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The COVID-19 Crises: The Threats, Uncertainties and Risks in Entrepreneurial Development

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Abstract: The COVID-19 pandemic and its different waves brought several complications to people's social lives and massively affected business activities worldwide. Accordingly, in this study, we explored the various COVID-19 threats, uncertainties, and risks that are faced by entrepreneurship, propensity, and development. We applied a deductive approach in this study and utilized cross-sectional data that we collected through a questionnaire. We based this study's findings on 320 valid cases. By employing structural equation modeling (SEM), we reveal that factors, such as quality of business environment (QoBE) and access to financial resources (AtFR,) have a positive and significant impact on entrepreneurial propensity (EP). On the other hand, the findings reveal that two factors, namely the uncertainties caused by the COVID-19 pandemic (UoCOVID-19) and the risk perceptions of the COVID-19 pandemic (RPoCOVID-19), have a negative effect on EP. This study's findings provide valuable information about the COVID-19 pandemic and, on particular, on the development of EP among university students. In addition, this study's findings guide and support policymakers and higher authorities in understanding the impact of the COVID-19 pandemic and other business-related factors for developing EP. Further, these findings support the creation of conducive business environments even during a global pandemic or another natural disaster. Finally, this study's findings contribute other empirical evidence to enrich previous research on health, business, and management.

Keywords: COVID-19 pandemic crises; risks; uncertainties; entrepreneurial propensity; quality of business environment; Saudi Arabia

1. Introduction

Globally, the COVID-19 pandemic caused considerable disruption in the lives of millions of people (Blanuša et al. 2021). The COVID-19 pandemic has been accredited mainly to the appearance of the highly contagious COVIDI-19 variant. However, the COVID-19 pandemic currently appears to be the predominant variant in many countries, such as the United States of America (USA), the United Kingdom (UK), South Africa, and Botswana (Katella 2021). The number of COVID-19 cases continued to increase for much of the first quarter of 2022, and this resulted in health and economic challenges worldwide. The COVID-19 pandemic has created many different societal, environmental, and economic risks and uncertainties (Oxford Analytica 2022). These uncertainties have caused shocks in several ways, and significantly affecting the landscapes in which policymakers operate and, in turn, creating further uncertainty about the efficiency of policy decisions.

During this situation, the COVID-19 pandemic has seriously affected entrepreneurship and entrepreneurial intention (EI), EP, and entrepreneurial inclination (Soomro and Shah 2023). Generally, in everyday routines, different factors, such as business and financial concerns, business environments, threats, risks, and uncertainties, have remained the most potent factors in predicting EP (Frueh et al. 2023; Belas et al. 2017; Wu et al. 2021). The COVID-19 pandemic has seriously damaged numerous sectors in Pakistan, such as

SMEs, education, health, and business start-ups (Soomro et al. 2021; Nasar et al. 2021). Due to the complications arising from the COVID-19 pandemic, the business community and entrepreneurs have confronted significant challenges that have slowed down and affected the sustainability of their enterprises (Mustafa et al. 2021). Moreover, among Saudi Arabian university students, factors such as social support, family background, personality traits, self-efficacy, and perceived environmental and entrepreneurial skills, have been investigated to gauge the EI (Choe et al. 2021). However, particularly among university students, a serious examination of the effects of risk, uncertainty, QoBE, and AtFR on EP is required. With this in mind, we sought in this study to answer the following question:

Which COVID-19-pandemic-related threats, uncertainties, and risks affect EP among Saudi Arabian university students?

Consequently, the objective of this study is to investigate the role of the threats, uncertainties, and risk-related factors, such as UoCOVID-19, RPoCOVID-19, QoBE, and AtFR, on Saudi Arabian university students' EP. By unveiling the role of these factors in developing EP, this study's findings aim to provide a concrete contribution to the existing knowledge by providing additional insights and by establishing the several threats, uncertainties, and risks confronted by Saudi Arabian university students in terms of EP. By ensuring that empirically based facts are provided by these students, this study's findings offer an original and unique contribution to the literature on this topic. These findings provide fresh insights and, simultaneously, highlight through an integrated model the quality of business environments and different difficulties and financial considerations (access to financial resources). Therefore, this study's findings support the development of broader theory of COVID-19 risk and other models.

In addition to the introduction in Section 1, this paper is organized as follows. Section 2 presents a literature review and this study's conceptual framework. Section 3 sets out the methods. Section 4 contains the results and the data analysis. Section 5 presents a discussion. Section 6 states the conclusions. Section 7 considers the limitations and offers recommendations for future research studies.

2. Literature Review and This Study's Conceptual Framework

2.1. Uncertainty Caused by COVID-19 Pandemic (UoCOVID-19)

The COVID-19 pandemic has caused different intolerable situations, such as stress arising from uncertainty and frustration. Due to the lockdown periods caused by the COVID-19 pandemic, these have had a severe effect on paid employment; many employees have become depressed, particularly those who have lost their jobs. Undertaking furlough (unpaid leave) has had no beneficial effects for individuals' mental health, whereas paid leave has had a positive and substantial impact. The COVID-19 pandemic's economic effects have led to extraordinary levels of employment loss, which, in turn, have resulted in adverse effects on mental health (Posel et al. 2021). Furthermore, the lockdowns have caused more difficulties and concerns for workers due to empty streets, shuttered businesses, and other consequences of government orders, such as social exclusion, sanitation rules, and the need for people to wear facemasks (Crețan and Light 2020). According to (Rajan et al. 2020), due to the rapid spread of the COVID-19 pandemic, countries worldwide have experienced extensive lockdowns, which have restricted people's movements, economic activities, and social contact. Romanians were allowed to flee their country because they were "needed" for low-paid farming and social care jobs in Western European countries (Crețan 2021). An online Chinese survey of residents highlights an association between infection, quarantine status, and general sleep status. There is a meaningful relationship between greater COVID-19-related uncertainty and higher degrees of intolerance of uncertainty. The perception of stress has a significant mediating effect on general sleep patterns and uncertainty arising from the COVID-19 pandemic (Wu et al. 2021). During the second wave of the COVID-19 pandemic in Pakistan, the authors of Soomro et al. (2021) explored COVID-19-related disorders and business start-ups. Their study's findings underline that predictors of stress and anxiety have a negative and significant effect on insights into COVID-19's arrival and

