An international study of early-stage entrepreneurship using global entrepreneurship monitor data

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Abstract

Purpose – The goal of this study is to identify and validate some selected determinants of early-stage entrepreneurial activity (ESEA) by assessing the impact of entrepreneurial knowledge and skills (EK&S), fear of failure (FoF), the social status of entrepreneurs (SSE) and entrepreneurial intentions (EI) on ESEA.

Design/methodology/approach – The study utilised cross-sectional data gathered by the Global Entrepreneurship Monitor (GEM) team from 49 countries, with a total of 162,077 respondents. The data analyses involved correlation, simple regression and path analyses, with a specific focus on testing for mediated and moderated effects. To complement the statistical analyses, fuzzy-set qualitative comparative analysis was also employed.

Findings – The path analysis revealed EK&S as primary drivers of EI and ESEA. Also, EK&S moderated the effects of FoF on EI, and the inclusion of EI improved the model significantly. The fuzzy-set qualitative comparative analysis result showed that the presence of EI, EK&S, FoF and SSE were sufficient but not necessary conditions for ESEA.

Practical implications – The tested model demonstrates the importance of EK&S and EI, as well as the need to mitigate the effects of the fear factor in promoting entrepreneurial activity. As such, the support of EK&S programmes seems justifiable.

Originality/value – The findings of this study provide a deeper insight into the intricate relationships that underlie entrepreneurial activity by utilising a combination of data analysis techniques.

Keywords Entrepreneurship, Knowledge, Skills, Fear, Status, Intentions, Global entrepreneurship monitor

Paper type Research paper

Introduction

Entrepreneurship is widely recognised as a crucial driver of economic growth, innovation and competitiveness (GEM, 2022). Consequently, many countries are increasingly showing interest in entrepreneurship development and considering it as a potent means to boost their economies and solve some of the various socioeconomic challenges they face (Chaves-Maza and Martel, 2020; Lerner, 2020; Xu *et al.*, 2021). However, not all individuals with entrepreneurial ideas or opportunities choose to start a new venture. The Global Entrepreneurship Monitor (GEM) tracks entrepreneurial activity across different countries and reports that in 2020 early-stage entrepreneurial activity (ESEA) was below 20% among the adult population in many countries. This indicates that in these countries, a smaller proportion of adults aged between 16 and 64 were engaged in ESEA – either in the process of starting a new business or had recently launched one (GEM, 2021). Hence, it is crucial for policymakers, educators and practitioners who aim to foster entrepreneurship and support

entrepreneurs to comprehend the contribution of personal factors, among other relevant issues, that influence entrepreneurial behaviour and outcomes.

While the existing literature acknowledges the significance of various factors influencing entrepreneurial activity, there remains a need for researchers to further investigate the role of personal-level factors, particularly the perceived entrepreneurship capabilities of active and potential entrepreneurs (Van Gelderen, 2020; Ferreras-Garcia *et al.*, 2021; Okolie *et al.*, 2021). This is vital because it is individuals, through bricolage, causal and effectual decision-making, who drive entrepreneurial activity (Alsos *et al.*, 2016; Janssen *et al.*, 2018). Their performance is significantly influenced by their competencies and other personal factors (Ferreras-Garcia *et al.*, 2021), highlighting the importance of deepening our understanding of the impact of such factors.

One factor that has received considerable attention in the entrepreneurship literature is entrepreneurial knowledge and skills (EK&S), which refer to the cognitive and practical abilities that enable individuals to recognise and exploit entrepreneurial opportunities, as well as plan, launch and manage new ventures (Van Gelderen, 2020; Ferreras-Garcia *et al.*, 2021; Okolie *et al.*, 2021). EK&S can be obtained through formal education, training, work experience, or social learning (Solesvik and Westhead, 2019; Gieure *et al.*, 2019). Previous studies have suggested that EK&S can positively influence ESEA by improving individuals' self-efficacy, perceived feasibility and desirability of entrepreneurship and entrepreneurial intentions (EI) (Otache *et al.*, 2019; Krueger *et al.*, 2000). However, EK&S alone may not be sufficient to trigger ESEA, as other factors may also play a role in the decision-making process. If the debate is to be moved forward, a better understanding of the outcome of the interaction between EK&S and other variables needs to be developed.

The fear of failure (FoF), which refers to the negative emotions associated with the possibility of failing in an entrepreneurial endeavour (Cacciotti and Hayton, 2015; Dutta and Sobel, 2021), is also another key factor that has attracted the attention of entrepreneurship researchers in the last decade. Some studies have found that the FoF can discourage individuals from engaging in ESEA (Kollmann *et al.*, 2017). Others, however, have observed that external support interventions can ameliorate the negative impact of FoF on ESEA as individuals may perceive the consequences of failure as less severe due to the measures provided (Cacciotti and Hayton, 2015; Morgan and Sisak, 2016). Hunter *et al.* (2021) underscore the necessity of advancing theory development and conducting additional studies to have a clearer understanding of the role of FoF in entrepreneurship. Therefore, this factor is included in the current study to contribute to a better understanding of its interaction with other factors and the subsequent implications.

Another factor that may influence the decision to engage in ESEA is the social status of entrepreneurs (SSE), which refers to the degree to which entrepreneurs are respected and admired by society (Kalden *et al.*, 2017; Kruse *et al.*, 2019). SSE can influence ESEA by shaping individuals' social identity, social norms and expectations, and perceived attractiveness of entrepreneurship as a career choice (Özsungur, 2019; Sajjad *et al.*, 2020). SSE can also interact with EK&S and FoF to influence ESEA, as individuals with high EK&S may be more likely to pursue ESEA if they perceive a high SSE and a low FoF, or vice versa (Kollmann *et al.*, 2017; Tsai *et al.*, 2016; Van Trang *et al.*, 2019). Due to the varying societal perceptions regarding the status of entrepreneurs, it is crucial to accumulate more evidence that clarifies the implications for the emergence of entrepreneurial activities in diverse contexts (Fuentelsaz *et al.*, 2018). Understanding these implications is essential to gain insights into the factors that influence entrepreneurship within different societies.

The current study sought to test a conceptual model that connects EK&S, FoF and SSE to ESEA while taking EI into account. The goal was to figure out how important the proposed determinant variables were in driving ESEA. Although other personal and environmental factors influence entrepreneurial activity, global data on such factors is scarce, in contrast to

EK&S, FoF, SSE, ESEA and EI, which are easily accessible through the GEM dataset. This explains our emphasis on the latter factors.

Cross-sectional data from 49 countries collected by the GEM team were used for the study. While previous studies attempted to connect these variables using GEM data, most of the interconnections were established within the context of a single country or specific world region, with less emphasis on the global stage (e.g. Arafat and Saleem, 2017; Ali *et al.*, 2023; Ahmad *et al.*, 2014; Coduras *et al.*, 2008; Fernández *et al.*, 2009). To address this literature gap, this study has a broader focus and includes all countries in the 2018 GEM survey to test the universality of the relationships.

