

Impact of autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness on students' intention to start a new venture



Yaser Hasan Al-Mamary*, Mohammad Alshallaqi

Department of Management and Information Systems, College of Business Administration, University of Ha'il, Hail, Saudi Arabia

ARTICLE INFO

Article History:

Received 24 May 2022

Accepted 29 July 2022

Available online 4 August 2022

Keywords:

Entrepreneurial intention
Entrepreneurial orientation
Students
Saudi Arabia

JEL classification:

M00
L26
M13
C12
C83

ABSTRACT

This study examines the impact of entrepreneurial orientation dimensions on students' intentions to start new businesses in Saudi universities. Using a 21-item questionnaire with a 5-point Likert scale, the authors collected data on students' demographics, entrepreneurial orientation, and entrepreneurial behavioral intention. The sample consisted of 341 business students from two public universities in Saudi Arabia. Specifically, business students were chosen for this study because they were potential entrepreneurs. Through structural equation modeling, AMOS software was used to analyze the study model. Results showed a strong relationship between entrepreneurial intention and greater autonomy, innovativeness, risk-taking, and proactiveness. In contrast, competitive and aggressive behavior, is not strongly related to entrepreneurial intention. These findings are important because they shed new light on the factors that shape future entrepreneurs, thereby making a significant theoretical contribution to the literature on entrepreneurial orientation, particularly in the context of university business students. As countries embrace the importance of innovation and entrepreneurship in enhancing their global competitiveness, this study also makes a practical contribution to policymakers' efforts to identify potential entrepreneurs and transform them into successful ones.

© 2022 The Author(s). Published by Elsevier España, S.L.U. on behalf of Journal of Innovation & Knowledge.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Introduction

This study's motivation was firmly grounded in the belief that innovation and entrepreneurship are the most viable ways to improve and develop a country's economy. In addition, investigating the underlying factors that orient aspiring business students towards becoming successful entrepreneurs is essential to studying and understanding entrepreneurship. Therefore, this study focuses on business students' entrepreneurial orientation (EO) and its influence on their intentions to start a new venture. A better understanding of the factors influencing college students' entrepreneurial behavior will assist policymakers in attracting and retaining younger entrepreneurs, help institutionalize entrepreneurial culture, and inform emerging scholarship on innovation and entrepreneurship.

According to [Ismail et al. \(2015\)](#), entrepreneurship is the most important economic activity in a country's economic development. Hence, it is imperative to study and understand the underpinning orienting factors of entrepreneurship because entrepreneurship serves to boost the efficacy of the bottom line of any economy, namely, its productive enterprises that generate the added value on which a

national economy thrives ([Guerrero et al., 2008](#)). In addition, entrepreneurship is also a viable solution to unemployment because it impacts regional development and economic progress as well as encourages innovation. According to [Cho & Honorati \(2014\)](#), fostering entrepreneurship is frequently viewed as a critical policy priority to steadily increase jobs and reduce poverty. Understanding the determinants that influence entrepreneurship can aid policymakers and governments in making better decisions to improve their economies and become more self-reliant. They can accomplish this by developing strategies to mitigate or remove the barriers that prevent potential entrepreneurs from actualizing the spirit of entrepreneurship ([Al-Mamary et al., 2020a](#); [Al-Suraihi et al., 2020](#)).

According to [Covin & Wales \(2019\)](#), EO is an essential indicator of the emergence of potential entrepreneurs. Similarly, entrepreneurial intentions foster the development of entrepreneurial capabilities, such as effective management and leadership ([Covin & Lumpkin, 2011](#)). Business schools play a critical role in developing entrepreneurial orientation and intentions among business students, especially in schools that heavily emphasize entrepreneurship in their curricula.

According to [Al-Nashmi \(2017\)](#), entrepreneurial intention (EI) is an essential factor that impacts a potential entrepreneur's intention, behavioral patterns, and effective performance. The dimensions

* Corresponding author.

E-mail address: yaser_almamary@yahoo.com (Y.H. Al-Mamary).

specifically relating to entrepreneurial behavior, which encourage individuals to become exceptionally creative and start their own businesses, are perhaps the most important in the long run.

In the context of the Saudi Arabian economy, entrepreneurship has gained significance under the national umbrella strategy of Vision 2030. According to the World Bank's Business Index Report for 2020, Saudi Arabia has one of the world's largest economies. Vision 2030 aims to transform the national economy from oil dependence to a diversified economy with a robust and healthy bottom line in terms of localizing industries and boosting entrepreneurship. Along these lines, Saudi Vision 2030 seeks to reduce the national youth unemployment rate from 12.9% to 7%. Hence, the government has been working at a breakneck speed to create a conducive entrepreneurial ecosystem. In this pursuit, the government has reformed rules and regulations, removed barriers, and increased national and international entrepreneurs' accessibility to financial institutions.

Additionally, the government has provided financial and regulatory support to business schools nationwide so that they can infuse entrepreneurship more actively into their educational curricula. Moreover, business accelerators have been established in most business schools in the country through government funding and support. Nonetheless, these factors hinge on a greater understanding of the factors that orient students towards becoming entrepreneurs, a topic that requires extensive research and investigation. This study aims to advance the knowledge on this issue and extend insights and contributions to the global entrepreneurial context. In this context, studying EO is vital because most previous studies focus on the major impact that the elements of a theory of planned behavior have on entrepreneurial behavior. However, little research has investigated the concept of EO and its impact on EI.

The rest of this paper is structured as follows: The second section reviews the literature on EO and EI, followed by the study's conceptual framework. The research design and methods are explicated in the third section. Subsequently, the results are presented in the fourth section. Next, the discussion section delineates the nuances gained from the results and relates them to the literature on EO and its impact on EI. The practical implications section elucidates the practical contributions of this study. Finally, the paper concludes by discussing the study's limitations and future research.

Literature review

Entrepreneurial orientation

Miller (1983) argued that a company's EO might only be referred to as entrepreneurial if it thrives on traditional qualities, such as creativity, proactiveness, and risk-taking. Miller's (1983) perspective has been used and built upon by other academics and scholars across businesses, countries, and cultures. For example, Lumpkin & Dess (1996) provided a new perspective on EO by adding a fifth dimension to Miller's three dimensions, plus at least competitive aggressiveness and autonomy.

Regarding the concept mentioned above, we can speculate that EO is a characteristic of a firm that operates autonomously and innovatively, takes risks and proactive efforts, and competes vigorously to seize future market opportunities. In this study, we are interested in the links between proactive personality, creativity, risk-taking, and overall average EO and performance factors in a Saudi Arabian setting.

In the context of management science, Gupta & Gupta (2015) define EO as an entirely strategic inclination toward entrepreneurship development as a dominant idea. Further, EO refers to the inclination of a corporation to act autonomously and innovatively, take risks, and take proactive actions in response to possible market conditions. As knowledge and understanding in the discipline of EO have

increased, academic researchers in EO are now concerned with the profession's economic contributions and its future direction.

Anderson et al. (2015) asserted that a business's entrepreneurship and functional innovation requirements, standard procedures, managerial role attitudes, and major company behaviors are influenced mainly by its EO. Similarly, Wu (2009) discovered that EO is a person's general attitude toward those directly participating in venture creation, whether within an established business or a new startup. This attitude can be positive or negative.