the consequent fear for business start-ups. The COVID-19 pandemic has had an enormous impact on the global and local economies and, particularly for entrepreneurs and SMEs (Uansa-ard and Wannamakok 2022). According to Castro and Zermeño (2021), the COVID-19 pandemic has devastated lifestyles and cultural and social entrepreneurship. In addition, it has caused, micro, macro, and meso-environmental concerns about entrepreneurship. Factors such as uncertainty and unease are directly connected to the COVID-19 pandemic and have massively hindered the development of entrepreneurial ecosystems (Ratten 2020a). Entrepreneurs face several challenges in adapting to this new environment. These challenges are mainly associated with how entrepreneurs react to the uncertainty in their environment (Ratten 2020b). The findings of one empirical study of Ratten (2021) underline that the uncertainty surrounding the COVID-19 pandemic has caused severe problems for educational organizations.

2.2. Risk Perception of COVID-19 (RPoCOVID-19)

Psychological risks, performance, and time have all had an adverse effect on image before and after the outbreak of the COVID-19 pandemic (Choe et al. 2021). The COVID-19 pandemic is a vital factor that has moderated the association between image and performance risk. In SMEs, the owner's character is an influential factor in terms of accessing finance, which is also, influenced substantially by the owner's creditworthiness (Wasiuzzaman et al. 2020) correlation between the risk of suicide, vulnerability caused by the pandemic, and pandemic-related tension. In China, an experiential system has had a highly positive and potent effect on the propensity to take risks. According to Seloni et al. (2023), while creativity and risk-taking factors are positive and significant predictors of EI, locus of control has no substantial effect on EI. Among graduate students, there is a positive and significant correlation between concepts such as tolerance for ambiguity or the propensity to take risks and EI (Cater et al. 2021). On the other hand, the experiential system has a negative effect on entrepreneurial behaviors. Furthermore, the rational approach involves the propensity to take risks rather than having a negative impact on entrepreneurial behaviors (Zhao and Fan 2010). According to Vainauskienė and Vaitkienė (2022), following the outbreak of the COVID-19 pandemic, there was more innovation and greater risk-taking. University students' perceptions of personal entrepreneurial risk are more remarkable than their perceptions of money and social risks. The perception of financial risk is a significant predictor of students' EI, since they aim to take advantage of the opportunities caused by the COVID-19 pandemic (Escamilla-Fajardo et al. 2020).

2.3. Quality of Business Environment (QoBE)

The COVID-19 pandemic has not only had a profound and disastrous impact on businesses and industries worldwide, but it has also revealed the internal and external factors that support the emergence of new ventures. The findings in Nag and Chatterjee (2018) demonstrate the factors that drive business environments among Chinese and Indian firms. Consequently, they show that governance and infrastructure have powerful roles in shaping the business landscape. In the Australian context, entrepreneurial initiatives catalyze the creation and growth of new ventures. These insights are correlated with the entrepreneurial mindset and affect entrepreneurship and entrepreneurship development (Krichen and Chaabouni 2022). According to Maritz et al. (2020), in global markets, human factors affect business transactions. Technological, political, and cultural environments are the significant determinants of entrepreneurial success. In the context of Russia's north-western region, there are forecasts of the interplay between entrepreneurship's socioeconomic environment and corporate organizations. In addition, the business environment improves the commercial sector and is the foundation of company owners' decisions regarding whether to expand their operations (Agwu and Onwuegbuzie 2018). The primary goals of the development of SMEs in terms of policy creation should be the improvement of the business environment and the supply of much more stable and encouraging circumstances for SMEs during the ongoing market transition (Yaluner et al. 2019).

For SMEs, high QoBE is an essential factor in increasing the economy's competitiveness and the future sustainability of its growth. This makes it a crucial element in countries' economic development (Raimi et al. 2023). According to the authors of Cepel (2019), the global COVID-19 pandemic caused economies worldwide to halt and, therefore, businesses could no longer conduct their operations. Jordanian SMEs have modified their practices in response to COVID-19-related changes to the country's business environment. These initiatives include changing how they operate, which means switching from a conventional business model to a more cautious approach, enhancing internal communications, and reorganizing their business cultures (Cook and Karau 2023). Similarly, in southeast Nigeria, the stressful business environment has limited entrepreneurial activity and hampered Nigeria's industrial growth (Abuhussein et al. 2023).

2.4. Access to Financial Resources (AtFR)

The AtFR dramatically contributes to the creation of growth opportunities and to meeting individuals' specific needs. It encourages individuals to become entrepreneurs and provides public organizations with strategies to, for example, provide financing for female entrepreneurs during the COVID-19 pandemic (Agboli and Ukaegbu 2006). In the United Kingdom (UK), the COVID-19 pandemic has led to a significant reduction in equity transactions. Seed finance is a significant type of entrepreneurial finance that was influenced enormously by the COVID-19 pandemic. Usually, this affects most start-up businesses with the least experience and the most considerable financial challenges (Villaseca et al. 2021). The findings in Brown et al. (2020) show that SMEs' business sustainability and their future opportunities are affected significantly by price controls and access to finance. According to data from Greek television enterprises, the AtFR fully mediates the relationship between entrepreneurial orientation and product performance (Singh et al. 2023). Among the United Arab Emirates (UAE)'s SMEs, access to finance helps financial institutions to make use of innovations. Moreover, financial barriers and the problems that affect access to finance, affect SMEs' growth (Zampetakis et al. 2011). However, in Pakistani SMEs, financial literacy helps owners to decide on the optimum financial level and the amount of fundraising required (Zarrouk et al. 2020). Based on the TPB theory, the findings in Junoh et al. (2019) show that access to finance has a moderating role between TPB factors and EI. Similarly, in European Union (EU) member countries, entrepreneurial activities are reinforced through access to finance (Urban and Ratsimanetrimanana 2019).

