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Effects Of COVID-19 Complexities On Sustainable Firms' Business Strategy In Manufacturing Industries In Saudi Arabia

By

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Abstract

COVID-19 pandemic has fetched about significant challenges that have ruined each firm's business strategy (BS). The present study examines the COVID-19 situation and its impact on BS in manufacturing industries in Saudi Arabia. The study employs the quantitative approach and targets the managers of the SMEs sector of Saudi Arabia. The study distributed 450 samples and got 280 valid samples with a response rate of 62%. The values of the structural equation model (SEM) demonstrates a negative significant effect of the perceptions of COVID-19 (CP19), firms' innovation capability (IC), environmental concerns (EC) and fear of COVID-19 (F19) on BS. In view of the waves of COVID-19, this study's findings provide policymakers and planners with opportunities to improve BS. In addition, this study's findings provide further indications to face the dangerous waves of COVID-19 responsible for the destruction of businesses and the environment. This study's results contribute to business and COVID-19 literature. This study empirically confirms and provides a better understanding of the effect of the COVID-19 situation on firms' BS in Saudi Arabia.

Keywords COVID-19 complexities, Environmental concerns; Innovation capability, Business Strategy, Manufacturing industry

1. Introduction

At present, the outbreak of the COVID-19 pandemic has had a strong influence on both global and national economies. Numerous enterprises have experienced diverse problems and to a certain extent, have suffered losses. The global Small and Medium-sized Enterprises (SMEs) are experiencing a substantial effects of COVID-19 pandemic. More specifically, rather than large enterprises, the SMEs have been the principal victims of this pandemic explosion. Frequently SMEs do not own adequate financial and managerial resources (Bartika *et al.*, 2020) and, in addition, BS indicators are increasingly significant at the company level (Azzone *et al.*, 1996). The constructs, i.e. F19, IC, and CP19 are the significant barriers to developing the BS. The pandemic has reduced production and the economy's functions. This condition is responsible, also, for reducing the GDP of almost all economies during 2020 (Zou *et al.*, 2020). F19 is a negative emotional state that brings about depression and anxiety (Ahorsu *et al.*, 2020). Moreover, the CP19 have raised a lot of fear among entrepreneurs and firm owners (Gómez-Salgado *et al.*, 2020). The routine ICs, which are routinely significant predictors of EP (Jiao *et al.*, 2011; Pang *et al.*, 2019), have failed significantly failed in respect of BS during

COVID-19 pandemic (Al-kalouti *et al.,* 2020).

Consequently, there are still certain gaps in the above-mentioned literature. First, there is no empirical evidence which may offer the occurrence of upheavals and various economic losses and increased business, more particularly during the second wave of pandemic (Donthu and Gustafsson, 2020). Second, no consideration has been given to investigating the SMEs' manufacturing sector despite running out of stock and scarcely continuing to rise (Al-Youbi *et al.,* 2020; Shafi *et al.,* 2020). Also, the firms' BS' has failed due to COVID-19 and ICs (Bartika *et al.,* 2020; Al-kalouti *et al.,* 2020). This scenario has resulted in the economy's collapse and to dramatic changes in both people's lives and has led to dramatic reductions in businesses activities (Donthu and Gustafsson, 2020). Therefore, it is crucial to consider the COVID-19 circumstances and, more particularly, the resultant adverse effects on BS particularly in the SMEs' sector. Therefore, this study aims to examine among the managers of Saudi Arabia firms the environment in respect of CP19's second wave in terms of F19 and the associated concerns, IC and EC towards BS. This study's findings aim to support the planners and policymakers to recognize the influence of fear, IC and EC towards BS. These findings may help, also, to design fear-free policies to boost and make more effective business plans and strategies in times of pandemics. Finally, this study's findings would support the creation of a better business environment through combating CP19 and its dangerous effects on the environment.