Scholars typically use the notion of EO to examine or comprehend a company's entrepreneurial behavior. The EO focuses on the fundamentals and procedures that underpin venture creation decisions and the framework for subsequent activities. Thus, according to Rauch et al. (2009), EO refers to the fundamental concepts and standard operating procedures that function as more than just a conceptual framework for decision-making in entrepreneurship and innovation. As a result, EO can also be defined as the multiple methods for developing strategic initiatives that major decision-makers use for conducting their firm's overall goal, perpetuating its perspective, and setting up a strategic advantage.

Generally, EO is a critical theory when managers and executives develop strategies with the intention of doing something completely new and capitalizing on career opportunities that other organizations cannot capitalize on. This implies that EO describes a firm's techniques, procedures, and decision-making styles, especially when a company operates in an entrepreneurial manner. The minimum level of EO in any other organization may be determined by comparing it to the other five dimensions. All these measurements encompass total autonomy, extremely competitive aggressiveness, creativity and innovation, opportunity recognition, and vulnerability (Edwards et al., 2014).

Dimensions of entrepreneurial orientation

Lumpkin and Dess defined EO as a combination of autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness (see also Al-Mamary et al., 2020b). The new definition of EO has not been extensively discussed in the literature on the subject. Fig. 1 depicts the EO's dimensions.

Autonomy

Autonomy is the right to exploit opportunities for a firm's competitive advantage, which then relates to the user's intervention in introducing another fundamental concept or perception and seeing it through until it reaches the end successfully. Autonomy is an essential attribute of EO.

Autonomy is commonly associated with business strategy in the lexicon of EO. Whenever team members or individual candidates are given more autonomy, they can develop ideas and expectations required to solve the problems that lie ahead for them. Many of these higher relative levels of autonomy are tactical measurements of individual autonomy. Here, entrepreneurial autonomy refers to the capability to make crucial decisions as to what gets accomplished, how everything gets accomplished, and even when it gets accomplished, as well as the whole company's business corporate strategy (Lumpkin et al., 2009).

Moreover, autonomy refers to a person's behavior or a group of people's potential to establish and successfully implement an entrepreneurial venture within an organization. People have been given the maximum flexibility that users need to introduce a different idea to make it a reality in high-autonomy organizations with unlimited access to corporate bureaucracy. Team members could indeed examine and champion innovative ideas more effectively, even when they are not constrained by organizational cultures and principles (Edwards et al., 2014).

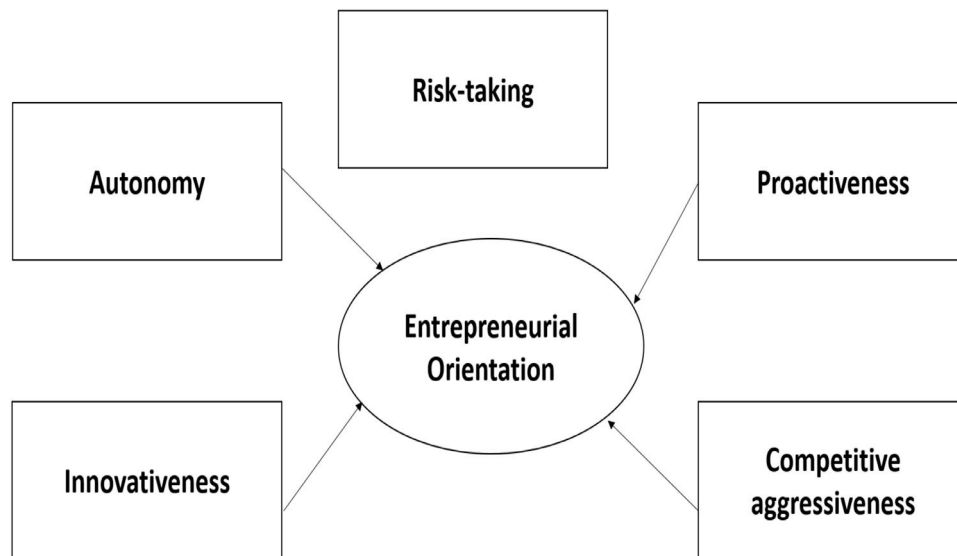


Fig. 1. Entrepreneurial orientation's dimensions.

Innovativeness

Organizations worldwide seem to be successful in their efforts to innovate significantly better than those that are not. [Amodu & Aka \(2017\)](#) described innovativeness as a company's propensity to actively support the formation and implementation of novel insights, experiment with alternative strategies, and enhance current products or services. [Edwards et al. \(2014\)](#) believe that innovativeness is the overwhelming desire to discover technological innovation and fully test new ideas. Several other scientific advances have improved the existing capabilities. Perhaps more significant developments involve acquiring new skills and knowledge, which may render conventional capabilities irrelevant. The prime objective of innovation is to create novel consumer goods, essential offerings, and new processes and systems.

Innovativeness has traditionally been referred to as a company's ability to actively engage in and foster fresh concepts, innovative thinking, research, and experimentation that can focus on new products, systems, or technological improvements ([Lumpkin & Dess, 1996](#)). Some argue that entrepreneurial spirit is closely intertwined with technical innovation because small business owners merely enter the market and create innovative resources. Innovativeness has always been described much more closely in the broader context of EO, emphasizing the importance of technology, Research and Development, and scientific advances across the company's entire product and service lines ([Schillo, 2011](#)).

Risk-taking

Risk-taking has long been regarded as an essential component of entrepreneurship. This was initially used to describe the risks encountered by humans once they choose to continue being self-employed rather than working for a firm. Risk management has been commonly implemented in large businesses, except when top management invests considerable amounts of money in risky ventures, with unpredictable consequences ([Schillo, 2011](#)). However, according to [Edwards et al. \(2014\)](#), risk-taking is the propensity to engage in sporting activities that are risky and expensive instead of those that are cautious and careful.

Risk tolerance and entrepreneurial spirit are strongly intertwined. Risk is the subjective probability of systemic failure, possible loss, or any disadvantageous natural occurrence of an unfortunate event while engaging in an activity or work experience. Risk as a personality trait influences attitudes towards entrepreneurship. Many people are hesitant to become successful entrepreneurs for a wide variety of

reasons, including the inherent risk associated with working in the entrepreneurial sector of the economy.

Proactiveness

An incredible opportunity mindset characterizes a proactive, as opposed to a reactive, organization. Proactiveness refers to a company's ability to respond to business possibilities by putting effort into the competitive marketplace. Proactivity is simply reacting to employment options itself as performing its functions for companies operating in complex situations or emerging business sectors in which social conditions are evolving and advancement opportunities are all around us. Proactivity is an amazing opportunity mindset that encompasses issuing innovative products and competitive services in the industry as well as dealing with the expectation of possible demand to create transformation and impact its surroundings ([Lumpkin & Dess, 2001](#)). Proactivity is the capacity to prepare for and adapt to new products and services, as opposed to simply responding to events in the future while they occur.