2.5. Entrepreneurial Propensity (EP)

According to the insights in Nasip et al. (2017), the socio-economic environment can affect university students' EP. Moreover, entrepreneurial attitude is an influential factor that partially mediates the association between EP and the entrepreneurship environment. By contrast, students' perceptions of the policy environment have no positive or significant effect on their EP. In a similar vein, the findings in an empirical study of Yao et al. (2016) show that, rather than with individual-level relationships, there is a positive relationship between organizational-structure components and work autonomy and performance. Furthermore, there is a positive association between work autonomy and EP. Moreover, there is a significant correlation between loss of control and EP and performance.

Regarding franchisors' EP, entrepreneurial personalities are valued within their franchised outlets (Ahmetoglu et al. 2020). On one hand, demographic constructs, such as family business, hometown, gender, and entrepreneurial education, have positive correlations with EP. On the other hand, other demographic constructs, such as parents' education, household income, occupation, and age, do not predict EP (Dada et al. 2015). The findings in one inspirational work (Liu et al. 2020) demonstrate the positive relationship between psychological and social capital, which, in turn, influences entrepreneurial performance. In India's regional entrepreneurial ecosystem, institutional infrastructure has a moderate effect on EI. Gender plays a major role in the choice of an entrepreneurial career (Ma et al. 2022). According to Kumar and Das (2019), there are differences between the development

of EI among Malaysian part-time and full-time students. Moreover, in developing their EI, these students confront significant barriers, such as fear of failure, risk aversion, lack of social networking, lack of resources, and aversion to stress and hard work (Hossain et al. 2023). Furthermore, psychological traits and family background are pivotal in predicting EI (Laspita et al. 2023). According to Chaudhary (2017), among students, self-efficacy and opportunity recognition have positive effects on EI. According to the authors of one study (Anton and Bostan 2017), while the COVID-19 pandemic has caused macroeconomic shifts, business activity has remained the same. However, there has been an increase in entrepreneurial action.

Therefore, the literature demonstrates the effects of different factors, such as opportunity recognition, self-efficacy, family background, personality traits, fear of failure, risk aversion, deficiencies in social networking and resources, and entrepreneurial education, along with their power to predict EI and EP in regular routines (Dada et al. 2015; Hossain et al. 2023; Laspita et al. 2023; Chaudhary 2017). In situations such as the waves of the COVID-19 pandemic, higher levels of uncertainty about the impact of COVID-19 and stress are linked with greater intolerance of uncertainty (Wu et al. 2021). Furthermore, the findings in (Soomro et al. 2021) show the effects of the COVID-19 pandemic's impediment of Pakistan's business start-ups. The findings in Choe et al. (2021) encompass psychological risks, time, and image performance before and after the outbreak of the COVID-19 pandemic. In addition, efforts are made to gauge the association between the COVID-19 pandemic and its associated risks (Mitchell et al. 2021). However, significant gaps remain in the literature. First, most of the relevant studies focused on investigating ETs and EI in normal routines rather than during the COVID-19 pandemic (Dada et al. 2015; Laspita et al. 2023; Chaudhary 2017). Second, there is a need to confirm EP empirically with the UoCOVID-19, RPoCOVID-19, QoBE, and AtFR factors. Third, a developing country, such as Saudi Arabia, needs to focus adequately on contextual perspectives. Fourth and, most importantly, despite various concerns and contagions, there is a need to investigate further the dangerous waves of the COVID-19 pandemic (Oxford Analytica 2022). Based on the significant gaps in the literature and existing associations, we developed Figure 1, below, to confirm the EP in Saudi Arabia through the UoCOVID-19, RPoCOVID-19, QoBE, and AtFR factors.
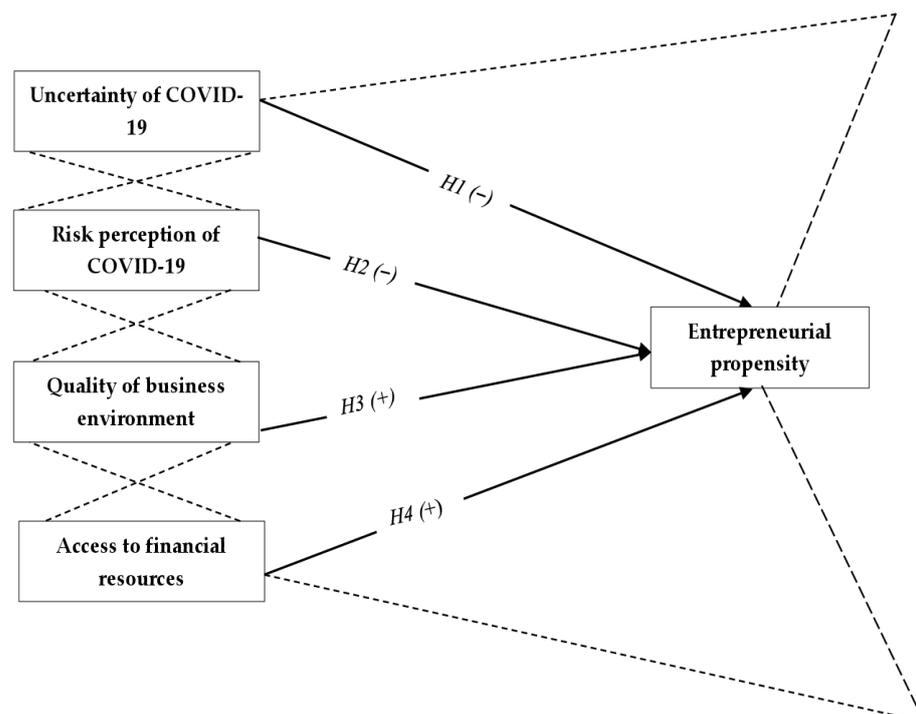

Figure 1. Conceptual model of the study. Source: Authors' own conceptualization.

