-level confidence interval; ULCI, upper-level confidence interval.



EI, Entrepreneurial Intention; PSN, Personal Social Norms; PA, Personal Attitude; SE, Self-efficacy; BE, Business Environment.

**FIGURE 2:** A structural model with path coefficients.

**TABLE 6:** Correlation between Items of Business Environment Variable and Entrepreneurial Intention Scale.

Item	Mean	Correlation
<b>Business Environment (BE)</b>		
Most people in my country consider it acceptable to be a female entrepreneur.	3.41	0.201*
The culture in my country is favourable towards female entrepreneurial activity.	3.45	0.228*
Female entrepreneurs' role in the economy is generally valued in my country.	3.35	0.193*
In my country, female entrepreneurial activity is worthwhile.	3.60	0.352*
The high female unemployment rate in my country encourages me to start a new business.	3.56	0.451*
The current political environment of my country now is better for females for starting a new business.	3.53	0.456*
Business Environment (overall)	3.48	0.374*
Perceived social norms (overall)	3.24	0.218*

\* refers significant at  $\leq 0.01$ .

Vision 2030's goal of sustainable economic development could be supported by women's entrepreneurship. Interestingly, the study found that Saudi female students showed a significantly higher level of EIs (over 84% of the respondents) compared to other nations. This finding is somewhat perplexing, but it may be because of the rapid economic transition that Saudi Arabia is currently undergoing, which is fueling the desire among female students to become entrepreneurs. In addition, Sakai (2022) asserts that despite the Saudi government implementing various programmes and initiatives aimed at enhancing female labour participation in both the private and public sectors under Vision 2023, females still encounter challenges in finding suitable employment in Saudi Arabia. The limited availability of appealing job opportunities for female graduates in both the private and public sectors, resulting from socio-cultural barriers, could be another factor contributing to the high EIs among female students in Saudi Arabia. In addition, the dissatisfaction with office jobs, market opportunities and the flexibility of work arrangements also influence women's decision to start their own businesses (Fallatah, 2012).

The study's results are generally satisfactory, as most of the hypotheses have been supported. Specifically, three of the four original core EIs model relationships are significant and supported by the findings of the PLS-SEM analysis of this study, with the exception of the perceived social norm – intention relationship (Table 6, Figure 2). Hypothesis 2 was not supported, as the study found no effects of PSN on EI ( $\beta = -0.311$ , ns). These findings are not surprising, as several studies have shown that public opinions often fail to predict behavioural intentions accurately (Cooke et al., 2016; Gabbiadini et al., 2017; Willis et al., 2020).

Positive PSN towards entrepreneurship as an alternative career choice indicate that family and friends view entrepreneurship as an acceptable profession. However, this does not necessarily alleviate the fears associated with entrepreneurship, nor does it confirm that entrepreneurship is a priority over other career options. Ultimately, EI is about acting for oneself, rather than fulfilling others' expectations.

Thus, PSN alone cannot determine EI. Instead, PSN have been shown to influence PA, self-efficacy and the business environment. The study found that the enthusiastic attitude of family members and close acquaintances towards an entrepreneurial career and their implicit support can boost an individual's morale, create a confident attitude for becoming an entrepreneur and enhance self-efficacy, leading to a higher level of business interest. Therefore, the study established the indirect influence of PSN on the venture intention of Saudi Arabian female students, which is the only significant difference between this study and prior studies (Ferri et al., 2018; Dinc & Budic, 2016). Previous research has consistently identified a straight and substantial relationship between PSN and EI.

This suggests that the lack of encouragement for female students to pursue entrepreneurship could be attributed to cultural factors. It is possible that attitudes and expectations of parents, relatives and friends towards children vary across countries, which may explain the differences in findings. Moreover, key motivators such as financial rewards and social status may already be fulfilled by family members, friends and relatives, potentially resulting in a diminished motivation for women to pursue entrepreneurship themselves (Islam et al., 2018). Although women in Saudi Arabia are permitted to engage in business, they may prefer professions who are compatible with their family responsibilities. Furthermore, when parents are successful entrepreneurs or hold prestigious jobs, it may deter females from pursuing entrepreneurship. Thus, we can conclude that culture plays a significant role in shaping females' EIs, consistent with the traditional view that subjective norms do not influence them. However, we recommend further research to confirm these findings.

This study also discovered that PSN had a positive and significant mediating effect on the relationship between EI and the constructs of PA, self-efficacy (SE) and business environment (BE). Therefore, Hypothesis 5 is supported. It is possible that social norms exert their primary influence by impacting an individual's attitude, self-efficacy and business environment, as this study found a highly positive and significant influence of PSN on these constructs. Perceived social norm may exert pressure on individuals to modify their PAs, self-efficacy and business environments to align with social norms. This can influence people's morals, beliefs, actions, attitudes and behaviours. However, it can also be argued that PSN affects individuals differently because everyone has diverse attitudes and encouragement levels. When an individual perceives that their decision to pursue entrepreneurship is supported by reference people, they are more likely to be interested in that choice and feel more capable of achieving it successfully.