Major corporations confidently predict competitive marketplace requirements and are therefore always the first to enter new markets. Moreover, they are often known as "quick adherents," even though they create and maintain these attempts, such as first moving companies ([Edwards et al., 2014](#)). According to [Lumpkin & Dess \(1996\)](#), innovative behavior involves continuing to act in anticipation of possible specific concerns or minor modifications. Similarly, [Astrini et al. \(2020\)](#) stated that proactiveness is the capacity to develop an insight centered on gaps that is identified through extensive research or market research analysis. Proactivity helps companies stay ahead of the competition while also pressuring market competition to respond immediately to first-mover activity.

Competitive aggressiveness

Competitive aggressiveness implies that companies respond positively to market changes and constant demand. Competitive aggressiveness has always been defined as more than just an aggressive attitude and a compelling way to respond quickly. It demonstrates what an organization pursues with zeal to outmatch its major competitors ([Lumpkin & Dess, 2001](#)). In addition, [Lumpkin & Dess \(1996\)](#) reported that proactiveness relates primarily to a company's willingness to compete forcefully and brutally in the market in order to gain access to the market or strengthen its presence. Competitive aggressiveness is a company's current strategy for dealing with most of its competitors, while attempting to differentiate between those who

circumvent competitive pressure and those who vigorously pursue their own competing companies' marketing efforts (Schillo, 2011).

Entrepreneurial intention

An individual's EI could be described as little more than conscientious knowledge and understanding that users aim to roll out a new entrepreneurial activity and intend to do so in the future (Nguyen, 2017). Additionally, EI is a psychological attitude whereby users concentrate on specific business objectives to accomplish innovative business accomplishments; this also indicates that people can start new ventures or add new value to existing ones (Kong et al., 2020).

Owee Kowang et al. (2021) defined intent as a personal judgment about how someone will act in the future, and it is further defined as the desire to engage in a specific behavior. Entrepreneurial intent can be defined as a person's passion or burning desire to implement a successful entrepreneurial activity. It is still an important part of the start-up process and deserves attention.

According to Al-Nashmi (2017), individuals' and groups' desire to participate in a particular behavior and attitude is fully described by EI, which is the factor that immediately precedes the behavior and pushes towards it. It is also known as individuals' desire to start entrepreneurial activities. Some researchers define EI as planning and implementing entrepreneurial ideas based on mental effort. Individual intentions supersede specific behaviors; for example, people deciding to set up a business before actually looking for a relevant job opportunity or determining the type of work they want is an indication of someone's actual achievement level, which propels them towards a successful business. Considering the large number of college graduates and a high unemployment rate, an attitude towards entrepreneurship refers to an individual's willingness to participate in entrepreneurial work and develop his or her own project instead of waiting for public or private job employment.

According to Information and Decision Support Center (IDSC) (2020), EI is among the examples of highly remarkable changes that societies today have always experienced simultaneously. Still, the general attitude towards entrepreneurial behavior continues to act as an important function through the advancement of EO and the desire to succeed in establishing a modern enterprise. Therefore, many variables can affect the same variables. EIs have always been described as the psychological state that encourages people to attain their goals. Specifically, it is the complete understanding of a user's free choice towards a more specific action; the faster and stronger the individual's willingness to carry out such behavior, the more likely it can be accomplished.

Moreover, entrepreneurial intent is a person's commitment toward future behavior, and this behavior is the intention to start a new business or organization. EI is essential for entrepreneurship's development, advancement, and sustainability. However, it plays a huge role in creating appropriate choices that are considered necessary to roll out a new enterprise. Entrepreneurship is deliberately planned behavior. Thus, monitoring intentions towards entrepreneurial behavior can help predict this behavior. Therefore, studying entrepreneurial intent is vital. Entrepreneurship has become critical to many countries' social and economic development. Consequently, scholars have focused on studying these phenomena and understanding the factors that drive people to become entrepreneurs, particularly their motivations. A significant concept is a better understanding of how and where to promote entrepreneurship and innovation.

Studies in the field of EO and EI

Research has indicated that external EO measurements contribute to college students' EIs. Indeed, it is evident that studies in Saudi Arabia, which also evaluate the influence of the concept of EO on

entrepreneurial intent, have always been largely limited. Consequently, this is why this research project was conducted. According to Al-Mamary et al. (2020a), the inadequate attention to other aspects of EO and its overall impact on growing EI among college students has been addressed by subsequent Saudi Arabian literature. The following subsections discuss why EO strongly influences college students' EIs.

Jegede & Nieuwenhuizen (2021) researched the contributions of EO, entrepreneurship education, and the opportunities and threats it faces in the EO of STEM students at a state and federal higher education institution in southwest Nigeria. This study was conducted by questioning 150 college students from six different faculties. According to the findings, entrepreneurship education (EE) was the most influential factor in EI and desires within and among STEM students. In contrast, EO and EE were far more heavily correlated with EI. The research also found that the entrepreneurial ecosystem of STEM students seems to be comparatively poor, with little or no influence on promoting entrepreneurship and innovation enthusiasm among some of them.

Tu et al. (2021) investigated the impact of four components of socioeconomic entrepreneurial orientation (SEO) on the EI of bachelor's degree students. The collected data were analyzed, and the envisaged relationships were investigated using PLS-based SEM, even within the proposed conceptual framework. Based on the respondents' social proactiveness, innovativeness, and motives for taking risks, both have the opportunity to influence SEO positively. On the other hand, students' social vision strongly influences all other social EIs indirectly rather than directly through their social entrepreneurial attitudes.

Kumar et al. (2020) examined the correlation between EO and EI in Indian college students. The survey investigated 393 high school students from 35 higher learning institutions in India's north, south, and west. Multiple linear regression and hierarchical regression analyses were used to analyze the data. According to research evidence, EO correlates positively with entrepreneurial behavioral intention.

Somjai & Sangperm (2019) examined the correlations among many Thai university students' EO, EE, entrepreneurial self-efficacy, and EI. The SEM-PLS was used as a quantitative approach to answer the main objectives of the prevailing study. The findings of the existing experiment demonstrate the desired outcomes. As a result, the study's findings contribute to the existing literature on EI by further incorporating individual EO into the model.

Shamsudeen et al. (2017) thoroughly investigated the correlation between EO, EE, and EI among Nigerian college students. The results of 74 valid questionnaires demonstrate that EO and EE correlate significantly positively with EI. This study has both practical and theoretical implications.

Aspa & Suprpto (2017) researched how sociocultural characteristics and EO affect entrepreneurial intent. A FEB UI magister student in management science examined the relationships between these variables. We conducted variance and simple regression analysis and discovered that EO is now the only factor influencing entrepreneurial behavioral intention.

So et al. (2017) researched on Indonesian business undergraduates to confirm or refute the dimension of EO features based on an analysis of its components. It was also effective in discovering whether there was a real correlation between EO and a college student's willingness to venture into a business. We conducted a cross-sectional online survey of college students in Indonesia. The hypothesized relationships were again tested using SEM on a dataset of 381 college students. Results showed that EO was a three-factor major component in the Indonesian context, with only three components: risk-taking, innovativeness, and proactiveness. Furthermore, this study indicates that EO and EI have a meaningful correlation among many Indonesian business undergraduate students.