2.6. Uncertainty over COVID-19 (UoCOVID-19) and Entrepreneurial Propensity (EP)

Uncertainty over and fear of COVID-19 continue in different waves at different times. Individuals are more worried due to the higher degree of uncertainty related to future pandemics. As a consequence of the COVID-19 pandemic, almost 143 worldwide economies, including those of the USA and the UK, are facing huge crises and a 100% decline in their respective gross domestic product (GDP) (Hassan et al. 2020). Furthermore, the uncertainty related to the COVID-19 pandemic has affected budget-related decisions and lockdown policies in Russia and Ukraine (Sarkodie and Owusu 2020; French 2020). In Pakistan, this uncertainty among entrepreneurs has had a positive and significant effect on environmental concerns. It has resulted in economic crises in almost all sectors, including business, health, and education (Vakulenko et al. 2020; Soomro and Shah 2023). According to Wu et al. (2021), the higher levels of threat and uncertainty caused by the COVID-19 pandemic is heavily associated with increased intolerance of uncertainty. Furthermore, perceptions of stress mediate the association between general sleep and COVID-19 uncertainty. In addition, there is a correlation between unbridled uncertainty and COVID-19, which is a disease that spreads rapidly (Rasheed et al. 2021). From business and economic perspectives, uncertainty causes a decline in investment, consumption, GDP, interest rates, and M2 money stocks (Koffman et al. 2020). Furthermore, uncertainty during the COVID-19 pandemic has had an adverse effect on the values of firms' investments. Generally, when individuals are risk-averse, the increase in uncertainty results in higher risks for investors.

Consequently, several investigations' findings have demonstrated, during the various waves of the COVID-19 pandemic, the effects of job insecurity, fear of COVID-19, threats, and uncertainty, and stress, on different factors, such as mask-purchase intentions, GDP, interest rates, investment, business, health, and education (Blanuša et al. 2021; Hassan et al. 2020; Rasheed et al. 2021; Basu and Bundick 2017; Shah et al. 2020). Generally, in regular routines and during the different waves of the COVID-19 pandemic, uncertainties have been shown on several occasions to be negative predictors of entrepreneurial inclination, EI, and purchase intention (French 2020; Rasheed et al. 2021; Basu and Bundick 2017). However, during the fifth wave of the COVID-19 pandemic, there is a need to consider seriously the uncertainty over EP caused by the COVID-19 pandemic. Therefore, we formulated the following hypothesis:

H1. *Uncertainty of COVID-19 (UoCOVID-19) is a negative and significant predictor of entrepreneurial propensity (EP).*

2.7. Risk Perception of COVID-19 (RPoCOVID-19) and Entrepreneurial Propensity (EP)

The enhancement of the knowledge about the COVID-19 pandemic has resulted in massive psychological problems (Khayyam et al. 2021). Currently, many individuals are susceptible to the virus (Stangier et al. 2021). Globally, many people are vulnerable and have suffered from the diverse effects of the pandemic (Macharia et al. 2020; Whitehead et al. 2020). It has caused severe losses of life and serious reductions in the levels of business' economic activities, as well as affecting individuals' everyday lives. Therefore, the COVID-19 pandemic has had a negative impact on business productivity and profits and has forced many companies to close permanently (Williamson et al. 2020). According to Alessa et al. (2021), the COVID-19 pandemic has affected entrepreneurs' attitudes towards business risk in the SME sector. In Czech SMEs, market, financial, and personnel risks have demolished the business environment. However, during the COVID-19 pandemic, the financial risk for Slovakian SMEs remained among the most dangerous business risks. For the tourist industry, the pandemic has increased risk, which is a tremendously influential factor that has reduced the tourists' intention to travel (Cepel et al. 2020; Teeroovengadum et al. 2021).

Undoubtedly, COVID-19's threats and risks have had a disruptive effect on entrepreneurial, business, and economic activities. The related research has highlighted the negative and significant role of perceptions of risk on travel intentions, business activities, entrepreneurs' attitudes, and business environments (Williamson et al. 2020; Alessa

et al. 2021; Teeroovengadum et al. 2021) caused by the different pandemic variants (Delta and Alpha). Therefore, we formulated the following hypothesis:

H2. *Risk perception of COVID-19 (RPoCOVID-19) is a negative and significant predictor of entrepreneurial propensity (EP).*

2.8. Quality of Business Environment (QoBE) and Entrepreneurial Propensity (EP)

The external business environment has played a significant role in developing EI among science, technology, engineering, and mathematics Students. Moreover, there is a close correlation between entrepreneurship education and orientation with EI (Kukoyi et al. 2022). However, among college students, perceptions of the entrepreneurial environment are meaningfully associated with motivation. An individual who is associated with a high-quality business is more inclined to start their own business. At the same time, socioeconomic conditions and the accessibility of financial and non-financial support have a positive influence on these entrepreneurial motivations (Jegede and Nieuwenhuizen 2021). In Gulf Co-operation Council (GCC) countries (namely, UAE, Oman, Saudi Arabia, and Kuwait), there is a statistically negative association between the time required to start a business and imports and exports (Wu and Mao 2020). According to the empirical evidence in Ali et al. (2023), favorable financial access and government environments encourage entrepreneurs to start their own businesses. Additionally, a high QoBE creates favorable circumstances for sustainable economic growth, which is a fundamental precondition for the development of entrepreneurship (Jang et al. 2020).