The study observed a direct and significant correlation ( $\beta = 0.521$ ,  $p \leq 0.01$ ) between PA and EI, as demonstrated in Table 5 and Figure 2. The female students in Saudi Arabia exhibited a strong attitude towards becoming an entrepreneur



(mean = 4.20). This finding is consistent with previous research conducted by Fenech et al. (2019) and Ferri et al. (2018). The study indicates that female students who possess a more positive attitude towards entrepreneurship are more likely to have intentions of becoming an entrepreneur. Therefore, Hypothesis 1 is supported.

This study provides several interesting insights into the relationship between self-efficacy and EI. Firstly, the study confirms that self-efficacy (SE) is the second most significant contributor to the formation of female students' intention to become entrepreneurs because of its strong direct relationship with EI (Table 5, Figure 2). This finding is consistent with previous studies by Austin and Nauta (2016) and Dinc and Budic (2016), which also showed that entrepreneurial self-efficacy significantly affects subsequent start-up behaviour. The strong confidence levels and self-efficacy displayed by female students in the Saudi cultural context indicate that recent social changes have influenced female students' self-confidence levels, enabling them to overcome barriers to entrepreneurship. To reduce barriers and strengthen the self-efficacy of female students, effective public policy, business support and higher education programming are necessary to inspire female participation in the labour force, particularly as entrepreneurs. Secondly, this study shows the significant effect of PSN on self-efficacy (Table 5, Figure 2), which highlights the collaborative and complementary effect of SE and PSN on EI, as supported by Liñán (2008). This finding contrasts with the findings of Rahatullah (2014), who stated that Saudi females do not hold an overall positive personal valuation of becoming an entrepreneur. Thirdly, this research reveals that self-efficacy not only plays a vital role in determining EI, but it also moderates the relationship between PA and EI. Thus, Hypothesis 6 is supported. This finding fills a gap in the literature (Tsai et al., 2016) as most previous studies only consider the direct or mediating effect of self-efficacy on EI.

The study's results support Hypothesis 4 in predicting female EIs with statistical significance. The study found that the business environment, which was newly added as a dimension in TPB, ranked as the third most significant factor in the formation of female students' EIs, with a strong direct relationship to EI. This finding is consistent with previous studies by Ozaralli and Rivenburgh (2016) and Elam and Terjesen (2010) but contrasts with studies by Spencer (2016). The high level of EIs among female students can be attributed to favourable evaluations of the political environment, high female unemployment rates and low wages in the country, which encouraged them to become entrepreneurs. The study suggests that macro-level governmental improvements are essential to support and encourage entrepreneurship. These existing conditions may have motivated and compelled female students to take risks and start their own businesses.

The empirical observations of the study's findings received robust support in respondents' opinions gathered through an open-ended question about the motivations behind their

entrepreneurial pursuits. When asked to list five reasons that encouraged them to embark on the entrepreneurial journey, a striking similarity emerged among the respondents' views. Notably, Miss Rotana Alqadi emphasised the fundamental reason as the Vision of 2030, which concurrently emphasises support for SMEs and encourages women to actively participate in the economy, which is also supported by Alshahrani et al. (2020). Under this vision, the government introduced Kafalah, a special loan for SMEs, with a distinct rate for women (Abou-Moghli & Al-Abdallah, 2019). Preceding Vision 2030, the Arab region exhibited the lowest female and youth labour force participation globally in 2017, with the highest gender gap in labour force participation. In Saudi Arabia, the unemployment rate among females was 20%, significantly surpassing the male unemployment rate of 3% in 2017 (Alasgah & Rizk, 2021).

The observed pattern of female work participation reflects traditional gender roles deeply ingrained in Arab culture. Women are predominantly assigned the roles of wife and mother, while men are traditionally perceived as the primary breadwinners (Langworthy & Warnecke, 2021; United Nations [UN], 2019). Females who need to secure employment to support themselves are inclined towards entrepreneurship (Alkhaled & Berglund, 2018).