Koe (2016) used a scientific survey of 176 university students from a government university, specifically designated as an entrepreneurship and innovation higher education institution," to examine the determinants of EI among university students. Proactivity and innovation were found to have positive impacts on college students' EIs. On the other hand, risk-taking ability does not influence students' EIs. The findings further indicate that college students are interested in learning about entrepreneurship and are excited about the possibility of becoming successful entrepreneurs.

This study theoretically reinforced the need for EO and independent research. It must have been strongly suggested that universities and colleges fully pay additional attention to creating entrepreneurial education school curricula through aspects of potential application. EE should prioritize creating students' IEO skills and enhancing their attitudes towards entrepreneurship.

Al-Mamary et al. (2020a) published a study on EIs in Saudi Arabia to add value to the research domain while also evaluating the variables that impact EIs among many undergraduates in multiple education programs. This encompasses creating and enhancing entrepreneurial endeavors at relevant and important universities. A questionnaire survey was used to conduct this study on university students in Ha' il. The questionnaire was developed based on previous research. To put the theories to the test, Amos software and SEM were used.

According to the survey results, significant risk-taking, proactive personality, and aggressive competitive behavior are the main determinants of entrepreneurial behavioral intention.

Young students should be inspired and motivated to encourage creativity and the creation of enough job opportunities to help Saudi Arabia achieve its goals. Cultural standards and social norms seem more closely related to social norms and innovativeness than to entrepreneurial intent. As a result, recognizing the factors affecting students' entrepreneurial competencies could help expand the entire field of entrepreneurial behavior among the Saudi Arabian younger generation. Furthermore, the overall results could lead to an interesting awareness of entrepreneurship and innovation among college students.

The conceptual framework

Most studies in Saudi Arabia have focused on the theory of planned behavior model measurements as the significant variables that influence EI (Alessa, 2019; Choukir et al., 2019; Sharahiley, 2020). Most recent Saudi Arabian research has not attached great importance to the factors of EO and their long-term influence on enhancing EI. For example, Al-Mamary et al. (2020a) reported that a few studies had explored the relationship between EI and EO, mostly in the context of Saudi Arabia.

Entrepreneurship is among the highly significant subjects that influence nations' economic growth, and this is one of the most important hot-button issues emphasized by Vision 2030. Consequently, this study has become paramount because it is critical to conduct the research mentioned above to comprehend the negative effects of EO on students' EIs. This is even though students at the College of Business Administration have always been potential future small business owners, which is why special emphasis has been placed on them. The study model is illustrated in Fig. 2.

Methodology

Research design

This research aims to examine the actual influence of EO on EI among college students in Saudi Arabia who are interested in venturing into new businesses. A quantitative approach was used in this study, which included a free online questionnaire survey.

The data-collection tool was based on a previously designed and validated questionnaire. SEM using AMOS software with SPSS was utilized to test the proposed model.

Questionnaire design & measures

For the convenience of data collection, the same online research survey questions were translated into Arabic and presented to the

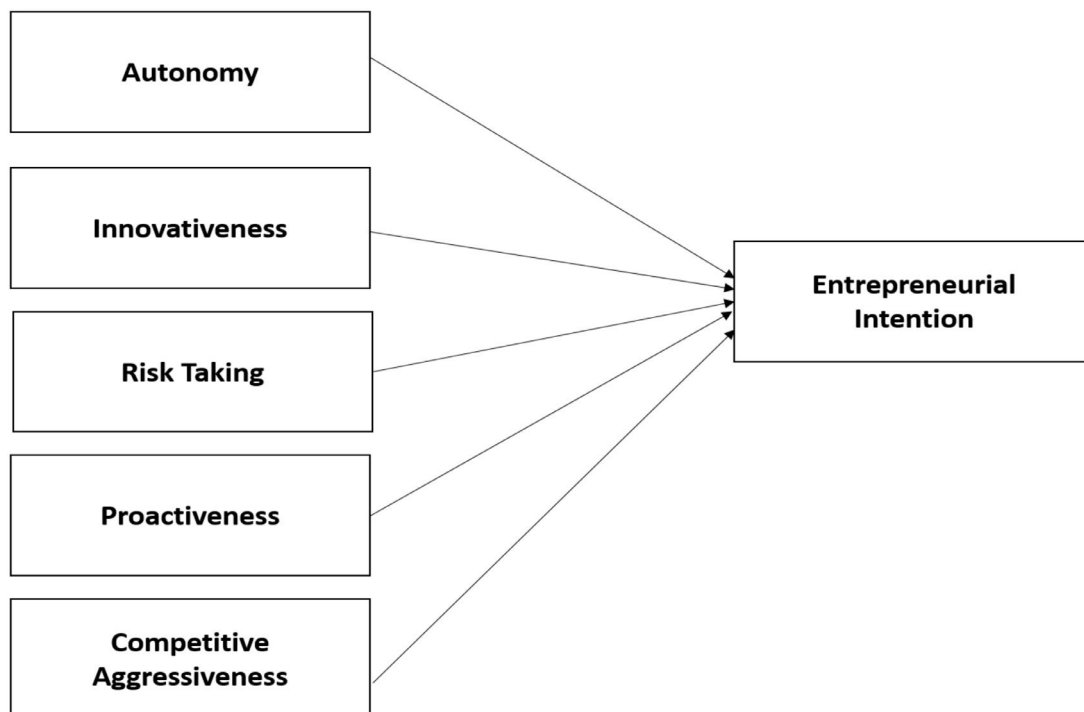


Fig. 2. The model of the study.

Table 1
Demographic characteristics.

		Frequency	Percent (%)
Gender	Male	120	35.2
	Female	221	64.8
College	University of Hail	240	70.4
	Shaqra University	101	29.6
Interest in starting a new business	Yes	297	87.1
	No	44	12.9

sample group. The purpose of the survey was to make it easy for students to study and enhance their response rates.

The survey questions were subdivided into three sections, namely A, B, and C. In section A of the questionnaire, the researchers collected a segment of the population's data based on demographic information, such as gender, college, and interest in starting a new business.

Independent variables: Al Mamun et al. (2017) and Vogelsang (2015) recognized a scale for measuring EO dimensions. The second section describes the five dimensions of EO, while the third section discusses the predictor variable, EI. The dependent and independent variables were measured using scale items that have already been established and validated in the scientific literature.

Dependent variable: Liñán & Chen (2006) established a scale for measuring entrepreneurial intent as the dependent variable. Moreover, we collected and analyzed variables, such as gender, college, and interest in creating new businesses.

Sample and data collection

This study's data was obtained using a web-based questionnaire distributed to undergraduates from two Saudi higher education institutions (University of Hail and Shaqra University). The questionnaire was administered to all the students from the two business schools. The questionnaire was developed and designed in Google Docs, making it simple to disseminate to survey participants and eventually reach a group of students.

Earlier research on EI used a random selection of college business students. Likewise, this dataset was obtained through a random selection of undergraduate students to identify the entrepreneurial behavioral intentions of Saudi Arabian students. The total number of returned questionnaires from university students was 341.