2. Literature Review

The COVID-19 pandemic has caused several concerns worldwide. The worldwide it has put millions of people in mortal danger and, most significantly, has destroyed people's lives and business' daily routines. It has transformed, also, the people's lifestyles; triggered extensive job losses; and endangered millions of people's incomes as companies have shut down to overcome the spread of the pandemic (Saadat *et al.,* 2020). Due to such circumstances, numerous studies have examined the effect of COVID-19 on businesses and the economy. According to Soomro and Shah (2022), individual consideration and inspirational motivations have had significant effects on new business ventures and innovation. There is a significant association between EC and energy concerns (Thieme *et al.,* 2015). Hamid *et al.'s* (2020) findings underline that COVID-19 and employees' reactions to changes have resulted in EP suffering from significant adverse effects. There is a positive correlation between innovation dimensions i.e. product innovations, market and processes, and firm performance (FP) (YuSheng and Ibrahim, 2020).) According to Bratianu and Bejinaru (2021), the COVID-19 crisis has caused natural disasters that people neither could have imagined nor prepared fully for the enormous troublesome and social nexus. In these situations, there is a massive gap in the strategic knowledge gap despite significant attempts to route this crisis away from creating nascent knowledge strategies. There is a positive and significant correlation between factors, such as knowledge creation and acquisition, knowledge structures, business opportunities, vision, employees training programs, knowledge transfer, innovation support and business analyses, and organizational learning (Bratianu *et al.,* 2020). Neuroticism and corona phobia are strong predictors of adults' pandemic-related psychopathology (Lee and Crunk, 2020). Dinia *et al.'s* (2022) findings show a link between the human society epidemic and the economic consequences of the pandemic. They suggest that these factors are favorable in forecasting the progress of future insurgencies.

Turning to the connection between CP19 and BS (Dobler *et al.,* 2014) and there is a negative and complex association between them. Among the entrepreneurs, Soomro and Shah's

(2021) findings reveal the robust effect of the antecedents, i.e. F19, COVID-19 risk perception, the uncertainty of COVID-19 and perceived vulnerability on environmental apprehensions. Likewise, the firms' IC has seriously affected and reduced financial performance during the pandemic (Saunila *et al.*, 2014). Moreover, there is a negative association between BS and green innovation which lingers when embracing sturdiness with BS and green design alternatives. However, Liu and Kong (2020) results suggest that environmental regulation reduces the negative association between BS and green innovation. Moreover, on the one hand, F19 remains the disparaging factor that has negatively affected the job, increased the stress level, and developed intent to leave the venture and a profession (Labrague and Santos, 2021). On the other hand, the different life cycle assessment methods and other normalization data have resulted in various business and environmental strategies (Mota *et al.*, 2020). In brief, the lethal virus (COVID-19) has had adverse effects on firms' routines due to lockdowns and has meant that they have had to change their work practices to enable their employees to work from home. This phenomenon has significantly reduced the performance level of firms' employees. In addition, it has created various negative concerns regarding stress, frustration, digital inequalities and work-family balance. All these factors have had adverse effects on BS and business performance (Sanders *et al.*, 2020; Wang *et al.*, 2020; Adam and Alarifi, 2021). In Sasaki *et al.* (2020), to uphold employees' performance, the business must preserve mental health by reducing their employees' fears and worries about COVID-19. Consequently, the existing literature highlights the negative connections of CP19, IC, EC and F19 with BS in the different contexts (YuSheng and Ibrahim, 2020; Liu and Kong, 2020; Nurunnabi (2020); Sanders *et al.*, 2020) and specific times spent on the daily routines (Saunila *et al.*, 2014). However, in the COVID-19 environment, the effects of F19, IC, EC, and CP19 perceptions on BS have not been investigated collectively and, more predominantly, in second wave of COVID-19 in the context of Saudi Arabia in manufacturing industries (Al-Youbi *et al.*, 2020; Alessa *et al.*, 2021).

On the basis existing relationships of CP19, IC, EC and F19 with BS, we developed Figure 1 below to examine these factors with managers of Saudi firms. We decided to choose managers as our study's units of analysis. Our study examines the only direct relationships of independent variables, i.e. CP19, IC, EC and F19, with dependent variable (BS). Our conceptual framework does not offer the investigation of independent variables with each other.