Besides, the study's use of the latest publicly available GEM data is noteworthy as it helps to confirm whether previously affirmed relationships between the variables persist with more current and accurate information about the variables, given that the data is continually changing and evolving. This can help validate earlier findings or reveal changes in trends over time, which is important because policymakers are often interested in research that employs the most up-to-date data.

The present study also contributes methodologically by combining different data analysis techniques to test proposed relationships. Prior studies that utilised GEM data have predominantly relied on regression-based data analysis techniques to examine links between variables. This study combines path analysis, which considers mediation and moderation effects, and fuzzy-set qualitative comparative analysis (fsQCA). FsQCA is a methodology that examines complex causal relationships between variables, aiding in the identification of sufficient or necessary causal configurations of variables that explain specific outcomes. It is particularly useful in situations where there are no clear linear relationships between variables or when there are multiple paths to a specific outcome. Therefore, the integration of regression techniques and fsQCA in this study results in a more nuanced understanding of the relationships between variables and the conditions that lead to ESEA - a finding that is not readily apparent in prior studies that utilised GEM data. Furthermore, triangulating different data analysis methods enhances the study's reliability and robustness. These contributions advance entrepreneurship research by promoting methodological pluralism and innovation, fostering the development of new theories and methodologies for future studies. The study is guided by the following research questions:

RQ1. What is the relationship between EK&S, FoF, SSE, EI and ESEA across different countries?

RQ2. What is the role of EK&S in the relationship between FoF and ESEA across different countries?

RQ3. What is the role of EI in the relationship between EK&S, FoF, SSE and ESEA?

RQ4. How do different combinations of EK&S, FoF, SSE and EI contribute to ESEA in different countries?

The rest of the paper is organised as follows. The next section reviews the relevant literature on EK&S, ESEA, EI, FoF and SSE, and develops the hypotheses. The following section describes the data sources, variables and methods used in the study. The subsequent section presents and discusses the results of the data analyses. The implications of the study are then presented. The final section outlines the limitations of the study and suggests areas for further study.

Literature review
In this section, we present the theoretical framework, an explanation of the outcome variable (ESEA), followed by the predictor variables ESK, FoF and SSE, and then the mediator EI, as

can be construed from the GEM framework. Lastly, the literature on how national income level (economic growth) might influence the links between the variables is presented. Throughout, relevant hypotheses linking these variables are presented.

Theoretical framework
Entrepreneurship constitutes a multifaceted and dynamic phenomenon, influenced by a web of interconnected factors. To gain a deeper understanding of this intricate interplay, our study adopts the social cognitive theory (SCT) as a coherent theoretical framework. Proposed by Bandura in 1986, the SCT emphasises the interplay between personal, environmental and behavioural factors in shaping human behaviour (Bandura, 1986). Crucially, personal factors such as self-efficacy and outcome expectations play a pivotal role in determining individuals' EI and subsequent actions (Santos and Liguori, 2020). Likewise, environmental factors, such as social support and cultural norms, exert influence over entrepreneurial decisions and behaviours (Malach-Pines *et al.*, 2005). Furthermore, behavioural factors, including skills and habits, contribute to the actualisation of entrepreneurial activities (Bird, 2019). Notably, the FoF factor aligns within this framework, serving as both a personal and environmental influencer. For instance, an individual with a genetic predisposition to fear failure may be more prone to developing this trait if they encounter negative experiences with failure early in life or reside in a culture emphasising competition and achievement (Morgan and Sisak, 2016).

By adopting the SCT as a guiding framework, the researchers recognise that entrepreneurial behaviour and activity are outcomes of a complex interplay of factors, including self-efficacy, outcome expectations, social support, skills, habits and FoF. For instance, a potential entrepreneur who lacks confidence in their entrepreneurial competencies may experience heightened FoF, leading to reduced self-efficacy and outcome expectations, subsequently diminishing their motivation to pursue entrepreneurial activities. Thus, the SCT enables a comprehensive exploration of how individuals' beliefs, perceptions of their capabilities and social interactions influence their EI and subsequent involvement in ESEA. This approach aligns well with our research questions, as it allows us to effectively investigate the relationships between EK&S, FoF, SSE, EI and ESEA. Ultimately, by embracing the SCT as a conceptual foundation, we seek to glean valuable insights into the decision-making processes that underlie the transition from intentions to entrepreneurial actions.

Early-stage entrepreneurial activity (business start-ups)
The rates of new business registrations and self-employment have experienced significant growth worldwide, albeit with varying degrees of intensity influenced by different contexts (GEM, 2021). Recognising the socio-economic importance of business start-ups, the GEM consortium has consistently monitored the numbers of nascent and new business owners in selected countries by documenting the total ESEA rate. This rate is defined by the GEM team as the percentage of individuals in the 18-to-64 age range who are either nascent entrepreneurs or owner-managers of new businesses (GEM, 2022). Nascent entrepreneurs are individuals who have invested resources in the process of starting new businesses but have not yet begun to reap the rewards of their production inputs (Gaba and Gaba, 2022). In this paper, we use the closely related but distinct terms, entrepreneurial behaviour and entrepreneurial activity, interchangeably. This is because both terms pertain to entrepreneurial action, albeit focussing on different aspects of the entrepreneurship process.

The contribution of different forms of entrepreneurial activity, including those in the early stages, to economic change and renewal as well as employment creation, is recognised in socio-economics research (Stoica *et al.*, 2020; Vatavu *et al.*, 2022; Doran *et al.*, 2018). Notably, Ressin's (2022) study confirmed a strong and favourable relationship between the upsurge in

business start-ups and the accomplishment of sustainable development goals in the institutional, social, environmental and economic spheres. Moreover, some academics believe that business start-ups provide the most practical path to recovery in the immediate aftermath of a crisis (Bowmaker-Falconer and Herrington, 2020; Delgado *et al.*, 2020; Kalogiannidis and Chatzitheodoridis, 2021). Accordingly, it appears essential for academics and other interested stakeholders to seek ways to comprehend and encourage the forces supporting the emergence of more start-up businesses, particularly considering the need to reverse the distressing effects of the recent COVID pandemic on the socio-economic landscape worldwide.

Intention and entrepreneurial activity
Thompson (2009, p. 676) uses the term "entrepreneurial intentions" to describe "a self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future". The concept originates from the social psychology theories of reasoned action and planned behaviour, which postulate that most human behaviour is pre-planned and less likely a chance occurrence (Ajzen, 2011). Thus, EI is studied extensively with the theory of planned behaviour which serves as the guiding theory in many studies (Liñán and Fayolle, 2015).

The EI variable continues to pique researchers' interest because it is the best-known predictor of entrepreneurial behaviour (Meoli *et al.*, 2020). Previous studies indicate that EI accounts for 27 to 31% of the variance in business start-up activity (Armitage and Conner, 2001; Van Gelderen *et al.*, 2015; Kautonen *et al.*, 2015; Sheeran, 2002). The determinants of entrepreneurial behaviour are thus largely unaccounted for, which has profound implications for the study of entrepreneurship.