Findings

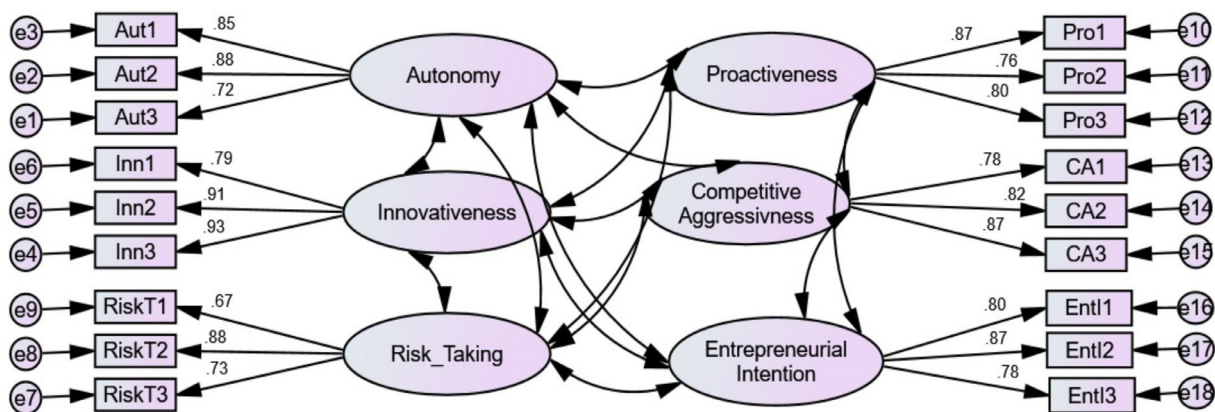
The demographic profile of this study was 35.2% male and 64.8% female. In addition, 70.4% of the respondents were from the University of Ha' il, and 29.6% were from Shaqra University. Results showed that, after graduation, 87.1% of the respondents were interested and excited about opening a new business, while 12.9% were not interested in opening a new business. This means that a majority of Saudi university students desire to practice self-employment by owning projects. Table 1 shows their demographic characteristics.

The research model was analyzed using AMOS. Before employing AMOS, SPSS was used to examine the consistency of the data, and Cronbach's alpha was found to be greater than 0.7. Therefore, it is acceptable in terms of the reliability of statistics.

In addition, the hypotheses from the conceptual model were validated using only SEM, while the two-stage approach was used for SEM analysis. During the first phase (confirmatory factor), the analysis was conducted by identifying the statistical correlation between the observed variables (items) and the underpinning of the conceptual frameworks. For this purpose, Confirmatory Factor Analysis (CFA) with AMOS was used. As stated by Awang (2015) and Al-Mamary et al. (2019), the second stage will be used for the structural model to explicitly state the pathways or direct causal links between the underlying exogenous and endogenous constructs (second stage).

The measurement models for every construct were examined using CFA with AMOS only during the first stage. Awang (2015) reported that CFA is a principal component analysis method used to ascertain whether construct measures match the researcher's understanding of the nature of the entire construct.

CFA assesses the measuring model using two major approaches. First, we analyzed the goodness-of-fit criteria indices (Fig. 3), and



Fitness Indexes

1. ChiSq/df = 1.785
2. TLI = .954
3. CFI = .966
4. NFI = .928
5. GFI = .910
6. RMSEA = .059

Fig. 3. Measurement model.

Table 2
Summary of the CFA report.

Construct	Item	Factor Loading	Cronbach alpha (≥ 0.7)	CR (≥ 0.7)	AVE (≥ 0.5)
Aut	Aut1	0.848	0.866	0.858	0.670
	Aut2	0.877			
	Aut3	0.722			
Inn	Inn1	0.795	0.859	0.913	0.777
	Inn2	0.911			
	Inn3	0.933			
RiskT	RiskT1	0.674	0.842	0.810	0.590
	RiskT 2	0.882			
	RiskT 3	0.734			
Pro	Pro1	0.874	0.833	0.854	0.663
	Pro2	0.764			
	Pro3	0.800			
CA	CA1	0.784	0.866	0.867	0.685
	CA2	0.824			
	CA3	0.873			
EI	Ent11	0.802	0.855	0.858	0.670
	Ent12	0.872			
	Ent13	0.778			

Table 3
Discriminate validity.

	Aut	Inn	RiskT	Pro	CA	Ent
Aut	(0.818)					
Inn	0.511	(0.882)				
RiskT	0.572	0.514	(0.768)			
Pro	0.423	0.459	0.448	(0.814)		
CA	0.653	0.602	0.765	0.646	(0.828)	
EI	0.788	0.635	0.770	0.567	0.773	(0.818)

then assessed the measurement model's convergent as well as discriminant validity and reliability (Tables 2 and 3).

Abdulrab et al. (2021, 2020), Al-Ghurbani et al. (2022), Al-Mamary (2022a), Zaiř and Berteza (2011) recommend using a suitable AVE (average variance extracted) technique to determine convergent validity (AVE ≥ 0.5). The square root of AVE is shown by the diagonal values (bold type below), while the other values show the correlation between the other constructs. According to Al-Mamary (2021, 2022b, 2022c), and Awang (2015), a diagonal value is said to have discriminant validity when it is higher than the values in its rows and columns. This study's convergent and discriminant validity are as shown in Tables 2 & 3.

Table 4 presents the results of the hypothesis test. The structural model fits well, as shown in Fig. 4.

Table 4
Hypothesis testing results.

Hypotheses	Results
EI \leftarrow Aut	Supported
EI \leftarrow Inn	Supported
EI \leftarrow RiskT	Supported
EI \leftarrow Pro	Supported
EI \leftarrow CA	Not Supported

Discussion

This study examined the significant impact of EO measurements on university students' intentions at two different Saudi Arabian universities.

This study's results accept H1, which further demonstrates that full autonomy has a positive influence on entrepreneurship intention among university students. These findings are consistent with those of Baluku et al. (2019); Mahajan & Arora (2018); and Al-Mamary et al. (2020a).

Entrepreneurs' quest to take initiative at work and implement tasks according to their vision is embodied in their quest for autonomy and a high degree of freedom in their work practices. It is one of the features related to the skills required to manage projects (Al-Nashmi, 2017). This shows that an entrepreneur's ownership of a project gives them autonomy in decision making because they can attain the goals they need to set for themselves. However, this freedom and autonomy in lifestyles or affairs is not enjoyed by those who normally work for the government as the workplace's standards and procedures bind them. Therefore, the students will have more EI if they feel more autonomy in their projects.

H2 is fully supported by this study's findings, which also show that a certain level of innovativeness appears to have a favorable effect on EO, which is congruent with previous research, such as Koe (2016), So et al. (2017), Tu et al. (2021), and Wathanakom et al. (2020).