Further, for SMEs, the ensuring the high quality of the business environment is the best way to improve and motivate individuals to start their own businesses (Vetráková et al. 2013). More specifically, the QoBE is a promising concept in the creation and development of business growth, entrepreneurial motivation, and, in regular routines, improvements in socioeconomic conditions, economic development, and EI (Kukoyi et al. 2022; Ali et al. 2023; Jang et al. 2020). However, this requires further confirmation in the context of the COVID-19 pandemic. Therefore, we formulated the following hypothesis:

H3. *During the COVID-19 pandemic, Quality of business environment (QoBE) is a positive and significant predictor of entrepreneurial propensity (EP).*

2.9. Access to Financial Resources (AtFR) and Entrepreneurial Propensity (EP)

Access to financial resources (AtFR) is vital to pursuing growth opportunities and meeting individuals' specific needs (Buno et al. 2015). According to the authors of Ahmad and Arif (2015), inadequate access to capital is a significant barrier to SMEs and generates a negative attitude among members of the society towards entrepreneurs. In the same dimension, the authors of Ali et al. (2023) demonstrate the tremendous importance of and the considerable role played by favorable financial access in encouraging entrepreneurs to start their own businesses and make financial returns. Similarly, in the context of developing countries' economies, the findings of a seminal work Addo and Asante (2023) show financial literacy's positive and significant moderating impact of the development of the association between SME growth and AtFR. In comparison, the findings in Bongomin et al. (2017) show financial literacy's reducing contribution to the monitoring of SMEs' capital structures and growth.

Furthermore, in the Baltic States and in South Caucasus countries, AtFR does not hinder business operations and regulates the likelihood of entrepreneurial strength (Hussain et al. 2018). In a similar vein, AtFR and financial depth are favorable for growth. Greater levels of AtFR result in greater optimism about financial growth (Imarhiagbe et al. 2021). More recently, firms funded by government agencies and state-owned banks were more vigorously inclined towards innovative activities and enhancing their performance (Haini 2021).

Consequently, relevant research demonstrates that AtFR has predictive power in the strengthening of entrepreneurship and entrepreneurs' financial returns through innovation

and improvements in their performance (Addo and Asante 2023; Hussain et al. 2018; Haini 2021). However, in Saudi Arabia, the examination of EP is still in its early stages. Therefore, we formulated the following hypothesis:

H4. *During the COVID-19 pandemic, access to financial resources (AtFR) is a positive and significant predictor of entrepreneurial propensity (EP).*

3. Methods

3.1. Sample Profile

We applied a quantitative approach to meet this study's objective of exploring Saudi Arabian higher-education students' perceptions of business and financial concerns in relation to EP during the COVID-19 pandemic. We based our analysis on a total sample of 320 questionnaires, which were received and used in the subsequent analysis. A sample size of more than 200 provides relevant results. Furthermore, it is the best sample size with which to perform confirmatory factor analysis (CFA). Therefore, we decided that a sample size of more than 300 met the requirements and ensured good results from SEM analysis. Table 1 shows that 53% (n = 172) male students and 46.25% (n = 148) female students contributed to this study. Regarding the respondents' ages, most (45.62% or n = 146) were between 20 and 25 years of age. In total, 30.62% (n = 98) were between 26 and 30 years old and a small number were more than 31 years old. In terms of the semester-wise classification, many of the students (13.75% of n = 44) were in their fifth semester. Moreover, in MA/ MSC-I and II, n = 30 and 32 respondents contributed to the study, respectively, and only 6.25% (n = 20) were in their seventh semester (see Table 1).

Table 1. Sample profile of the respondents.

	Category	Frequency	Percentage
Gender	Male	172	53.75
	Female	148	46.25
	Total	320	100.0
Age	<20 years	40	12.5
	20–25 years	146	45.625
	26–30 years	98	30.625
	31 and >years	36	11.25
	Total	320	100.0
Semester	1st	30	9.379
	2nd	33	10.312
	3rd	29	9.062
	4th	38	11.875
	5th	44	13.75
	6th	36	11.25
	7th	20	6.25
	8th	28	8.75
	MA/MSC-I	32	10.00
	MA/MSC-II	30	9.376
	Total	320	100.0

3.2. Response-Collection Method and Respondents' Ethics

We surveyed different university students from Saudi Arabia's public and private universities. Entrepreneurship plays a vital role in society, and it is directly connected with society's economic growth and prosperity. In this regard, university education is one of the key pillars of environments that are conducive to business and students' EP (Schamberger et al. 2023; Gavurova et al. 2018). University students are often found to show great interest in entrepreneurship and EI (Dvorský et al. 2019; Shah and Soomro 2017). They are relatively optimistic and eager to become entrepreneurs after graduation, and they display positive attitudes towards entrepreneurship and entrepreneurial career growth,

along with a willingness to start their own business ([Lakhan et al. 2021](#)). More specifically, young entrepreneurs and students have the potential to be innovative, and have successful start-up businesses, thereby achieving sustainable growth. More interestingly, university students' views on the COVID-19 pandemic have affected their self-efficacy in situational adjustments and perceived attractiveness ([Belas et al. 2019](#)).

Considering the Saudi Arabian government's social-distancing policy, we used both a paper questionnaire and an online version. We used the online questionnaire to collect information from different scholars about their human behaviors, predominantly during the COVID-19 pandemic ([Soomro et al. 2021](#); [Kaur et al. 2022](#)). Due to the targeted respondents' movement restrictions, we used the convenience-sampling technique, which is commonly used, particularly in behavioral model testing ([Kaur et al. 2022](#); [Sumaedi et al. 2020](#)). We shared the online-questionnaire link with WhatsApp groups comprising the students attending the online classes, since institutes ran the classes online due to the high numbers of COVID-19 cases. Before handing over the questionnaires to the participants, the researchers approached them, based on their preparedness to contribute voluntarily to this study, and explained the study's aim and objectives. We identified the students who were willing to consider their futures, and we guaranteed their privacy and the confidentiality of their responses. Finally, we informed the students that they could withdraw from the study at any time without declaring a reason for doing so.

3.3. Measures

3.3.1. Uncertainty over COVID-19 (UoCOVID-19)

We used three items to measure UoCOVID-19. Essentially, these items were developed by [Sumaedi et al. (2016)](#). Subsequently, the authors of [Soomro and Shah (2023)](#) modified and confirmed these items from a COVID-19-pandemic perspective. The sample item on the scale was "I perceive the context of COVID-19 as very complex."