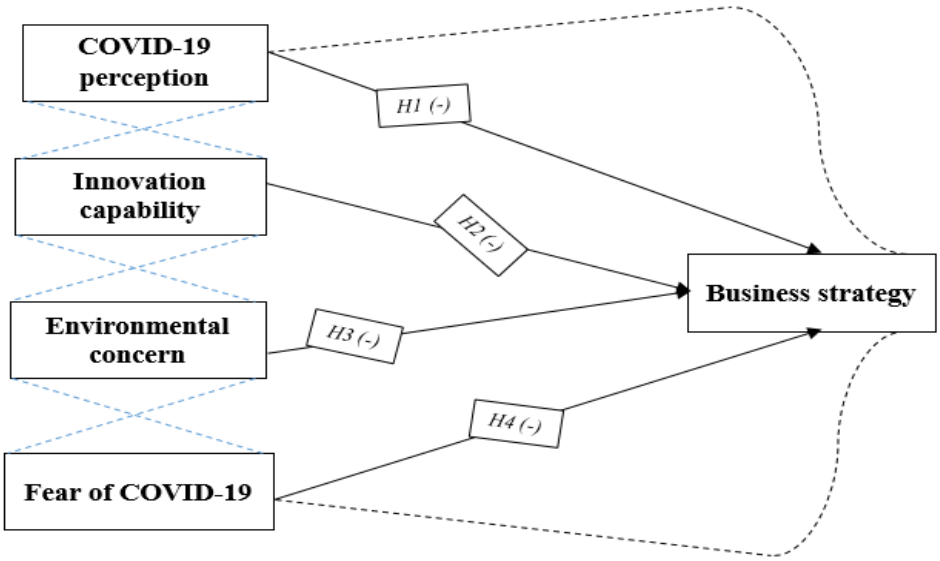

Figure 1. *Conceptual model developed by the researchers*

2.1 Effect of perceptions of COVID-19 (CP19) on business strategy (BS)

By examining CP19's impact on small businesses, Bartika *et al.'s* (Bartika *et al.,* 2020) findings shed light on CP19's significant impact on financial fragility. CP19 has meant that the firms have been confronted with significant challenges. CP19 has had an adverse effect on their production and operational activities. From an economic perspective, there was an 83 percent decrease in GDP during 2020 (Zou *et al.,* 2020). The Czech Republic's SMEs faced significant risks in the CP19 environment (Sasaki *et al.,* 2020). According to Gavrila and De Lucas Ancillo (2022), the CP19 pandemic is like an unfortunate accelerator with severe effects on both digital transformation and consumer habits that resist developments from new business models. Recently, Fan *et al.* (2022) claimed that CP19 was a great hindrance to economic development. The findings of Ruiz-Rosa *et al.* (2020) investigation confirmed an enormous decline in social entrepreneurial intentions caused by the high level of uncertainty and the deep economic recession due to the pandemic. The perception of CP19 have resulted in a lot F19 and this was felt, most particularly by entrepreneurs and firm owners (Gómez-Salgado *et al.,* 2020). The appearance and perceptions of CP19 have seriously affected Saudi's economy (Alessa et al., 2021). SMEs have become the pandemic's most significant victims. The firms have faced the effects of numerous disruptions to their supply chains; reduced demand for their goods and services; lower sales and profits; and serious financial issues. The SMEs have failed to make plans and policies to deal with these challenges (Nurunnabi, 2020). Henceforth, we formulated the following hypothesis for confirmation during the second wave of a pandemic:

H1. CP19 has had a negative and significant effect on BS.

2.2 Effect of innovation capability (IC) on business strategy (BS)

Similarly, the associations between HR practices and organizational IC can be achieved through the mediation effect of knowledge management (Iqbal *et al.*, 2021). In Shafi's (2020) perceptions, the existence of IC impacts of suppliers and cooperation with customers on firm performance. In Mexico's biotechnology sector, factors, such as technological and IC, absorption and productivity substantially affect creative performance (Stezano and Espinoza, 2019). Jiao *et al.'s* (2011) empirical findings demonstrate the robust effect of innovation strategy on dynamic competencies. Thus, an innovation strategy can upgrade and build dynamic capabilities in both rapidly changing and stable environments. By using Business Model Innovation (BMI), Pang *et al.* (2019) tried to determine the association between BS, integrative capacity and firm performance. The study outcomes reveal that as BMI has a positive effect in mediating the association between firm performance and IC (Pang *et al.,* 2019). In Thailand, strategic IC aspects, such as proactive activity support, dynamic adaptation commitment, the development of new ideas, and acceptance of risk-taking circumstances, acceptance impact positively on firm sustainability (Sriboonlue and Puangpronpitag, 2019). Akman and Yilmaz (2008) proposes that innovation strategy dimensions, such as pro-activeness and futurity, influence the software firms' IC. In service firms, IC has a serious effect on both their financial and non-financial performance (Al-kalouti *et al.,* 2020).