Beyond Vision 2030, several additional factors emerged as motivations for entrepreneurship among Saudi females: Firstly, economic empowerment is a driving force, with Saudi females recognising the economic opportunities inherent in establishing their ventures. Entrepreneurship becomes a means for financial independence, self-fulfillment and a positive societal impact. Secondly, financial stability stands out as a motivating factor, with many Saudi females aspiring to secure financial stability not only for themselves but also for their families. Entrepreneurship is seen as a means to achieve higher income levels compared to traditional employment. Thirdly, flexibility plays a crucial role, as entrepreneurship provides Saudi females with the autonomy and flexibility to strike a balance between work and personal or family responsibilities. The ability to set their schedules enables them to prioritise both family commitments and career aspirations simultaneously. Fourthly, social impact serves as a strong motivator, with many Saudi females driven by the desire to contribute positively to society. Through entrepreneurship, they can develop businesses that address societal needs, foster social progress and contribute to the overall development of the country. Miss Rotana's opinions are strongly supported by previous empirical study conducted by Bin Dahari et al. (2019). They claimed that the majority of women engage in entrepreneurial activities because they prefer working for themselves rather than collaborating with unfamiliar male counterparts. This choice allows them to maintain a balance between their work, family and domestic responsibilities.

The findings of this study, which are both interesting and encouraging, may be attributed to several potential factors.

Firstly, recent societal and cultural changes have led to greater adaptability and improved economic conditions, creating an environment that is conducive to entrepreneurship. This supportive culture has likely contributed to higher EI among the population, resulting in an increase in the number of new businesses being attempted. Secondly, the Saudi government's commitment to boosting the SME sector through various programmes and initiatives under Vision 2030 has played a significant role. These initiatives have gradually removed the existing barriers to women's empowerment, resulting in a more accepting and supportive society for female entrepreneurship. As a result, Saudi society has become more accepting of women in business, which may have boosted the confidence and belief of female students in their ability to perform as entrepreneurs, leading to a positive attitude towards EIs. The findings suggest that there is still much work to be done in improving the conducive environment for entrepreneurship, particularly for female and youth. This sentiment aligns with the UN's (2019) acknowledgment of the need to enhance the business environment in the Arab region.

The study's novelty lies in its assessment of a country where socialisation is deeply rooted in religion and ritual, using a newly developed instrument, namely business environment to identify the intention antecedents towards entrepreneurship. The study's findings offer insights into the EIs of female students in Saudi Arabia and worldwide, as well as an updated understanding of the current state of female entrepreneurship in Saudi society. Furthermore, the study provides empirical support for the path structural model of motivational factors and behaviour, which is a significant contribution to the field.

## Theoretical developments

This study has contributed to the TPB by identifying the factors that shape female students' EIs during the economic transition in Saudi Arabia. The findings affirm the TPB's relevance and applicability in the entrepreneurial context, aligning with prior empirical research. For example, the TPB proposes that PA and perceived social norm (PSN) are direct factors of EI. At the same time, it does not directly designate self-efficacy (SE) as a factor of EI, which this study does. In Ajzen's (1991) study, SE was considered a moderator of the relationships between PA and EI and PSN and EI, which contrasts with the findings of this study. In addition, a pioneering aspect of this research involves expanding the TPB by introducing a business environment factor and evaluating its impact on EI, making a novel contribution to the existing literature.

Further developments of TPB include its functions as a theoretical framework to describe and predict human behaviour in various decision-making processes (Taufique & Vaithianathan, 2018). It is actually a psychological theory that delves into the psychological underpinnings of human behavioural intention (Abbasi et al., 2021). The TPB seeks to understand how external influences, such as social norms

and perceived control, affect an individual adopter's internal decision-making process (Montes de Oca Munguia et al., 2021). Yoo (2021) claims that intention is founded on three key antecedents: attitude, subjective norms and perceived behavioural control in the TPB paradigm. Theory of planned behaviour addresses cases where people do not have complete control over their behaviour, subjective norms, desire to use and actual use, which are different TPB frameworks (Kamble et al., 2019).

However, the mediation assumptions in TPB conflict with the proof; beliefs are also found, for instance, to predict behaviour above and beyond a person's intentions (Araújo-Soares et al., 2013; Conner et al., 2013). The TPB theory does not consider other factors influencing entrepreneurial behavioural intention and motivation, such as anxiety, anger, mood or previous experiences. Entrepreneurial behaviour is believed to be the outcome of a decision-making process that does not change over time (Edberg, 2013). The TPB eliminates the factor of perceived risk from individuals' perceptions (Abbasi et al., 2021). This study's contribution to the TPB is further validated by Yoo's (2021) recommendation that researchers extend the TPB model by including more predictor variables to develop a more holistic perspective. And, this study has exactly done this with regard to investigating the EIs of female university students in Saudi Arabia.