3.3.2. Risk Perception of COVID-19 (RPoCOVID-19)

We used three items to measure the RPoCOVID-19 factor. The originators of these items were the authors of [Andrews (2008)](#) and [Whaley (2000)](#), who applied these items in different situations. Subsequently, the authors of [Soomro and Shah (2023)](#) slightly modified these items by and validating them in COVID-19-pandemic situations. The sample item on the scale was: "Based upon my behavior, I am at a great risk of acquiring COVID-19."

3.3.3. Quality of Business Environment (QoBE)

We used three items to measure the QoBE construct, adopted from [Belas et al. (2017)](#). The sample item on the scale was: "Business environment of my country is of good quality and convenient for starting a business."

3.3.4. Access to Financial Resources (AtFR)

We used four items to evaluate AtFR, adopted from [Belas et al. (2017)](#). The sample item on the scale was: "Business entities have easy access to bank credits."

3.3.5. Entrepreneurial Propensity (EP)

We used four items to measure the dependent variable (EP), adopted from [Belas et al. (2017)](#). The sample item on the scale was: "I am very interested in business." The researchers used a five-point Likert scale (strongly agree = 1 to strongly disagree = 5) to rank all the items.

4. Data Analysis and Results

4.1. Measurement Model

4.1.1. Indicator and Construct Reliability

The indicator's high loading shows the common association caught by the construct ([Essien et al. 2007](#)). According to [Hair et al. (2017)](#), items containing low loading scores

(<0.40) need be eliminated to improve the average variance extracted (AVE) values or composite reliability (CR). In this study, we observed that most of the items had loading scores of >0.50 (see Table 2). The two exceptions were qobe4 and atfr3, which did not meet the suggested loading scores; therefore, these were not given further consideration. Similarly, in terms of construct reliability, we observed CR values (ranging from 0.823 to 0.867) greater than the proposed value of 0.70 (Hair et al. 2017, 2019; Kineber et al. 2023). This meant that the construct's reliability was satisfactory. In addition, the Cronbach's α coefficient for the individual factors ranged from 0.808 to 0.862; these values were higher than the recommended level of 0.7 (Zyphur et al. 2023). Therefore, the attained CR and Cronbach's α for all the constructs were appropriately error-free (see Table 2).

Table 2. Loading, Cronbach's α, CR, and AVE for the full model.

Construct	Item Code	Factor Loadings Above 0.5	CR >0.7	AVE Above 0.5	α Above 0.7
Uncertainty over COVID-19 (UoCOVID-19)	uoCOVID 1 uoCOVID 2 uoCOVID 3	0.887 0.865 0.843	0.867	0.848	0.808
Risk of COVID-19 (RPoCOVID-19)	rpoCOVID 1 rpoCOVID 3 rpoCOVID 2	0.898 0.870 0.869	0.843	0.867	0.839
Quality of business environment (QoBE)	qobe1 qobe2 qobe3	0.867 0.853 0.838	0.823	0.800	0.862
Access to financial resources (AtFR)	atfr1 atfr2 atfr4	0.823 0.805 0.798	0.849	0.856	0.809
Entrepreneurial propensity (EP)	ep1 ep2 ep4 ep3	0.863 0.857 0.832 0.809	0.859	0.812	0.828

Notes: CR = composite reliability; AVE = average variance extracted; α = Cronbach's alpha reliability.

4.1.2. Convergent Validity

Convergent validity is used to assess the strength of the correlation with alternative measures of the same construct. In particular, renowned researchers applied AVE to gauge construct validity (Essien et al. 2007). On one hand, higher AVE scores or those equal to 0.50 underline that the construct explains more than half of the variance of its elements. On the other hand, an AVE score of less than 0.50 indicates more item errors than the variance that the construct clarifies (Essien et al. 2007). This study's results show the accepted AVE to have been higher than 0.50 for UoCOVI-19 (0.848), RPoCOVID-19 (0.867), QoBE (0.800), AtFR (0.856), and EP (0.812) (see Table 2). Therefore, the convergent validity of the entire model's constructs was satisfactory.

4.1.3. Discriminant Validity

Discriminant validity is used to measure, by pragmatic standards, the degree to which the accuracy of a construct is dissimilar from those of other constructs. The creation of discriminant validity indicates that a construct is exclusive to the model and that internment situations are not signified by other constructs (Thomas and Duffy 2023). We applied the measure used in Hair et al. (2021) to ensure discriminant validity. Consequently, the correlation coefficient for the key components ranged from 0.334 to 0.562. These values were lower than the AVE's square root, which ranged from 0.780 to 0.860 (see Table 3). Therefore, these values ensure good discriminant validity (Thomas and Duffy 2023). Moreover, the connection between the exogenous constructs was 0.85. These values confirm the model's discriminant validity (Sarstedt and Hwang 2020).

Table 3. Discriminant validity using Fornell–Larcker criterion for the full model.

S.No	Factors	1 UoCOVID-19	2 RPoCOVID-19	3 QoBE	4 AtFR	5 EP
1	UoCOVID-19	0.860				
2	RPoCOVID-19	0.562	0.796			
3	QoBE	0.434	0.550	0.809		
4	AtFR	0.380	0.466	0.493	0.780	
5	EP	0.438	0.334	0.423	0.467	0.811

UoCOVI-19 = uncertainty over COVID-19; RPoCOVID-19 = risk perception of COVID-19; QoBE = quality of business environment; AtFR = access to financial resources; EP = entrepreneurial propensity.