Consequently, IC's positive and significant effect has been observed routinely on the firm's performance and sustainability performance (Akman and Yilmaz, 2008; Tseng *et al.*, 2020). However, in CP19 pandemic situations, they may have failed to develop their IC towards dealing with the challenges in BS (Shafi *et al.*, 2020; Nurunnabi, 2020). Henceforth, we formulated:

H2. IC has a negative and significant effect on BS during COVID-19.

2.3 Effect of environmental concerns (EC) on business strategy (BS)

Ahmed *et al.'s* (2003) study examined the association between EC and firm performance and found it positive and significant. In the assessment of Johansson and Winroth (2010) and Johansson and Winroth (2010), EC and issues may lead to numerous potential inferences that affect the decision-making processes. In turn, these severely affect the strategy for manufacturing construction procedures. There is the positive effect of EC on competitive priorities. The intensity of environmental issues affects the embracing of proactive environmental management. A firm's resources and competitive advantage work as a mediator construct towards a positive association between financial performance and environmental protection (López-Gamero *et al.*, 2009). The environmental issues lead to the firm's successful execution of such actions (Yahya and Ha, 2013). Subsequently, EC is commonly helpful toward environmentally appropriate behaviors and the acquisition of pro-environmental values (Fransson and Gärling, 1999). People, who accentuate EC have faith that human beings can survive in congruence with nature; defend the natural environment and can avoid behaviors that damage it (Soyez, 2012). The individuals overhaul environmental quality mostly because they are certain that tarnished environment postures are a risk to individuals' health. Henceforth, it is a threat to the environment and a danger to individuals' well-being in the shape of EC (Soyez, 2012).

Consequently, EC affects the firm's performance and degraded environment postures are a threat to individual health (Ahmed *et al.*, 2003; Soyez, 2012). In some cases, the EC's care may enable managers to take account of potential implications in their decision making (Johansson and Winroth, 2010). However, in the COVID-19 situation, as yet there have not been any investigations about the effect of EC on BS (Fransson and Gärling, 1999; Ahmed *et al.*, 2003; Al-Youbi *et al.*, 2020; Shah *et al.*, 2020; Alessa *et al.*, 2021). So, we formulated:

H3. EC has a negative and significant effect on BS during CP19.

2.4 Effect of fear of COVID-19 (F19) on business strategy (BS)

COVID-19 and its concerns have led to fears, uncertainties, and apprehension among people universally (Adam and Alarifi, 2021). F19 is an adverse emotional condition that predominantly captures depression and anxiety because of an awareness of the pandemic's likely outcomes, for example, being infected with the pandemic (Johansson and Winroth, 2010; Ahorsu *et al.*, 2020). In a similar vein, López-Gamero *et al.* (2009), Jian *et al.* (2020) studies show the link between the uncertainty of CP19 and consumers' fears. These studies findings indicated that COVID-19 and anxiety uncertainty has enhanced the respondents' environmental concerns and trust in green brands. In the Saudi context, F19 has had a dramatic effect on several industries. Due to losses of sales losses, BS has deteriorated enormously has decreased (Yahya and Ha, 2013). However, this investigation has not yet explored all the factors (Fransson and Gärling, 1999; Yahya and Ha, 2013). Consequently, we suggested:

H4. F19 has a negative and significant effect on BS during COVID-19.

3. Methods

3.1. Respondents, data collection procedures and sample size

We targeted the manufacturing industries of Saudi as a study context where managers are selected as the units of analysis of the study. Fundamental reasons for selecting managers are considered leading individuals who look at all the organizations' issues (Gimenez and Tachizawa, 2012). They are also well-known in the company (Zahra, 1999) and widely

contribute to economic stability by promoting SMEs (Moeuf *et al.*, 2018; Soomro *et al.*, 2019). The manufacturing sector's selection demonstrates the most powerful engine in the economy of Saudi Arabia (Alofi and Younes, 2019; Adam and Alarifi, 2021). More specifically, the SMEs sector is responsible for rapid technological advancement and an accessible global production network (Shah and Soomro, 2020).