Meoli *et al.* (2020) observe that intentions do not always translate into actions, and neither is the conversion of intentions to action tied to a specific timeline. Similarly, Sheeran (2002) contends that strong intentions on their own are not sufficient to trigger an associated behaviour, thus questioning the predictive effect of the strength of entrepreneurial goal intentions on entrepreneurial activity. This view is supported by Van Gelderen *et al.* (2018), who highlight a possible intention–behaviour gap in entrepreneurship research. According to Fayolle and Liñán (2014), expanding the field of entrepreneurship research necessitates rethinking the presumptions that accompany EI. Krueger (2009, p. 53) contends that "the construct of intentions appears to be deeply fundamental to human decision making and, as such, it should afford us multiple fruitful opportunities to explore the connection between intent and a vast array of other theories and models that relate to decision making under risk and uncertainty". This view calls for more in-depth theorising about the drivers and consequences of EI and, thus, we hypothesise that:

H1. EI predicts ESEA.

Entrepreneurial knowledge and skills
Entrepreneurial actions such as the birth and growth of firms are profoundly influenced by EK&S, also known as entrepreneurial competencies (Ferreras-Garcia *et al.*, 2021). New venture creation is a unique type of activity that necessitates distinct task-aligned competencies that are broad in scope and include, among other things, business and management skills, human relations skills, and conceptual and relationship competencies (Silveyra *et al.*, 2021). Unlike general business competencies which people use in already existing businesses with stable structures, EK&S are exceptional in that they manifest mainly when they are applied to uncertain environments, non-routine tasks and emergent business scenarios (Morris *et al.*, 2013). Entrepreneurial competencies are not fixed personality traits and individuals can accumulate

them through various types of life experiences, resulting in a shift in attitudes and behaviours (Wang *et al.*, 2019).

The impact of EK&S on entrepreneurial outcomes is challenging to evaluate (Schelfhout *et al.*, 2016). Van Gelderen (2020) cautions, for instance, that having entrepreneurial competencies does not ensure business success, nor does a lack of them result in failure, because of the other factors which also affect such outcomes. On the other hand, a significant body of literature indicates a favourable relationship between entrepreneurial competencies and EI (González-López *et al.*, 2021; Okolie *et al.*, 2021; Rosique-Blasco *et al.*, 2016). According to Linan (2008), entrepreneurial competencies increase a person's propensity to engage in entrepreneurship because of a heightened sense of capability to carry out associated tasks. In the same vein, Solesvik and Westhead (2019) and Gieure *et al.* (2019) argue that acquiring EK&S through exposure to entrepreneurial education and training enhances one's likelihood of starting a business. Considering this, the following hypotheses are suggested:

H2. EK&S influence EI.

H3. EK&S directly impact ESEA.

The fear of failure (fof)
There is little consensus about what the FoF means in the entrepreneurship literature. Cacciotti *et al.* (2020) observe that previous studies mostly defined FoF as either a fixed dispositional trait signifying an averseness to entrepreneurship due to the possibility of financial and/or emotional costs, or as a negative but transient emotional response to changes in the environment. In the current study, the following GEM definition is employed: "percentage of the 18–64 population perceiving good opportunities to start a business who indicate that fear of failure would prevent them from starting a business" (GEM, 2022).

Research on the FoF-entrepreneurship nexus is relatively new (Costa *et al.*, 2023). To date, several studies have suggested that high levels of FoF hinder entrepreneurship because of the potential losses that individuals might endure (Cacciotti and Hayton, 2015). Many previous studies have confirmed the negative effects of the FoF on EI (e.g. Duong, 2022; Dutta and Sobel, 2021; Games *et al.*, 2023; Ukil and Jenkins, 2023). Conversely, a transnational study by Wannamakok and Chang (2020) based on GEM data found that the FoF did not have any statistically significant influence on women's EI. Yet, some researchers claim that there are some circumstances where the FoF motivates entrepreneurial activity. According to Dutta and Sobel (2021), an environment of economic freedom and an abundance of entrepreneurial opportunity reduces the FoF and increases the likelihood of entrepreneurial action. Furthermore, Games *et al.* (2023) claim that while a high level of FoF increases entrepreneurship anxiety, it motivates incubated start-ups while inhibiting non-incubated start-ups.

Taken together, the preceding studies show that there is still uncertainty about the effects of FoF on entrepreneurship, highlighting the need to investigate the relationship further. Thus, the following hypotheses are proposed:

H4. The FoF directly influences EI.

H5. The FoF directly influences ESEA.

When people make entrepreneurship-related decisions, doubting their entrepreneurial skills amplifies the detrimental impact of FoF (Koellinger *et al.*, 2013). On the other hand, having confidence in one's entrepreneurial knowledge and abilities mitigates the negative effects of failure fear (Van Trang *et al.*, 2019). This underlines the importance of EK&S as a source of self-efficacy, which inspires individuals to take on difficult tasks with confidence and resilience (Bandura, 1997). In other words, EK&S provide a dynamic mechanism for coping with the negative emotional reaction that is frequently triggered by the FoF. According to

Cacciotti and Hayton (2015), the ability to cope is essential to the process of dealing with the effects of FoF and entrepreneurial outcomes. Given this, the following hypothesis is proposed:

H6. The influence of the FoF on EI is moderated by EK&S.

Perceptions about the social status of entrepreneurs
The socio-cognitive theory of career choice underscores the impact of outcome expectations in the formation of specific career interests and decisions (Pfeifer *et al.*, 2016). Outcome expectations are beliefs about what will happen if one acts in a certain way (Santos and Liguori, 2020). Such expectations can have an impact on an individual's decision to pursue an entrepreneurial career, and the strength of the influence is generally determined by the sociocultural context (Lent *et al.*, 2000). Parker and Van Praag (2010) discovered that the social status of the entrepreneurial occupation influences people's career preferences and choices to some extent. While some individuals may pursue entrepreneurship to make money and achieve financial independence, others value the social status and prestige that comes with success (Fuentelsaz *et al.*, 2018; Huurinainen, 2015; Kalden *et al.*, 2017). Thus, the respect and reputation of successful entrepreneurs may inspire non-entrepreneurs to start their businesses so that they too can enjoy a similar status. According to Van Praag (2009), there is a positive association between perceived entrepreneurial status and the likelihood and willingness to start a business. In addition, Stoica *et al.* (2020) found that countries with a higher proportion of wealthy and high-level entrepreneurs have higher employment growth and more export-oriented entrepreneurial activities. However, Islam *et al.* (2018) reported that the positive status of local entrepreneurs did not motivate Saudi-educated female students to pursue entrepreneurship careers. The following hypotheses are proposed, considering the preceding discussion:

H7. The SSE directly influences EI.