4.2. Structural Model

4.2.1. Model Fitness

Due to the potential reduction in statistical power, degree of freedom (df), and explainable variation, we did not use any control variables (Chikhalikar et al. 2023; Jones and O'Byrne 2023). Initially, we observed chi-square statistics with non-significant values of χ^2 (CMIN/df = 2.239 (<3 or $p > 0.005$) (see Figure 2 and Table 4) of available data (Kohler et al. 2023). Furthermore, the absolute model fit ensured the presence of other model-fit indicators. The goodness-of-fit index (GFI) was 0.920. Furthermore, the adjusted goodness-of-fit index (AGFI) remained at 0.919 with suitable scores on the normed fit index (NFI = 0.932). The comparative fit index (CFI) was 0.916. Finally, the root mean square error of approximation (RMSEA) was 0.041. These attained values ensured a good model-fit score (cut-off value = 0.08) (Kohler et al. 2023; Hair et al. 2019) (see Figure 2 and Table 4).
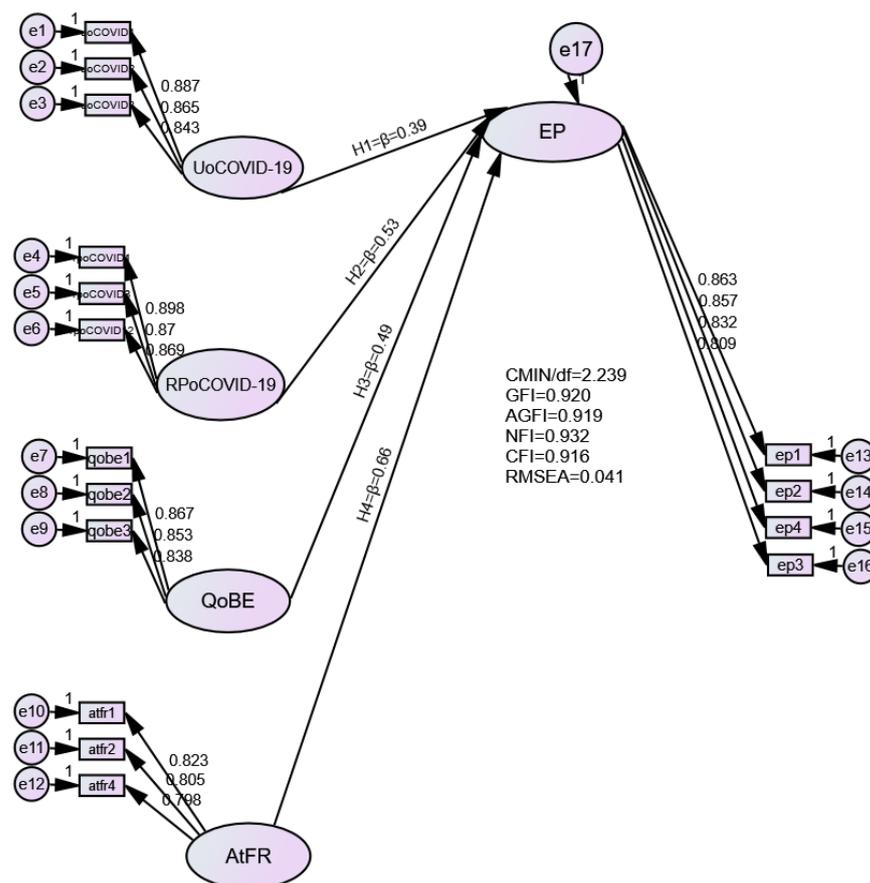

Figure 2. Structural equation model. Source: Authors' own estimation. Note(s): UoCOVID-19 = uncertainty over COVID-19; RPoCOVID-19 = risk perception of COVID-19; QoBE = quality of business environment; AtFR = access to financial resources; EP = entrepreneurial propensity.

Table 4. Model-fit indices.

Model fit indicators	CMIN/df	CFI	NFI	GFI	AGFI	RMSEA
	2.239	0.916	0.932	0.920	0.919	0.041

Notes: CMIN = χ^2/chi-square; df = degrees of freedom; CFI = comparative fit index; NFI = normed fit index; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit Index; and RMSEA = root mean square error of approximation.

4.2.2. Hypotheses Confirmation

When the SEM techniques were used, the multiple regression underlined that UoCOVID-19 has a negative impact on EP (β = −0.8; CR = −1.079) (see Figure 2 and Table 5). Therefore, hypothesis H1 was accepted. Similarly, as shown in Figure 2 and Table 5, the SEM results reinforced RPoCOVID-19's expected negative influence on EP (β = −0.04; CR = −1.044). Therefore, hypothesis H2 was rejected. Furthermore, the findings showed that QoBE has a positive predictive power for EP (β = 0.49; CR = 7.223 ***). Therefore, hypothesis H3 was accepted (see Figure 2 and Table 5). Finally, the analysis reinforced that AtFR has a positive and significant influence on EP (β = 0.66; CR = 7.664 ***) (see Figure 2 and Table 5). Therefore, hypothesis H4 was accepted.

Table 5. Structural-path-analysis result.

H.No.	Independent Variables	Path	Dependent Variables	Estimate β (Path Coefficient)	SE	CR (*t*-Value)	Decision
H1	UoCOVID-19	→	EP	−0.08	0.074	−1.079	Supported
H2	RPoCOVID-19	→	EP	−0.04	0.066	−1.044	Supported
H3	QoBE	→	EP	0.49	0.078	7.223 ***	Supported
H4	AtFR	→	EP	0.66	0.039	7.664 ***	Supported

Notes: SE, standard error; CR, critical ratio. *** $p < 0.001$. UoCOVID-19 = uncertainty over COVID-19; RPoCOVID-19 = risk perception of COVID-19; QoBE = quality of business environment; AtFR = access to financial resources; EP = entrepreneurial propensity.

5. Discussion

The aim of this study was to explore the financial and business-related problems caused by the COVID-19 pandemic that affect EP. We conducted a quantitative analysis based on cross-sectional data gathered from Saudi Arabian university students. The findings showed that UoCOVID-19 has a negative influence of on EP (see acceptance of hypothesis H1). These findings are consistent with those in previous studies (Soomro and Shah 2023; Vakulenko et al. 2020; Koffman et al. 2020). In the context of the COVID-19 pandemic, these findings reflect those in Wu et al. (2021) and Hassan et al. (2020), in which it is postulated that, in both developed and developing countries, the COVID-19 pandemic has caused different socio-economic and business complications within major sectors, such as business, education, and health, and has had a negative effect on EP.