3.2. Tool's authenticity and non-response bias

We used a survey questionnaire as the crucial tool to collect the data (O'Brien, 2001) due to the appropriate and most useful social sciences research methods. To confirm the questionnaire's accuracy, we conducted a pilot study to certify its validity and reliability assumptions (Tabachnick and Fidell, 2007). Consequently, overall internal consistency among the items is > 0.70 or excellent (Hair *et al.*, 2018). We confirmed the validity by sending emails to university professors who were experts in the area. The professors suggested, also, some minor changes to the design and physical format of the questionnaire. Finally, we sent a valid and reliable survey to the respondents. In addition, to reduce the non-response biases, we applied the Mann-Whitney test by choosing as previously the first fifty responses and fifty later responses to observe the response bias. Consequently, this study does not show explicitly a considerable amount of communal way variance (Podsakoff and Organ, 1986).

3.3. Measures

COVID-19 perception (CP19) - We evaluated the CP19 construct by adopting seven items adopted from (Gómez-Salgado *et al.*, 2020). The taster items of survey are "I feel tense or worried about the effects that the coronavirus might have" and "I feel anxious or nervous about the coronavirus."

Innovation capability (IC) - We gauged the IC construct on three items adapted from Tsai and Tsai (2010). The scale's example items are "To facilitate green innovation, our organization encourages employees to think creatively" and "To facilitate green innovation, our organization provides managerial support at all levels."

Environmental concerns (EC) - We evaluated the EC on three items adopted from Tsai and Tsai's (2010) investigations. The scale's sample items are "To facilitate green innovation, our organization cultivates a green culture among employees." and "To facilitate green innovation, our organization pays attention to environmental protection in daily operations."

Fear of COVID-19 (F19) - We measured the F19 construct on Ahorsu *et al.*'s ten-item scale (Ahorsu *et al.*, 2020) with example items as "I am most afraid of COVID-19" and "It makes me uncomfortable to think about COVID-19."

Business strategy (BS) - We measured the BS on nine item adapted from Cragg *et al.* (2002), Hussin *et al.* (2002), Chen (2010) and Wu *et al.* (2015). The scale's sample items are "We attempt to remain ahead of our competitors through cheaper pricing of our products" and "We attempt to remain ahead of our competitors by focusing on quality products rather than price." We assessed all the factors with a five-point Likert scale ranging from strongly agree=1 to strongly disagree=5.

4. Data Analysis And Findings

4.1 Demography

Concerning sample characteristics, most respondents were males (n=210 or 75.00%) than females (n=70 or 25.00%). We found many respondents (64.64% or n=181) between 31-

45 years of age. 15.36% (n=43) were between 15-30 years of age, and 20.00 %(n=56) respondents were 46 and above years of age. Besides, most managers (62.86% or n=176) had 4-10 years of management experience. 23.57% (n=66) of respondents were 11 and more years of experience. Finally, 13.57% (n=38) of respondents had less than three years of management experience (Table 1).

We conducted an online survey due to stay-at-home initiatives and the Saudi Government's SOPs policy. We applied convenience sampling throughout the survey. We followed the adequate ethical norms of excellent and fair research to protect the participants' human rights concerning the survey's guidelines and endorsements (Neuman, 1997). We requested them to participate in the study voluntarily. After obtaining the necessary consent, we sent out 450 copies of the questionnaire, sent the links to the managers' WhatsApp groups, and requested them to complete the questionnaire. In turn, we received back 280 valid surveys with a response rate of 66%. This response rate fulfils the requirement of both paper surveys (45%) and online surveys (33.3%) (Watt *et al.*, 2002). Moreover, this sample size (280) enabled us to perform the SEM estimation (Hair *et al.*, 2006).