H8. The SSE directly influences ESE.

The mediating effect of EI
Given the literature supporting the direct predictive relationships between EK&S, FoF and SSE, on the one hand and the outcome variables (EI and ESEA), it is imperative to explore the potential mediating role of EI in shaping the linkages between EK&S, FoF, SSE and ESEA. Intentions-based models and theories commonly employed to explain entrepreneurs' behaviour (e.g. Ajzen, 1991; Bird, 1988; Krueger *et al.*, 2000; Krueger and Carsrud, 1993) converge on their proposition of intentions as the proximal determinant of entrepreneurial activity. While these theories may differ in certain assumptions, they collectively suggest that EI play a crucial role in transmitting the influence of various factors on entrepreneurial behaviour, an idea supported by numerous studies (Adam and Fayolle, 2015; van Gelderen *et al.*, 2018; Jarvis, 2016; Liñán and Fayolle, 2015; Duong, 2022). Consequently, EI act as a cognitive bridge, potentially mediating the impact of EK&S, FoF and SSE on the actual manifestation of entrepreneurial behaviour (Krueger, 2009). A comprehensive understanding of the mediating mechanisms of EI can provide valuable insights into the decision-making processes underlying the transition from intentions to entrepreneurial actions (Meoli *et al.*, 2020).

H9. EI mediates the relationship between EK&S and ESEA.

H10. EI mediates the relationship between FoF and ESEA.

H11. EI mediates the relationship between SSE and ESEA.

Additionally, considering the interplay between EK&S, FoF and EI, we propose the following moderated mediation hypothesis:

H12. The mediating effect of EI on the relationship between FoF and ESEA is moderated by EK&S.

Figure 1 depicts the hypothesised relationships.

Complexity is added to the model presented in Figure 1 by adding national income level as a control variable. This was necessary, as the complex link between entrepreneurial activity and economic growth has long been argued (Carree and Thurik, 2010). Some literature suggests a circular association: entrepreneurship propels economic activity and growth (Almodóvar-González *et al.*, 2020; Gaba and Gaba, 2022; Neumann, 2021; Stoica *et al.*, 2020; Urbano *et al.*, 2019), and entrepreneurial growth stimulates further entrepreneurial activity (Thurik, 2011). Perhaps more appropriate to the data which will be presented in the current study is that the rate of entrepreneurial activity is consistently higher in lower-income countries than in high-income countries (GEM, 2022). The reality that many residents of low-income countries have limited access to resources and career opportunities, leaving little if any alternative income source but necessity-driven self-employment, is one of the reasons for their higher levels of entrepreneurship (Ciambotti *et al.*, 2023). The reasons why low-income countries show higher entrepreneurship are beyond the scope of this research, but it would be negligent not to include this factor as a predictor in a multinational study of entrepreneurship.

The following proposition is also tested:

ESEA in different countries is influenced by different combinations of EK&S, FoF, SSE, and EI.

Research methodology
In this section design, sampling, the method of data collection, statistical analyses and ethical issues in the study are discussed.
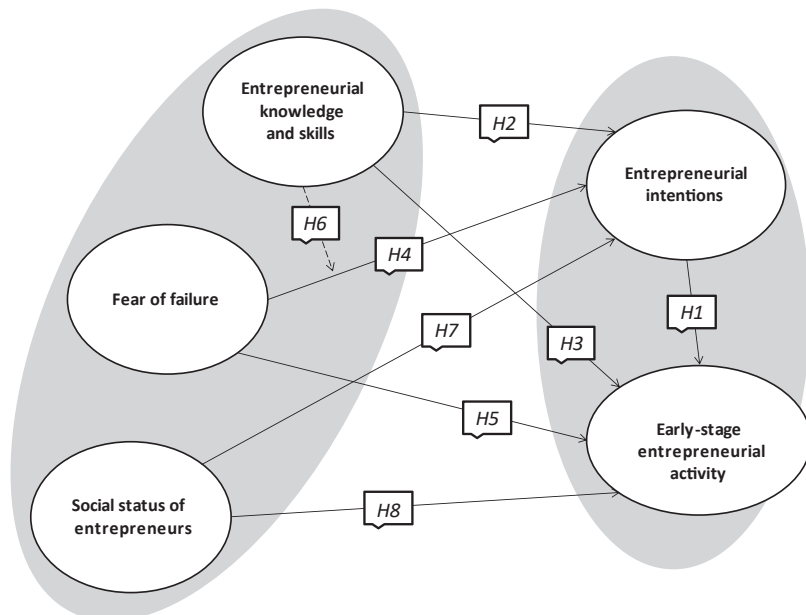

Figure 1.
Conceptual model of hypothesised relationships, controlling for national income

Source(s): Authors' own work

Design
This study used quantitative secondary data to examine the influence of EK&S, FoF, SSE and EI on ESEA while controlling for national income level. The analysis draws on national-level cross-sectional data collected from 49 countries through the GEM 2018 survey.

Sampling
All the countries included in the GEM (2018) dataset were used. At an individual level, the GEM Consortium webpage details the methodology used to draw the sample units from different nations, with special attention paid to ensuring that each participating country's sample was well-represented. The data collected was sourced from male and female respondents who were aged between 18 and 64 years at the time of the survey. In total, 49 countries were included in the study, and as analyses were conducted at the country level, this makes the sample size 49. The data were obtained from a total of 162,077 respondents.

Measurement instrument
In this study, each of the six variables in the conceptual model was measured using a single item. Specifically, we utilised six items from the GEM (2018) questionnaire to measure each respective variable. ESEA was measured with the item "Suskil18" (YES: Has required knowledge/skills to start a business), FoF was measured with the item "frfail18" (YES: Fear of failure would prevent starting a business) and SSE, using the item "NBstats18" (YES: People attach high status to successful entrepreneurs). The mediator variable, EI, was measured using item "Futsup1" (YES: Expects to start a new business in the next 3 years). The dependent variable, ESEA, was measured using the item "TEA18" (YES: Setting up firm or owner of young firm).

The individual responses of different countries to these yes/no questions are presented as a percentage of the national population that agrees with each statement. The dependent, mediator and independent variables were therefore national averages. Despite the directness, the employment of categorical measures oversimplified the differentiation between respondents exhibiting a particular quality and those who did not. Moreover, such scales, unlike continuous scales, fail to capture the range of intensity of the responses associated with a specific attribute. Furthermore, certain researchers (e.g. Krueger *et al.*, 2000) have emphasised the reliability and validity limitations of single-item measurements of entrepreneurship constructs. Conducting a Cronbach alpha reliability test on the single-item measures is not recommended because there are no other items to correlate with, resulting in a Cronbach alpha value of 1.0, which may lead to misleading interpretations. However, it is worth noting that some previous studies (e.g. Amini Sedeh *et al.*, 2021; Raza *et al.*, 2019) have also utilised the GEM scales without providing information on their reliability and factor analysis, which aligns with the approach in the current study.