Entrepreneurship is the intentional furtherance of transformation and seizing of employment options, and not a personality trait or frame of mind. Unlike most people today, entrepreneurs view small details from a unique viewpoint. As a result, they begin to act promptly ahead of others. This also evaluates the current industry, disregarding what already exists, and determines whether the industry seems unable to meet its needs. The more imaginative a student is, the more likely they are to venture into a new business line. Innovation entails the development of more efficient processes, goods, and ideas. Because students prefer traditional work methods, universities and governments must encourage them to be creative and inventive (Al-Mamary et al., 2020a). Furthermore, those sectors that foster an environment favorable to advancement in innovation show concern for the entrepreneurship ecosystem. More importantly,

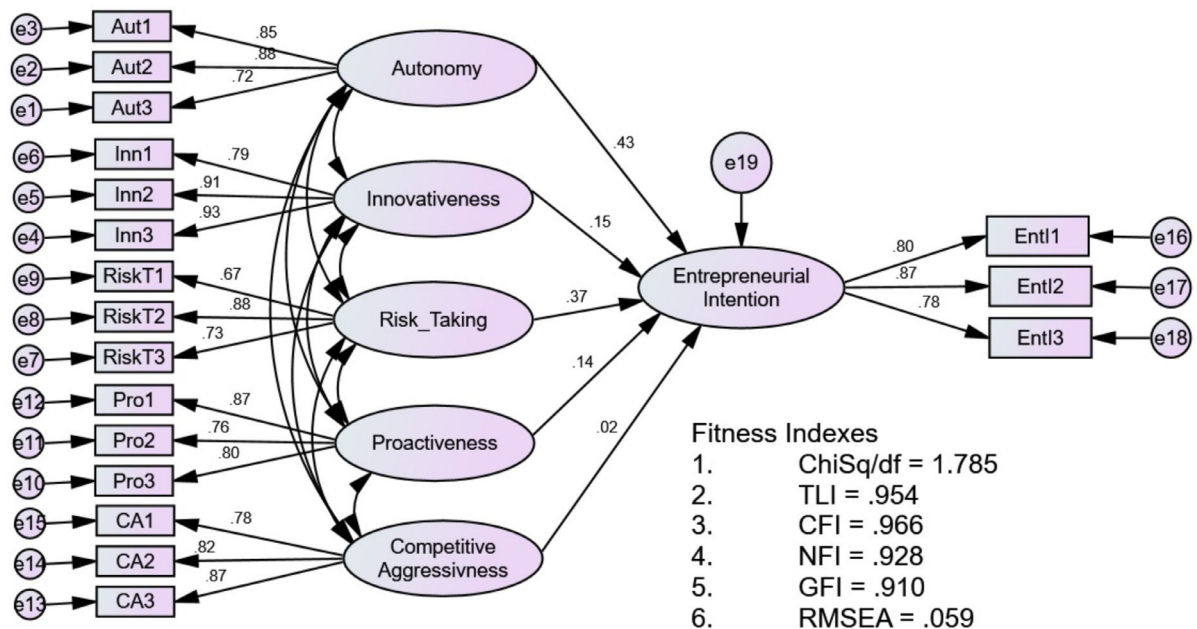


Fig. 4. Structural model.

conventional basic problem-solving approaches must always be abandoned.

H3 is supported by the findings of this study, which show that taking risks has a positive impact on EI, which again is similar to the findings of Al-Mamary et al. (2020a), Moraes et al. (2018), So et al. (2017).

According to Al-Mamary et al. (2020a), when introducing new innovative products to the market, the successful entrepreneur thinks outside the box and takes calculated risks. This also entails considering the dangers of ambiguity. Thus, an entrepreneur is motivated to take risks to succeed and earn the highest possible return. According to Al-Nashmi (2017), entrepreneurs are more likely to take risks and operate under unpredictable circumstances. Risk-taking tendency develops as the desire for success grows; hence, motivating entrepreneurs to make quick decisions in rugged environments with scarce information available. Entrepreneurs are motivated to take risks to succeed and earn the highest possible return. It also shows that students tend to act boldly to achieve financial returns and profits as well as for the success of their new project.

H4 is supported by this study's findings, which also implies that proactivity does indeed have a favorable impact on EI and is already in alignment with and consistent with previous literature (e.g., Koe, 2016; So et al., 2017; Al-Mamary et al., 2020a; Tu et al., 2021).

Al-Mamary et al. (2020a) define proactivity as "expropriating as well as leveraging economic opportunities while also predicting and achieving needs of the market before they could be wasted or carried out by potential competitors." Proactivity differentiates industry leaders and main commercial sites by providing an additional line of products and services, essential items, and new evolving technological or managerial technologies. Successful entrepreneurs have the resources necessary for a first-mover advantage in the market to gain a competitive edge and become industry leaders, as opposed to merely becoming new followers of those who came before them. Their willingness, intelligence, and potential to seize new business opportunities should strengthen their ability to take new opportunities, consider possible obstacles, and develop workable responses.

H5 is rejected by this study's findings, which suggest that competitive aggressiveness has no impact on EI. Moreover, these research results also do not agree with other earlier studies (e.g., Al-Mamary et al., 2020a; Hossain & Asheq, 2019).

Perhaps the outright rejection of this hypothesis may be related to students' lack of strong and aggressive behaviors. Furthermore, even before competing for jobs, students do not tend to be competitive in the marketplace by taking bold or extremely aggressive approaches to their work. Moreover, the students had no hostile attitudes or responses to competitors' actions. In addition, some university students have no desire to compete with their competitors to join the market or strengthen their marketing strategies. Moreover, they think about outperforming competitors through risk taking, proactiveness, and innovation.

Practical implications

This study has three dimensions of practical implications: implications for policymakers in charge of fostering entrepreneurship, business accelerators and incubators, and teaching and training of students in business schools to become entrepreneurs.

First, these findings are of immense practical importance to policymakers at both national and international levels. Countries, such as Saudi Arabia, aggressively pursue national programs to foster entrepreneurship among their populations. These programs range from providing venture capital to direct funding and financing of non-profit organizations and educational institutions, as well as proposing programs to foster an entrepreneurial ecosystem and culture. With immense competition for government funding, governments worldwide need to develop prioritization mechanisms to enable them to allocate their funds in the best and most efficient manner; hence, achieve the highest return on investment; the results of this study will help governments come up with a way to do this. Thus, the results of this study can be used to design evidence-based prioritization mechanisms. For example, this study found that autonomy and innovativeness have a significant positive effect on an individual's intention to start a new venture. This insight can be used to prioritize funding for programs that help foster autonomy and nurture innovativeness.

The second practical implication can be extended to business accelerators and incubators. Business accelerators play a vital role in the entrepreneurial ecosystem by supporting early stages entrepreneurs to graduate into successful business owners. Insights from this study will help business accelerators and incubators to identify the

characteristics of successful entrepreneurs and design evidence-based support programs for targeted entrepreneurs; hence, encourage them to become autonomous and foster innovativeness in their mindset and leadership styles.

The third practical implication is related to business schools, which have developed academic programs and executive training sessions that aim to train entrepreneurs. These findings will help business schools develop such programs in a more relevant and practical manner. Learning outcomes, for example, can be crafted to help instill EO among students and trainees, and this can help to enhance the effectiveness of such programs.

Conclusion

This study sought to answer the question of the impact of EO on EI to start a new venture among business school students in Saudi Arabia. This study focused on the EO constructs of autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness in a context and population characterized by a strong emphasis on entrepreneurship, namely business school students in Saudi Arabia under Vision 2030. This study found that EO measurements significantly impact students' EIs. Even among students, statistical data reveal that autonomy, risk-taking, innovativeness, and proactiveness have been significantly related to EI. This study's results are crucial in aiding business schools and government agencies by enhancing their entrepreneurship understanding to foster entrepreneurial knowledge and understanding among young university undergraduates.