The findings in Sarkodie and Owusu (2020) and French (2020) demonstrate the practical indicators of uncertainty: reduced interest rates, consumption, GDP, and money stocks. In Saudi Arabia, these negative associations (UoCOVID-19 and EP) show that university students are fully aware and, to some extent, fearful of the complexities of the COVID-19 pandemic and its unpredictable effects on their upcoming businesses. Further, the respondents were well informed about the delays to firms' investments arising from the uncertainty caused by the COVID-19 pandemic. Finally, the students had more serious concerns about the changing and rapid spread of the COVID-19 pandemic (Rasheed et al. 2021).

Moreover, RPoCOVID-19 has a negative effect on EP (hypothesis H2 was accepted). Furthermore, this study's findings regarding RPoCOVID-19's adverse effect on EP are consistent with those of previous studies (Williamson et al. 2020; Alessa et al. 2021; Cepel et al. 2020). The COVID-19 pandemic is a major factor that has significantly increased risk among individuals (Teeroovengadum et al. 2021). According to this study's findings, individuals have generally experienced psychological threats in the form of the risk of

COVID-19, which has created vulnerability and deprivation (Stangier et al. 2021; Whitehead et al. 2020). The students were extremely worried about the COVID-19 pandemic, since it is a very dangerous and contagious variant.

Furthermore, the findings show that the third hypothesis was accepted. These findings were consistent with those of previous studies (Wu and Mao 2020; Jang et al. 2020). Furthermore, in terms of COVID-19 complications, these results are consistent with those obtained by several scholars (Kukoyi et al. 2022; Ali et al. 2023). Despite the COVID-19 pandemic, university students are eager because of and satisfied with the convenience of the environment for their business ventures after completing their degrees. They think Saudi Arabia was a risk-resistant country during the COVID-19 pandemic and they expect a favorable and friendly environment to launch their own businesses. Furthermore, they believe that Saudi Arabia can win the battle against any disease or pandemic. This belief developed as a result of the Saudi government's successful response to COVID-19.

Finally, since AtFR had a strong effect on EP, hypothesis H4 was accepted, too. These findings are consistent with those of previous studies (Ali et al. 2023; Buno et al. 2015; Addo and Asante 2023). The positive findings may have been due to AtFR providing a vital contribution to the improvements in business activities and growth opportunities (Buno et al. 2015). In the students' view, a lack of financial resources significantly hinders their ability to start their own business. Therefore, quick AtFR further improves their propensity and inclination to become involved in industry. Further, easy access and to credit and commercial banking encourages them to develop highly positive intentions about their own businesses. They tended to be satisfied with interest rates and government support for business activities. Moreover, some of the respondents engaged in their own small business activities, which they operated alongside their regular studies.

6. Conclusions

The Coronavirus life-threatening, and the global COVID-19 pandemic has not only affected various segments of society, but also, ruined business activities worldwide. In the entrepreneurship domain factors such as QoBE and AtFR are stronger predictors of EP, particularly among Saudi Arabian students. These students, displaying EP, hope that there will be a convenient business environment to start their own business after the COVID-19 pandemic. Furthermore, AtFR is the key factor in the development of EP and environments conducive to business. The AtFR from the Saudi Arabian government and commercial banks may be more supportive in boosting entrepreneurship.

By contrast, this study's findings show that the factors such as UoCOVID-19 and RPoCOVID-19 provide great resistance to EP. These findings demonstrate that Saudi Arabian university students are aware of the effects of the COVID-19 pandemic, particularly in terms of risk and uncertainty. However, they are very determined to start their own businesses following their graduation. They believe that fear, threats, risks, and uncertainty created significant resistance to the formation of EP during the COVID-19 pandemic. An environment that is conducive to business and AtFR are essential for them to develop their ET.

7. Limitations, Recommendations and Future Research Studies

In conducting this study, we experienced certain limitations. We employed a deductive approach along with a questionnaire, to collect the data from Saudi Arabian university students only, following the arrival of the pandemic in the country. We did not apply a theory to strengthen this study's model. Finally, we based this study's findings on a sample size of the 320 completed questionnaires.

The outbreak of the COVID-19 pandemic and its lethal effects have resulted in millions of deaths worldwide. However, the COVID-19 pandemic's fifth wave in Saudi Arabia has resulted in severe consequences for entrepreneurship. Against this background, this study's findings demonstrate the adverse impact of UoCOVID-19 and RPoCOVID-19 on EP.

Consequently, we recommend that Saudi Arabian policymakers and COVID-19 response teams consider the other psychological concerns caused by the COVID-19 pandemic that affect university students' inclinations and interests. The COVID-19 pandemic has caused psychological problems, such as stress, anxiety, and fear, which have seriously affected Saudi Arabian students' EI and their desire to start their own businesses. Therefore, the Saudi Arabian government and the country's commercial banks should provide students who are willing to start their own businesses with sufficient AtFR. We recommend that the Saudi Arabian government and authorities consider the importance of these factors and that they develop plans to boost EI and EP among students. Furthermore, we recommend that the Saudi Arabian government provide an environment that is conducive to business to enable students to complete their university degrees and start their own businesses without delay. A pro-business environment would create great enthusiasm among students. Therefore, there is a need to further motivate students and, in this regard, AtFR offers significant support for the development of their entrepreneurial tendencies. The AtFR is a considerable challenge when starting a business. Consequently, we recommend that the Saudi Arabian government develop and manage smooth credit plans for students to start their own businesses on graduation. Finally, the COVID-19 pandemic and its waves determined EP. Therefore, all members of society should be prepared to face the different challenges arising from pandemics and should continue to develop their entrepreneurship-related perceptions and inclinations.

This study's theoretical observations should be supported by qualitative and mixed methods of investigation. We recommend more longitudinal studies in the future, with large samples. Psychological factors, such as stress, fear, and anxiety, may be taken into account to gauge EI and EP. Finally, we recommend that future studies investigate other types of student, such as collegiate and law students.

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