The control variable, national income level, was evaluated using the categorical item "WEFIncREV" (National income level), which had three response categories, namely 1 = low income, 2 = middle income and 3 = high income.

Data analysis procedure
Because the study sought to test predictive relationships, the data analysis entailed (1) a Pearson correlation analysis to test for association between ESEA and the proposed predictors, (2) simple regression analysis (3) a path analysis to evaluate if the variables were adequately described by the regression paths specified in the theorised model and (4) fsQCA to determine the different combinations of EK&S, FoF, SSE and EI that contribute to ESEA in different countries.

The Pearson test assumes that variables have a linear relationship with each other. The correlation coefficients, r, are from 0 (no relationship) to 1 (perfect linear relationship) or −1 (perfect negative linear relationship). The correlation coefficients are assessed using Cohen's standard, where a value of 0.10–0.29 denotes a weak association between the two variables, a value of 0.30–0.49 denotes a moderate association, and a value of 0.50 or higher denotes a strong association (Cohen, 1988).

Path analysis was conducted using the PROCESS technique, which included the bootstrapping of direct and indirect effects in computer software Smart PLS 4. Path analysis is a useful regression-based method for assessing models with numerous dependent and independent variables. The test results include the coefficients of determination (R^2) and regression estimates of the hypothesised relationships which confirm or disprove the suitability of a proposed model.

Lastly, a fsQCA analysis was conducted using fsQCA version 4 software to identify configurations of EK&S, FoF, SSE, and EI that are conducive to ESEA. The four causal conditions were analysed in the study, namely EK&S, FoF, SSE and EI.

The first stage of the analysis involved calibrating the variables into fuzzy sets. This included determining the cross-over points, full membership (1) and full non-membership (0). In this study, the cross-over points were based on the mean value, full membership on the maximum value and full non-membership on the minimum value of each variable. The second stage consisted of conducting necessity analyses to determine the degree of necessity of each causal condition for ESEA. Finally, various configurations of the causal conditions were derived in the last stage. The consistency threshold was set at 0.75, following recommendations in the literature.

Ethical considerations
The research used secondary data obtained from the GEM database. In this case, there was no direct interaction with human participants in the study. The GEM data is available freely for use by the public. Nevertheless, researchers who publish scholarly work from the data should acknowledge the database. In addition, a general ethical clearance was obtained from the researcher's institution of affiliation to conduct research using secondary data from institutions such as the World Bank, GEM and the Global Entrepreneurship and Development Institute.

Results
Correlation analysis
A Pearson product-moment (r) correlation was conducted to test for the strength and significance of the association between ESEA, ES&K, FoF, SSE, EI and national income level. The results of the test are presented in Table 1.

This table shows that the outcome variable of the study, ESEA, was positively correlated with EI ($r = 0.774$, $p = 0.007$) and EK&S ($r = 0.695$, $p < 0.001$). Furthermore, ESEA was negatively correlated with both the FoF variable ($r = -0.387$, $p < 0.01$) and the control variable, the national income level ($r = -0.443$, $p = 0.001$). However, the relationship between ESEA and SSE was not statistically significant ($r = 0.172$, $p = 0.247$).

EI had positive correlations with EK&S ($r = 0.608$, $p < 0.001$) and the SSE ($r = 0.311$, $p = 0.033$), as well as negative correlations with FoF ($r = -0.444$, $p < 0.001$) and the national income level ($r = -0.585$, $p < 0.001$). Taken together, these findings confirm an association between the variables studied and pave the way for testing predictive relationships between the variables using path analysis.

Effects of the control variable
The effects of the national income level were controlled when the analyses were conducted since the literature links the variable to the level of entrepreneurial activity.

Variables	Descriptive statistics	(1)	(2)	(3)	(4)	(5)
1. Early-stage entrepreneurship	Mean = 12.62; SD = 7.286	–				
2. Entrepreneurial knowledge and skills	Mean = 49.19; SD = 14.03	0.695***	–			
3. Entrepreneurial intentions	Mean = 26.95; SD = 17.80	0.774***	0.608***	–		
4. Social status of entrepreneurs	Mean = 69.80; SD = 10.82	0.172	0.184	0.311*	–	
5. Fear of failure	Mean = 39.84; SD = 9.58	−0.387**	−0.320*	−0.444**	0.134	–
6. National income level	Mean = 2.49; SD = 0.73	−0.443**	−0.253	−0.585***	−0.304*	0.131

Note(s): *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Source(s): Authors' own work

Table 1.
Descriptive statistics
and correlation
between variables

Two models were compared: model 1 (excluding the effects of the national income level) and Model 2 (including the effects of the national income level) to demonstrate the effect of the national income level. The change in the predictive ability of the models reflected the impact of the national income level.

A simple regression analysis shows that the national income level had negative effects on EI (beta = −0.585, $p < 0.001$) and ESEA (beta = −0.443, $p < 0.001$). Further simple regression tests were conducted to determine the variance in the effects of EK&S, FoF and the SSE on EI and ESEA, before (model 1) and after (model 2) including the national income level variable. Table 2 summarises the outcome of these sets of tests. The results demonstrate that the combination of national income level with each of the predictors of EI – that is, EK&S, FoF and the SSE – improves the R^2 values by 0.199, 0.282 and 0.264 respectively. In the case of the predictors of ESEA, the combination of national income level with EK&S, FoF, SSE and EI caused the following respective changes in R^2: 0.076, 0.156, 0.155 and 0.000.

Path analysis
Path analysis was used to determine the different pathways by which EK&S, FoF, SSE and EI affected ESEA. The data were initially screened to test for some applicable assumptions of regression analysis. All the predictors of EI and ESEA had variance inflation factors less than 3 (see Table 3), confirming that there were no issues with multicollinearity. Normality was not

		Predicted variable				
		EI			ESEA	
Predictor	$R^2_{(Model\ 1)}$	$R^2_{(Model\ 2)}$	ΔR^2	$R^2_{(Model\ 1)}$	$R^2_{(Model\ 2)}$	ΔR^2
EK&S	0.370	0.569	0.199	0.483	0.559	0.076
FoF	0.197	0.479	0.282	0.150	0.306	0.156
SSE	0.097	0.361	0.264	0.030	0.185	0.155
EI	–	–	–	0.599	0.599	0.000

Note(s): EK&S = entrepreneurial knowledge and skills, FoF = fear of failure, SSE = social status of entrepreneurs, EI = entrepreneurial intentions, ESEA = early-stage entrepreneurial activity
Source(s): Authors' own work

Table 2.
Simple regression
analysis

tested, because the partial least squares regression test used in the study does not make such an assumption about the data.

The R^2 values for the two endogenous variables were as follows: ESEA = 0.687 and EI = 0.728. According to the guidelines of Hair *et al.* (2021), the set of proposed predictors had moderate explanatory power. The results of the path analysis showing the standardised regression coefficients are presented in Figure 2 and Table 4.