## Conclusions

The purpose of this study was to address gaps in the entrepreneurship literature by examining the antecedents of the EI of female university students in Saudi Arabia, using an extended version of the TPB. The study builds on the principles of TPB (Ajzen, 1991) to explore unexplained issues related to EI. Theory of planned behaviour posits that PAs and PSN are the direct factors influencing behaviour, with self-efficacy playing a secondary role. However, this study demonstrates that for female students' EI, the relationship between PSN and career intention is strengthened by PAs, entrepreneurial self-efficacy and the entrepreneurial business environment acting as mediating factors. Thus, PSN contribute positively to developing a constructive entrepreneurial mindset, enhancing creative self-efficacy and ultimately leading to an individual's EI. This finding deviates from established theoretical models and provides a valuable contribution to the literature on female entrepreneurship. However, this study contributes to the current knowledge by shedding light on the role of business environment and its impact on female students' EIs in Saudi Arabia. This study has practical implications for policymakers, educators and other stakeholders who are interested in enhancing female entrepreneurship in Saudi Arabia.

Specifically, the findings of this study highlight the need for creating a supportive business environment, providing entrepreneurial education and training and promoting positive attitudes towards entrepreneurship among female students. Furthermore, the study suggests that policymakers should focus on removing any existing barriers to female

entrepreneurship, such as legal and cultural constraints, to encourage more women to pursue entrepreneurial careers. Overall, this study provides valuable insights into the factors that influence female students' EIs in Saudi Arabia and can help guide future efforts aimed at promoting female entrepreneurship in the country.

The present study provides robust evidence of the indirect effect of PSN on EI via PA, self-efficacy and business environment. The study highlights the crucial role played by family, close relatives and friends in shaping an individual's career choice. As individuals acquire values and norms through their initial developmental route with family, friends, relatives and neighbours, they tend to promote their morals, beliefs, basic skills, qualifications, behaviours and other characteristics through their interactions with these individuals. Therefore, it is essential for family, relatives, friends and neighbours to foster a positive outlook on entrepreneurship and encourage the development of the qualities and skills needed to be a successful entrepreneur. In Saudi society, family and social and business environment factors play a pivotal role in individual decision-making. The culture is collectivist, and individuals are significantly influenced by the opinions and beliefs of those around them (Alalsheikh et al., 2022). Additionally, the study highlights the impact of business environmental factors on people's perception of entrepreneurship. Public investments in specialised female entrepreneurship education and training, recognition of female entrepreneurial efforts and a stable and favourable political environment are likely to inspire female individuals in society to view entrepreneurship as an attractive and viable career choice. Therefore, it is crucial to create a supportive environment that encourages entrepreneurship and fosters the necessary skills and qualities needed to succeed as an entrepreneur, particularly for women.

To promote gender diversity in entrepreneurship and encourage more women to become entrepreneurs, it is crucial to create an enabling environment that provides women with equal opportunities and support. This includes allowing women to be proprietors or occupying top managerial roles and providing female students with the necessary support and funding through monetary channels. Entrepreneurship education and training are also crucial in promoting EI. Therefore, the Saudi government should redesign course curricula and programmes to integrate entrepreneurship content right from the elementary level to the tertiary level, with a focus on female entrepreneurship content. Teaching strategies should emphasise the practical aspects of entrepreneurship, such as business planning and financial management, and invite successful female entrepreneurs to share their experiences and insights through guest lectures. It is also important to engage with religious scholars and family elders to address any cultural or social barriers that may hinder women's participation in entrepreneurship. These stakeholders should be involved in open discussions to encourage more female students to choose entrepreneurship as a viable career option. Lastly, initiating a crash programme on entrepreneurship by the government or the private sector

can help accelerate the flow of female entrepreneurs in the country. Such a programme can provide funding, training and mentorship opportunities to aspiring female entrepreneurs, making it easier for them to start and grow their businesses. By taking these steps, Saudi Arabia can create a more inclusive and diverse entrepreneurial ecosystem that empowers women to participate fully in the economy.

### Limitation and future study direction

This study has various limitations that deserve acknowledgement. Firstly, the use of electronic data collection methods may have limited access to a larger population. Secondly, the study solely employs a quantitative research design, overlooking the subjective interpretations of cultural and social norms, practices and situations that significantly influence EI. Therefore, future studies may use mixed methods that combine quantitative and qualitative data from in-depth interviews to gain greater insight into the phenomenon and uncover unidentified issues. In addition, the study's use of limited variables is another limitation, as many other factors, such as social and economic factors, may impact EI. Future research could incorporate these other aspects to provide a more comprehensive understanding of female students' EIs. Lastly, this study is one of the initial attempts to validate the role of business environmental factors in entrepreneurial perceptions, and further research is necessary to confirm or refute these findings.

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### Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### Author's contributions

M.M.I. is the sole author of this research article.

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### Data availability

The data that support the findings of this study are not openly available and are available from the corresponding author, M.M.I., upon reasonable request.

### Disclaimer

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