Table 1. *Respondents' profile*

Construct	Characteristics	Samples	Percentage
Gender	Male	210	75.00
	Female	70	25.00
	Total	*280*	*100.00*
Age [years]	15-30	43	15.36
	31-45	181	64.64
	46 and above	56	20.00
	Total	*280*	*100.00*
Management experience [years]	< 3	38	13.57
	4-10	176	62.86
	11 and more	66	23.57
	Total	*280*	*100.00*

4.2 Measurement model assessment

The numerous fitness indices indicate the model fitness of the collected data in terms of the SEM technique. Nevertheless, there is no common consensus among researchers on the use of fitness indexes. Absolute fit indices demonstrate the $\chi 2$ is not significant. However, the model is fitted entirely due to how large samples are applied. The $\chi 2$ closely rejects the model. In addition, to judge the reliability of every item, we observed the factor loading. The loading values were above 0.70 (Yamamoto *et al.*, 2014), excluding items cp4, f19-3, 6 and 10, bs6, 8, and 9 ka19-5 did not seem suitable loading values. As a result, we skipped the following analysis stages for low-loaded items (Hair et al., 2017). Additionally, Composite Reliability (CR) values remained between 0.70 and 0.99 (see Table 2) (Kline, 2005). Also, to assess constructs' uniqueness, an Average Variance Extracted values (AVE) are detected from 0.806 to 0.859 for all variables (> 0.50) (Hair *et al.*, 2010; Yamamoto *et al.*, 2014). Lastly, the Cronbach's alpha (α) for whole constructs was appeared within acceptable limits (> 0.70) (see Table 2).

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

Variable	Item	Loadings	CR	AVE	α
CP19	cp1	0.876	0.899	0.822	0.872
	cp2	0.852			
	cp3	0.849			
	cp5	0.798			
	cp6	0.787			
	cp7	0.760			
IC	ic1	0.898	0.868	0.810	0.862
	ic2	0.881			
	ic3	0.859			
EC	ec1	0.890	0.892	0.858	0.836
	ec2	0.828			
	ec3	0.803			
F19	f19-1	0.892	0.882	0.806	0.792
	f19-2	0.866			
	f19-4	0.859			
	f19-5	0.840			
	f19-7	0.825			
	f19-8	0.818			
	f19-9	0.809			
BS	bs1	0.872	0.832	0.859	0.816
	bs2	0.843			
	bs3	0.832			
	bs4	0.810			
	bs5	0.802			
	bs7	0.780			

Notes: *CP19=perception of COVID-19; IC=innovation capability; EC=environmental concern; F19=fear of COVID-19; BS=business strategy; CR= composite reliability; AVE= average variance extracted values; α=Cronbach's alpha.*

4.3 Convergent and discriminant validity

The observed value of CMIN=2/chi-square is 2.223, which can be used to evaluate the model's fitness. The other model fit indices, such as the goodness-of-fit index (GFI=0.919), normed fit index (NFI=0.928), comparative fit index (CFI=0.920), and adjusted goodness-of-fit index (AGFI=0.942), as well as root mean square error of approximation (RMSEA=0.047), were observed to be within satisfactory scores (see Table 3 and Figure 2). Additionally, we did Discriminant validity analyses to see how different all of the constructs were from one another (DV). This implies a factor's uniqueness, which is not indicated by other components, to prove DV (Hair et al., 2018). We validated the DV of the measurement model by using Fornell and Larcker's (1981) measurement. The correlation between all constructions is between 0.223 and 696, ranging from 0.829 to 0.882.

Table 3. *Model fit indices*

Model fit indicators	CMIN/df	GFI	AGFI	NFI	CFI	RMSEA
	2.223	0.919	0.942	0.928	0.920	0.047
Suggested values	< 3	> 0.90	> 0.90	> 0.90	> 0.90	< 0.05

Note: *CMIN= χ2/Chi-square/df; df= degree of freedom; AGFI=adjusted goodness of fit index; GFI=goodness of fit index; CFI= comparative fit index; NFI= normed fit index; RMSEA=root mean square error of approximation.*

Table 4. *Discriminant Validity by Fornell-Larcker criterion for the full model*

	Factors	1 CP19	2 IC	3 EC	4 F19	5 BS
1	CP19	**0.839**				
2	IC	0.223	**0.858**			
3	EC	0.483	0.439	**0.829**		
4	F19	0.339	0.480	0.530	**0.882**	
5	BS	0.561	0.539	0.281	0.469	**0.868**