Table 4 shows that EI had a positive and statistically significant effect on ESEA (beta = 0.537, p < 0.001), and therefore hypothesis H2 is accepted. Furthermore, Table 4 demonstrates that the direct effect of EK&S on EI and ESEA was statistically significant (beta = 0.398, p < 0.001 and beta = 0.364, p = 0.007). As a result, both H2 and H3 are acceptable.

In addition, the direct effect of FoF on EI was negative and statistically significant (beta = −0.261, p = 0.023). The interaction of FoF and EK&S had a statistically significant effect on EI (beta = −0.383, p = 0.018), as shown in Figure 3 and Table 5. The simple slope plots in Figure 3 indicate that at higher levels of EK&S (+1 SD), the inverse relationship between FoF and EI was significantly weaker (beta = −0.644, p = 0.001). Furthermore, at

	Entrepreneurial intentions	Early-stage entrepreneurial activity
Entrepreneurial intentions	–	2.830
Entrepreneurial skills and knowledge	1.213	1.634
Fear of failure	1.188	1.414
Social status of entrepreneurs	1.197	1.245
Source(s): Authors' own work		

Table 3.
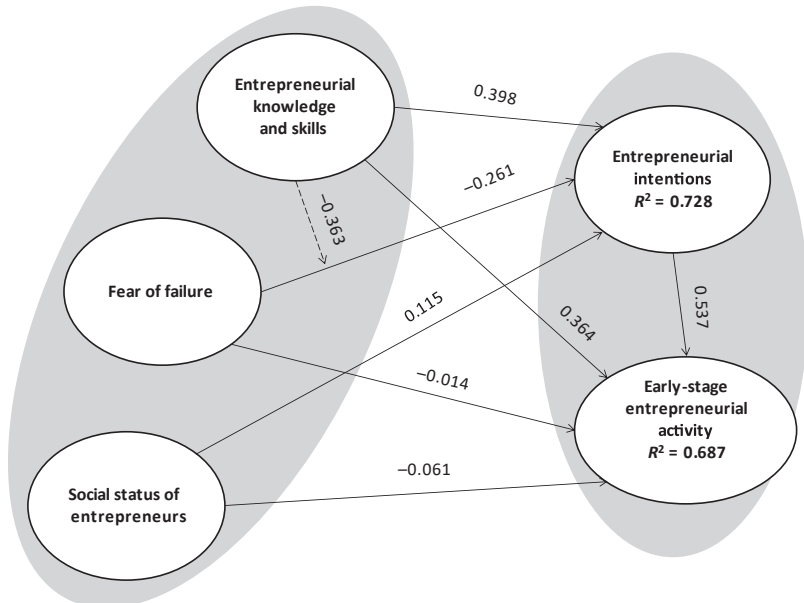Variance inflation factors

Figure 2.
Graphical presentation of the R^2 and regression estimates (β), controlling for national income

Source(s): Authors' own work

Hypotheses	Path relationships	Standardised regression Coefficients	Standard deviation	p-values
H1: Accepted	EI → ESEA	0.537	0.143	<0.001
H2: Accepted	EK&S → EI	0.398	0.109	<0.001
H3: Accepted	EK&S → ESEA	0.364	0.136	0.007
H4: Accepted	FoF → EI	−0.261	0.115	0.023
H5: Accepted	EK&S x FoF → EI	−0.383	0.161	0.018
H6: Rejected	FoF → ESEA	−0.014	0.108	0.898
H7: Rejected	SSE → EI	0.115	0.081	0.156
H8: Rejected	SSE → ESEA	−0.081	0.082	0.321
H11: Rejected	SSE → EI → ESEA	0.062	0.046	0.178
H10: Accepted	FoF → EI → ESEA	−0.140	0.070	0.045
H12: Rejected	EK&S x FoF → EI → ESEA	−0.206	0.105	0.051
H9: Accepted	EK&S → EI → ESEA	0.214	0.094	0.023

Note(s): EK&S = entrepreneurial knowledge and skills, FoF = fear of failure, SSE = social status of entrepreneurs, EI = entrepreneurial intentions, ESEA = early-stage entrepreneurial activity
Source(s): Authors' own work

Table 4.
Regression estimates
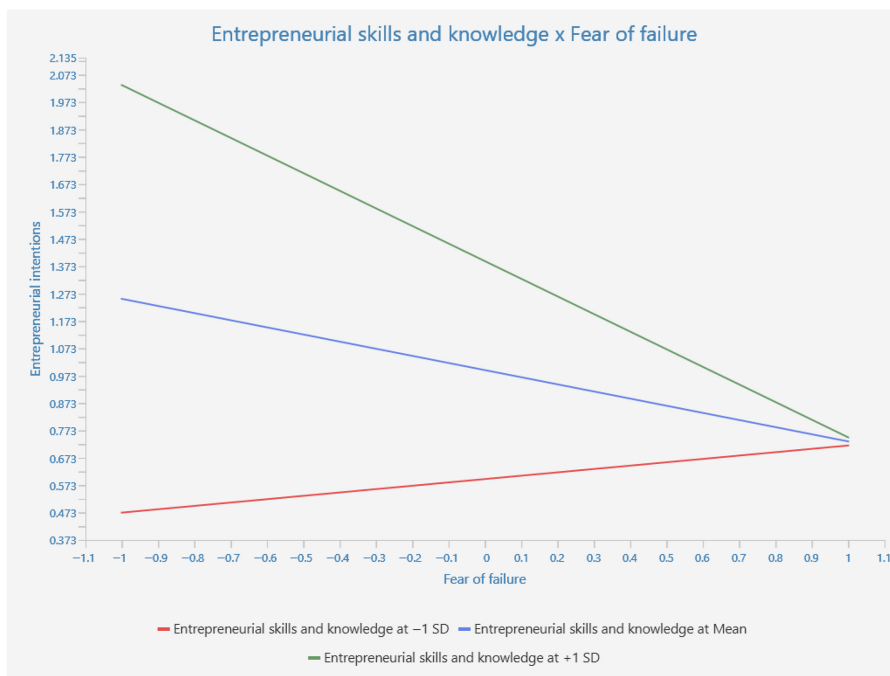for the hypothesised
path relationships

Source(s): Authors' own work

Figure 3.
Simple slope plots of
the moderation effects

average levels of EK&S, the inverse relationship between FoF and EI was also weak (beta = −0.261, p = 0.023). The relationship between FoF and EI was positive but not statistically significant at lower levels of EK&S (−1 SD). Nevertheless, the direct effect of FoF on ESEA was not statistically significant (beta = −0.014, p = 0.898). Therefore, H4 and H5 are accepted, whereas H6 is rejected.