Like other studies, this study has limitations, which the researchers put forth for future research in this area. First, rather than focusing on the impact of EI on entrepreneurship development, this study focuses on elements of EO and their roots in the cultural impact on EI. Therefore, this study recommends that future research consider combining EI and its consequences when developing a new business venture. Second, this study assumed throughout this research that business school students had far more entrepreneurial and innovation insights than that of students from other colleges sampled concurrently. Other than business administration students, we suggest that future studies focus on students from different educational backgrounds to understand the intentions of entrepreneurship. Third, this study's sample comprises two Saudi Arabian public universities. We suggest that future research should be expanded to include both public and private universities in Saudi Arabia as well as other countries with different cultural contexts to test and generalize the study's findings. Fourth, this study had no mediating or moderating variables. Therefore, we suggest that future studies test the mediating or moderating variables.

References

Abdulrab, M., Al-Mamary, Y. H. S., Alwaheeb, M. A., Alshammari, N. G. M., Balhareth, H., & Al-Shammari, S. A. (2021). Mediating role of strategic orientations in the relationship between entrepreneurial orientation and performance of Saudi SMEs. *Brazilian Journal of Operations and Production Management*, 18(4), 1–15. doi:10.14488/BJOPM.2021.029.

Abdulrab, M., Alwaheeb, M. A., Al-Mamary, Y. H. S., Alshammari, N. G. M., Balhareth, H., Soltane, H. B., et al. (2020). Effect of entrepreneurial orientation and strategic orientations on financial and nonfinancial performance of small and medium enterprises in Saudi Arabia. *Journal of Public Affairs*, e2305. doi:10.1002/pa.2305.

Al Mamun, A., Kumar, N., Ibrahim, M. D., & Mohd Nor Hakim, B. Y. (2017). Validating the measurement of entrepreneurial orientation. *Economics and Sociology*, 10(4), 51–66. doi:10.14254/2071-789X.2017/10-4/5.

Alessa, A. A. (2019). Entrepreneurial intention among Saudi students: The role of personal attitude, subjective norms and perceived behavior control. *SMART Journal of Business Management Studies*, 15(1), 50–67. doi:10.5958/2321-2012.2019.00006.X.

Al-Ghurbani, A. M., Jazim, F., Abdulrab, M., Al-Mamary, Y. H. S., & Khan, I. (2022). The impact of internal factors on the use of technology in higher education in Saudi Arabia during the COVID-19 pandemic. *Human Systems Management*, 41(2), 283–302. doi:10.3223/HSM-211219.

Al-Mamary, Y. H. S. (2021). The impact of transformational leadership on organizational citizenship behaviour: Evidence from Malaysian higher education context. *Human Systems Management*, 40(5), 737–749. doi:10.3223/HSM-201068.

Al-Mamary, Y. H. S. (2022). Examining the factors affecting the use of ICT in teaching in Yemeni schools. *Journal of Public Affairs*, 22(1), e2330. doi:10.1002/pa.2330.

Al-Mamary, Y. H. S. (2022). Why do students adopt and use learning management systems?: Insights from Saudi Arabia. *International Journal of Information Management Data Insights*, 2(2), 100088. doi:10.1016/j.jjimei.2022.100088.

Al-Mamary, Y. H. S. (2022). Understanding the use of learning management systems by undergraduate university students using the UTAUT model: Credible evidence from Saudi Arabia. *International Journal of Information Management Data Insights*, 2(2), 100092. doi:10.1016/j.jjimei.2022.100092.

Al-Mamary, Y. H. S., Abdulrab, M., Alwaheeb, M. A., & Alshammari, N. G. M. (2020). Factors impacting entrepreneurial intentions among university students in Saudi Arabia: Testing an integrated model of TPB and EO. *Education + Training*, 62(7/8), 779–803. doi:10.1108/ET-04-2020-0096.

Al-Mamary, Y. H. S., Al-Nashmi, M. M., Shamsuddin, A., & Abdulrab, M. (2019). Development of an integrated model for successful adoption of management information systems in Yemeni telecommunication organizations. *International Journal of Scientific and Technology Research*, 8(11), 3912–3939.

Al-Mamary, Y. H., Alwaheeb, M. A., Alshammari, N. G. M., Abdulrab, M., Balhareth, H., & Soltane, H. B. (2020). The effect of entrepreneurial orientation on financial and non-financial performance in Saudi SMEs: A review. *Critical Review*, 7(14), 270–278.

Al-Nashmi, M. M. (2017). The impact of entrepreneurial characteristics on the intention of administrative sciences students university of science and technology – to start new ventures. *The Arabic Journal for Quality Assurance in Higher Education*, 10(31), 103–119 VolNo.

Al-Suraihi, A. H. A., Ab Wahab, N., & Al-Suraihi, W. A. (2020). The Effect of Entrepreneurship Orientation on Entrepreneurial Intention among Undergraduate Students in Malaysia. *Asian Journal of Entrepreneurship*, 1(3), 14–25.

Amodu, A. A., & Aka, A. (2017). The primacy of social networks in entrepreneurship: A study of networking ability and innovativeness among university students in north central Nigeria. *People: International Journal of Social Sciences*, 3(3), 644–657 VolNo.

Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. (2015). Reconceptualizing entrepreneurial orientation. *Strategic Management Journal*, 36(10), 1579–1596.

Aspa, Z., & Suprpto, S. A. A. (2017). Sociocultural characteristics, entrepreneurial orientation, decision making style, and entrepreneurial intention. *International Journal of Humanities and Management Sciences*, 5(1), 12–18.

Astrini, N. J., Rakhmawati, T., Sumaedi, S., Bakti, I. G. M. Y., Yarmen, M., & Damayanti, S. (2020). Innovativeness, proactiveness, and risk-taking: Corporate entrepreneurship of Indonesian SMEs. In *Proceedings of the IOP conference series: Materials science and engineering*. 012037 IOP PublishingVolNo.

Awang, Z. (2015). *SEM made simple: A gentle approach to learning structural equation modeling*. Malaysia: MPWS Rich Publication.

Baluku, M. M., Leonsio, M., Bantu, E., & Otto, K. (2019). The impact of Autonomy on the relationship between mentoring and entrepreneurial intentions among youth in Germany, Kenya, and Uganda. *International Journal of Entrepreneurial Behavior and Research*, 25(2), 170–192. doi:10.1108/IJEBR-10-2017-0373.

Cho, Y., & Honorati, M. (2014). Entrepreneurship programs in developing countries: A meta regression analysis. *Labour Economics*, 28, 110–130. doi:10.1016/j.labeco.2014.03.011.

Choukir, J., Aloulou, W. J., Ayadi, F., & Mseddi, S. (2019). Influences of role models and gender on Saudi Arabian freshman students' entrepreneurial intention. *International Journal of Gender and Entrepreneurship*, 11(2), 186–206. doi:10.1108/IJGE-08-2018-0083.