Note: *Diagonals represent the square root of the AVE while the other entries represent the correlations.*

We also calculated the standard error (SE), critical ratio (CR), and p-values to evaluate the coefficients of the path. The SEM scores for hypothesis H1 show that CP19 has negative and substantial impacts on BS (H1=SE=0.072; CR=-1.803; p > 0.01) (see Table 5 and Figure 2). Henceforth, hypothesis H1 is accepted. Similarly, the results demonstrate the insignificant and negative effects of IC on BS (H2=SE=0.022; CR=1.023; p > 0.01) (see Table 5 and Figure 2). Therefore, hypothesis H2 is accepted. In addition, the EC is found as a negative and insignificant predictor of BS (H3=SE=0.037; CR=-1.231; > 0.01) (see Table 5 and Figure 2). Accordingly, hypothesis H3 is accepted. Finally, as per our expectations, the results demonstrate that F19 has a negative and significant effect on BS (H4=SE=0.062; CR=-2.001; p > 0.01) (see Table 5 and Figure 2). Consequently, hypothesis H4 is accepted.

Table 5. *SEM coefficients*

H.No.	Independent variables	Path	Dependent variable	Estimate	SE	CR	*P*	Decision
H1	CP19	→	BS	-0.082	0.072	-1.083	0.280	*Accepted*
H2	IC	→	BS	0.010	0.022	1.023	0.176	*Accepted*
H3	EC	→	BS	-0.049	0.037	-1.231	0.391	*Accepted*
H4	F19	→	BS	-0.039	0.062	-2.001	0.099	*Accepted*

Note: *SE=standard error; CR=critical ratio; p=significance level ***p<0.05*
CP19=perception of COVID-19; IC=innovation capability; EC=environmental concern; F19=fear of COVID-19; BS=business strategy