The direct influence of SSE on both EI and ESEA was not statistically significant (beta = 0.150, p = 0.156 and beta = 0.810, p = 0.321, respectively). As a result, neither H7 nor H8 are confirmed. Notably, the control variable (national income level) had an inverse and statistically significant effect on EI (beta = −0.448, p = 0.007), but not on ESEA (beta = −0.081, p = 0.592).

The mediation effect of EI on the relationship between EK&S and ESEA was statistically significant (beta = 0.214, p = 0.023). This confirms partial mediation, because both the direct and indirect relationships between EK&S and ESEA were significant. Furthermore, the negative indirect effect of FoF on ESEA, as mediated by EI, was statistically significant (beta = 0.14, p = 0.045). EI partially mediated this relationship, because both the direct and indirect effects were statistically significant. The indirect influence of SSE on ESEA was not statistically significant (beta = 0.062, p = 0.178). Overall, hypotheses 9 and 10 were confirmed in part, while hypotheses 11 and 12 were not confirmed.

Configurational evaluation using fsQCA

As indicated in the methodology section, the configuration analysis was in three stages. In the first stage, all the proposed causal conditions and outcome variables were transformed into fuzzy sets where cross-over points, full membership and full non-membership thresholds were deduced using the mean, maximum and minimum values for each variable respectively. In fuzzy set analysis, membership thresholds range from 1 (full membership), 0.5 (cross-over point), to 0 (full non-membership).

In the second stage, necessary conditions were analysed to identify factors that must be present for ESEA to occur. In a proposed fsQCA model, a condition is sufficient if it is present in all cases where an outcome occurs. A higher consistency threshold is preferred as it increases the robustness of the analysis. A commonly used rule of thumb is to set the consistency threshold between 0.7 and 0.9, even though this may vary depending on the context of the analysis. The results of the necessary conditions analysis are presented in Table 6, where the presence of EI, ESK, higher SSE and the absence of FoF had satisfactory

FoF predicting EI conditional on …	Beta	Standard deviation	t-statistics	p-values
ES&K at +1 standard deviation	−0.644	0.195	3.307	0.001
ES&K at mean standard deviation	−0.261	0.115	2.272	0.023
ES&K at −1 standard deviation	0.123	0.201	0.610	0.542

Note(s): ES&K = entrepreneurial skills and knowledge, FoF = fear of failure, EI = entrepreneurial intentions
Source(s): Authors' own work

Table 5.
Direct conditional effects

Conditions tested	Consistency	Coverage
EI	0.855	0.798
~EI	0.714	0.437
EKS	0.937	0.693
~EKS	0.647	0.478
FoF	0.654	0.516
~FoF	0.895	0.622
SSE	0.804	0.524
~SSE	0.634	0.541

Note(s): ~ = negation of condition; Outcome variable = ESEA
Source(s): Authors' own work

Table 6.
Necessary conditions analysis

consistency and coverage values. Therefore, these four were necessary conditions for the outcome of ESEA conditions.

In the final stage of the analysis, the Quine McCluskey algorithm was used to explore possible configurations of the causal conditions in the model ESEA = f(EK&S, FoF, SSE, EI). The process identified combinations of factors that were sufficient but not always necessary for ESEA to occur. A frequency cut-off of 1 and a consistency cut-off of 0.841424 were used. The truth table analysis identified three assumptions that met the frequency and consistency cut-offs: ~FoF*EI, EK&S*EI and SSE*EI. The solution coverage was 0.848589, indicating that the selected assumptions explained 84.86% of the variation in ESEA. The solution consistency was 0.797188, suggesting that the intermediate solution was reliable.

The consistency threshold of 0.841424 indicates that the results are reliable. The solution coverage of 0.848589 suggests that the model accounts for a substantial proportion of the variance in the EAR. The solution consistency of 0.797188 indicates that the results are internally consistent. Based on the results, the model suggests that SSEA is a function of the combination of ESK, FoF and SSE, all in the presence of EI. These configurations are sufficient but not necessary conditions for ESEA. Table 7 presents the results of the analysis of the configuration.

Discussion of findings and implications

In this study, the collective influence of EK&S, FoF and the SSE on EI and ESEA among adults in the countries covered by the GEM 2018 survey was examined.

The findings provide support for the integrated framework that incorporates both the SCT and the FoF perspective. Specifically, the study found that EI mediates the relationship between EK&S and ESEA, supporting the central premise of the SCT that individual agency and self-efficacy play a critical role in driving entrepreneurial behaviour and activity. The negative and statistically significant direct effect of FoF on EI suggests that it is a key barrier to entrepreneurial activity and provides support to the FoF theory's assumption that fear plays a significant role in shaping entrepreneurial activity and behaviour.

Furthermore, national income level, a control variable, was found to be a statistically significant predictor of both EI and ESEA. These results are consistent with findings from previous research which suggested an inverse relationship between national income levels and ESEA rate in the concerned countries (GEM, 2021; Maniyalath and Narendran, 2016). The pattern of results could be explained by the fact that in high-income economies, working-age adults have broader occupational choices, and formal jobs may offer higher returns than entrepreneurial careers, resulting in fewer people aspiring to be entrepreneurs. Conversely, in lower-income countries, formal employment opportunities may be fewer than in economically advanced countries (GEM, 2021). As a result, most working-age adults pursue entrepreneurial careers as a first option, because of limited job opportunities.

In addition, consistent with numerous studies highlighting the importance of EI in explaining entrepreneurial activity (Ali, 2020; Hueso *et al.*, 2021; Liñán and Fayolle, 2015;

Path	EK&S	FoF	SSE	EI	Raw coverage	Consistency
~FoF*EI		~		●	0.788	0.841
EK&S*EI	●			●	0.559	0.801
SSE*EI			~	●	0.703	0.805

Note(s): ● = presence of condition; blank space = absence of conditions; ~ = negation of conditions; Outcome = ESEA
Source(s): Authors' own work

Table 7.
Configurations
analysis

Neves and Brito, 2020), our results show that EI is strongly linked to entrepreneurial activity and play a role in mediating the influence of other factors on entrepreneurial behaviour. This strong influence was not surprising given that most human behaviour, including entrepreneurial actions, is deliberate and pre-planned (Ajzen, 1991, 2011). In other words, when people are presented with entrepreneurial opportunities, forethought and consideration are crucial in deciding whether to pursue the opportunity, since the choice involves an opportunity cost of resources as well as the possibility of loss (Jarvis, 2016; Krueger, 2000).

Our findings are also consistent with claims made by González-López *et al.* (2021) and Morris *et al.* (2013) that EK&S are important in individuals' decisions to pursue entrepreneurship and that people are more likely to take on tasks they believe they can competently do. In addition, EK&S were found to be direct predictors of ESEA, emphasising the important effect of entrepreneurial skills on behaviour and not just aspirations. This direct influence on entrepreneurial activity digresses from the assumptions of Ajzen's theory of planned behaviour, which states that the influence of all antecedents of behaviour is transmitted indirectly via the intentions factor.