Covin, J. G., & Lumpkin, G. T. (2011). Entrepreneurial orientation theory and research: Reflections on a needed construct. *Entrepreneurship Theory and Practice*, 35(5), 855–872. doi:10.1111/j.1540-6520.2011.00482.x.

Covin, J. G., & Wales, W. J. (2019). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. *Entrepreneurship Theory and Practice*, 43(1), 3–18. doi:10.1177/1042258718773181.

Edwards, J., Try, D., Ketchen, D., & Short, J. (2014). *Mastering strategic management-1st Canadian edition*.

Guerrero, M., Rialp, J., & Urbano, D. (2008). The impact of desirability and feasibility on entrepreneurial intentions: A structural equation model. *International Entrepreneurship and Management Journal*, 4(1), 35–50. doi:10.1007/s11365-006-0032-x.

Gupta, V., & Gupta, A. (2015). The concept of entrepreneurial orientation. *Foundations and Trends® in Entrepreneurship*, 11(2), 55–137.

Hossain, M. U., & Asheq, A. A. (2019). The role of entrepreneurial orientation to sme performance in Bangladesh. *International Journal of Entrepreneurship*, 23(1), 1–6 VolNo.

Information and Decision Support Center (IDSC). (2020). Entrepreneurial intention, Egyptian council of ministers, development concepts series, 22(1), 1–5.

Ismail, K., Anuar, M. A., Omar, W. Z. W., Aziz, A. A., Seohod, K., & Akhtar, C. S. (2015). Entrepreneurial intention, entrepreneurial orientation of faculty and students towards commercialization. *Procedia – Social and Behavioral Sciences*, 181, 349–355. doi:10.1016/j.sbspro.2015.04.897.

Jegede, O., & Nieuwenhuizen, C. (2021). Effects of entrepreneurial orientation and external business environment on entrepreneurial intentions of STEM students in Nigeria. *Journal of Contemporary Management*, 18(2), 42–66. doi:10.35683/jcm21026.119.

Koe, W. L. (2016). The relationship between Individual Entrepreneurial Orientation (IEO) and entrepreneurial intention. *Journal of Global Entrepreneurship Research*, 6(1), 1–11.

Kong, F., Zhao, L., & Tsai, C. H. (2020). The relationship between entrepreneurial intention and action: The effects of fear of failure and role model. *Frontiers in Psychology*, 11, 229. doi:10.3389/fpsyg.2020.00229.

- Kumar, S., Paray, Z. A., & Dwivedi, A. K. (2020). Student's entrepreneurial orientation and intentions: A study across gender, academic background, and regions. *Higher Education, Skills and Work-Based Learning*, 11(1), 78–91. doi:10.1108/HESWBL-01-2019-0009.
- Liñán, F., & Chen, Y.W. (2006). Testing the entrepreneurial intention model on a two-country sample (Documents de Treball 06/7). Recuperado de <http://www.recercat.net/handle/2072/2213files/134/2213.html>
- Lumpkin, G. T., Cogliser, C. C., & Schneider, D. R. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship Theory and Practice*, 33(1), 47–69. doi:10.1111/j.1540-6520.2008.00280.x.
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135–172. doi:10.5465/amr.1996.9602161568.
- Lumpkin, G. T., & Dess, G. G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance. *Journal of Business Venturing*, 16(5), 429–451. doi:10.1016/S0883-9026(00)00048-3.
- Mahajan, T., & Arora, V. (2018). Analysis of autonomy factor of entrepreneurship intention with reference to students of selected universities of north-India. *Jurnal Manajemen dan Kewirausahaan (Journal of Management and Entrepreneurship)*, 20(2), 87–91. doi:10.9744/jmk.20.2.87-91.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, 29(7), 770–791 VolNo.
- Moraes, G. H. S., Iizuka, E. S., & Pedro, M. (2018). Effects of entrepreneurial characteristics and university environment on entrepreneurial intention. *Revista de Administração Contemporânea*, 22(2), 226–248. doi:10.1590/1982-7849rac2018170133.
- Nguyen, C. (2017). Entrepreneurial intention of international business students in Viet Nam: A survey of the country joining the trans-pacific partnership. *Journal of Innovation and Entrepreneurship*, 6(1), 1–13.
- Owee Kowang, T., Abdulah Apandi, S. Z. B., Choon Hee, O., Chin Fei, G., Saadon, M. S. I., & Othman, M. R. (2021). Undergraduates entrepreneurial intention: Holistic determinants matter. *International Journal of Evaluation and Research in Education*, 10(1), 57–64. doi:10.11591/ijere.v10i1.20733.
- Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice*, 33(3), 761–787.
- Schillo, R. S. (2011). Entrepreneurial orientation and company performance: Can the academic literature guide managers? *Technology and Innovation Management*, 1(2), 20–25 (Review).
- Shamsudeen, K., Liman, B. M., & Haruna, M. J. (2017). An empirical investigation on the relationship between entrepreneurial orientation, entrepreneurial education and entrepreneurial intention in Nigeria: A study of some selected students of higher learning. *Saudi Journal of Business and Management Studies*, 2(3), 3–5.
- Sharahiley, S. M. (2020). Examining entrepreneurial intention of the Saudi Arabia's University students: Analyzing alternative integrated research model of TPB and EEM. *Global Journal of Flexible Systems Management*, 21(1), 67–84. doi:10.1007/s40171-019-00231-8.
- So, I. G., Ridwan, A., Simamora, B. H., & Aryanto, R. (2017). Confirming entrepreneurial orientation dimensions and linking it with entrepreneurial intention among business students in Indonesia. *International Journal of Economics and Management*, 11(2), 277–299.
- So, I. G., Ridwan, A., Simamora, B. H., & Aryanto, R. (2017). Confirming entrepreneurial orientation dimensions and linking it with entrepreneurial intention among business students in Indonesia. *International Journal of Economics and Management*, 11(2), 277–299 VolNo.
- Somjai, S., & Sangperm, N. (2019). Exploring the nexus between entrepreneur orientation, entrepreneur education, entrepreneur self-efficacy and entrepreneur intention among university students in Thailand. *International Journal of Innovation, Creativity and Change*, 6(10), 319–338.
- Tu, B., Bhowmik, R., Hasan, M. K., Asheq, A. A., Rahaman, M. A., & Chen, X. (2021). Graduate students' behavioral intention towards social entrepreneurship: Role of social vision, innovativeness, social proactiveness, and risk taking. *Sustainability*, 13(11), 6386. doi:10.3390/su13116386.
- Vogelsang, L. (2015). *Individual entrepreneurial orientation: An assessment of students* (Doctoral Dissertation). Humboldt State University).
- Wathanakom, N., Khlaisang, J., & Songkram, N. (2020). The study of the causal relationship between innovativeness and entrepreneurial intention among undergraduate students. *Journal of Innovation and Entrepreneurship*, 9(1), 1–13.
- Wu, J. (2009). Entrepreneurial orientation, entrepreneurial intent and new venture creation: Test of a framework in a Chinese context (Doctoral dissertation, Virginia Tech).
- Zait, A., & Berteau, P. E. (2011). Methods for testing discriminant validity. *Management and Marketing Journal*, 9(2), 217–224.