Apart from that, the results of this study also underscore the importance of FoF in inducing EI, and, indirectly, in shaping entrepreneurial behaviour. A significant body of research on the role of FoF in the entrepreneurship setting has revealed that the variable harms entrepreneurial outcomes (Ekore and Okekeocha, 2012; Kollmann *et al.*, 2017; Morgan and Sisak, 2016). However, a growing body of literature seems to indicate that there are cases where FoF motivates individuals to become entrepreneurs (Cacciotti and Hayton, 2015; Hunter *et al.*, 2021; Morgan and Sisak, 2016).

Moreover, the results also confirmed how the effects of the FoF on EI were moderated by EK&S. Probably, by gaining an in-depth understanding of the entrepreneurial process and obtaining appropriate skills, the respondents felt more self-assured in their capability to launch and run a successful business. Thus, entrepreneurial knowledge and abilities might provide individuals with a framework for decision-making that assists them in approaching problems in a planned and methodical manner (De Winnaar and Scholtz, 2020). This, in turn, may alleviate the stress and uncertainty associated with launching and managing a new business. The result supports Bird's (2019 p. 114) suggestion that entrepreneurial competencies are "a key intervention strategy for bolstering or turning around new ventures and for facilitating the would-be entrepreneur".

Lastly, the data did not confirm SSE as a significant predictor of both EI and ESEA. This finding contradicts the claim of Huurinainen (2015) and Malach-Pines *et al.* (2005) that the prestige and status associated with a successful entrepreneurial career, combined with other environmental factors, persuade other members of society to pursue an entrepreneurial career. The reasons for the lack of significance in this study are not obvious.

The theoretical contributions and practical implications of the present study are summarised in Tables 8 and 9 respectively.

Limitations and areas for future research

Notwithstanding its merits, this study had its weaknesses. First, the study was limited by an uneven representation of countries with different income levels, with some categories being over-represented, which could skew the results. More data with a proportional representation of countries at different stages of economic development would provide deeper insights into the relationships tested in the study. Secondly, the researchers had no control over the data collection and the credibility of the tools used. The GEM data on the five main variables were collected on single-item measures based on a dichotomous scale, with respondents answering the questions asked with either yes or no. Such scales have reliability and validity limitations. Therefore, future research on the model proposed in this study should aim to use validated

	Description
Support for the integrated framework	Results provide empirical evidence for the conceptual model that integrates the SCT and FoFT
A nuanced understanding of complex relationships	Results provide a comprehensive clarification of the complex relationships between EK&S, FoF, SSE, EI and ESEA in different countries through a combination of path analysis and fsQCA
Validation	The results confirm the universality and persistence over time of previously established relationships, as validated through the triangulation of data analysis techniques. This provides support for methodological pluralism and innovation in the study of entrepreneurship behaviour to enhance the robustness and credibility of findings
Role of context	- Demonstrates the importance of considering the differences across economies, when examining the determinants of ESEA
Importance of entrepreneurial intentions	- EI mediates the influence of other factors on entrepreneurial behaviour - EI is necessary for ESEA. - ESK, FoF and SSE are all sufficient conditions for ESEA, but only in the presence of EI
Importance of EK&S	- EK&S influence entrepreneurial pursuit by increasing individuals' perceived competence
The direct influence of entrepreneurial skills on behaviour	EK&S predict ESEA, highlighting their direct effect on behaviour, not just aspirations as assumed in the established theories
The negative influence of fear of failure	FoF is a key barrier to ESEA
The moderating effect of entrepreneurial knowledge and skills	Possession of appropriate skills and an understanding of the entrepreneurial process enhanced ESEA
Limited influence of social status	- SSE had no significant impact on EI or ESEA, contrary to previous research - However, fsQCA suggested it was a necessary condition for ESEA to emerge

Source(s): Authors' own work

data-collection scales to achieve a higher level of accuracy. Fourthly, the study excludes many contextual factors from the analysis. Analysis of the combined effects of personal and situational variables at a global scale can provide interesting insights into the dynamics of entrepreneurial activity around the world. Fifth, the present study did not differentiate whether the quantified entrepreneurial activity was motivated by opportunity or necessity. Future research should explore this distinction for researchers and other concerned stakeholders to gain a better understanding of the determinants of ESEA. Sixth, the use of GEM national-level data in this study is a limitation, as it does not allow for an in-depth analysis of country-specific idiosyncrasies. To address this limitation, future research could incorporate qualitative data collection methods to gain a more nuanced understanding of the context-specific factors that influence entrepreneurial activity. Lastly, it is worth noting that the 2018 GEM data, while the most recent publicly available data at the time of writing, is relatively outdated.

Conclusion
This study aimed to investigate the combined effects of EK&S, FoF, SSE and EI on ESEA among adults aged 16–64 years globally. The results indicate that EK&S exhibited the strongest and most positive influence on both EI and ESEA. Additionally, it was found that FoF had a negative impact on EI, but the negative effect was attenuated by EK&S.

Implication	Description
Leveraging EI	Leveraging EI is integral to nurturing future entrepreneurs and encouraging the creation of new businesses through policy measures. Can be achieved through governments offering funding and resources to potential entrepreneurs, removing barriers to entry by simplifying administrative procedures for business registration, tax incentives for new businesses, offering subsidies for early-stage entrepreneurial ventures, establishing innovation clusters, public education campaigns that promote the benefits of entrepreneurship and the entrepreneurial mindset, creating social impact bonds to support early-stage businesses that are focused on social or environmental impact, as well as encouraging collaboration between industry and academia to foster innovation and entrepreneurship
Development of entrepreneurial competencies	Policymakers should prioritise long-term planning and allocate more resources to developing entrepreneurial competencies among potential and current entrepreneurs through educational and training institutions
Mandatory enterprise education	Introduction of mandatory enterprise education at all levels in countries where it is not yet available
Business incubator and business accelerator services	Strong government, educational, industry support and aggressive marketing of business incubator services can effectively develop entrepreneurial competencies in practice
Addressing FoF	Addressing FoF as a barrier to entrepreneurship requires developing competencies among potential entrepreneurs through education and training. Science and technology parks, business incubators and accelerator services can provide a safe environment for enhancing entrepreneurial competencies and launching new ventures with limited personal risk. Furthermore, establishing government-backed insurance schemes for new businesses to mitigate the financial risks associated with failure, offering tax incentives or grants to incentivise entrepreneurs to take calculated risks and pursue new ventures, as well as developing networks of peer support to create a sense of community and encourage the sharing of knowledge and resources can help to negate the effects of FoF

Table 9.
Practical implications

Source(s): Authors' own work

Furthermore, the influence of SSE on EI and ESEA did not yield statistically significant results. These findings contribute to the existing knowledge of ESEA development by providing a novel understanding of the underlying mechanism through which the selected predictors exert their influence. This enhanced understanding can lead to improved predictions of how personal-level factors impact entrepreneurship. Despite its limitations, this study's findings hold important implications for policy and practice.

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