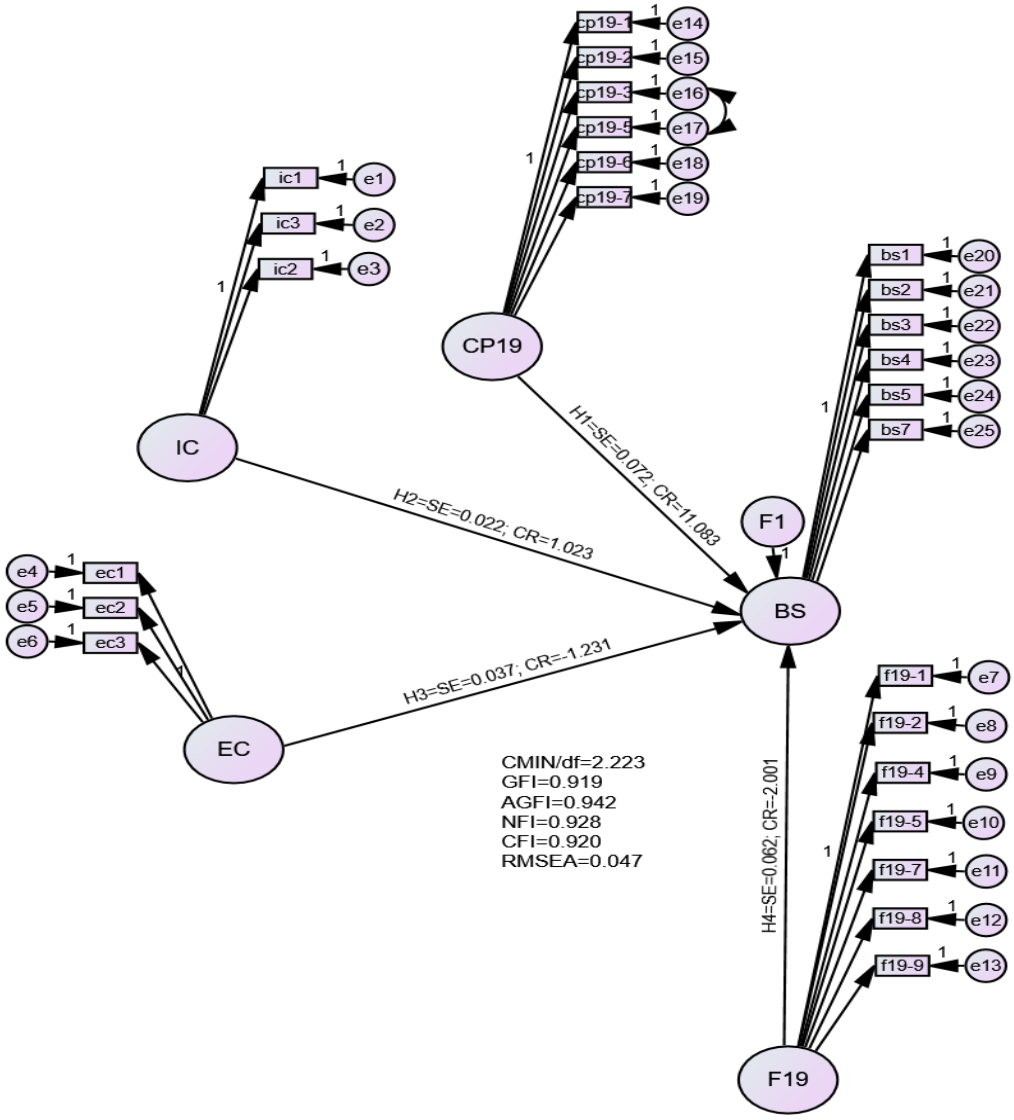

Figure 2: *Structural Equation Model (SEM)*
Notes: *CP19=perception of COVID-19; IC=innovation capability; EC=environmental concern; F19=fear of COVID-19; BS=business strategy*

5. Discussion And Conclusion

The aim of this study was to explore the COVID-19 environment and its impact on BS. Based on the COVID-19 literature, we created the conceptual framework for the study and came up with certain estimation hypotheses. The SEM results highlight that CP19 has had a negative and significant effect on BS (H1 accepted). Numerous academics, including Zou *et al.* (2020) and Gómez-Salgado et al. (2020), who discovered the ineffectiveness of business strategy during a pandemic, validate these findings. Further, the challenging pandemic situation reduced GDP during 2020 when the SMEs faced significant CP19 risks and reduction of entrepreneurial intentions. Our findings are supported, also, by (Bartika *et al.*, 2020) who found a substantial effect of COVID-19 on financial fragility in SMEs. Our work reflects that the second wave of COVID-19 would be more dangerous than the first one since it brought a massive decline in economic gains, increased uncertainty (Ruiz-Rosa *et al.*, 2020) and caused a lot of fear and anxiety (Fransson and Gärling, 1999), more particularly, for the firm owners, entrepreneurs and managers (Gómez-Salgado *et al.*, 2020). SMEs remain the massive fatalities

and miscarry to make their plans and policies to cope with the challenges (Shafi *et al.*, 2020). We note that managers are worried or anxious about the harmful effects of the second wave of COVID-19. They neglect them as they think about CP19. Some managers have trouble sleeping whilst thinking about the pandemic.

With regard to hypotheses H2, our findings reveal that IC has an insignificant adverse effect on BS. These results are consistent with Al-kalouti *et al. s'* (2020) findings, that IC has a severe effect on the service firms' financial and non-financial performance. It is noteworthy that our findings contradict those of Akman and Yilmaz's (2008) findings that, in regular routines, IC has a significant effect on BS. However, in a pandemic, the present results reflect the negative associations between IC and BS. The respondents may fail to develop their IC in creating the BS and providing good business environment in such situations. Our adverse results may be because the managers do not facilitate green innovation and discourage the employees from thinking creatively. They do not offer managerial support to the firm during the COVID-19 pandemic. They perceive that SMEs cannot organize the available resources appropriately.

Similarly, our findings show that EC's adverse effects on BS and is insignificant (Therefore H3 is accepted). These findings are consistent with those of (Ahmed *et al.*, 2003; Johansson and Winroth, 2010), which concluded that environmental issues' adverse effects have no significant difference between performance and manufacturing and service companies. On the one hand, these issues may lead to numerous potential inferences for decision-making conditions. On the other hand, these results are contrary to those of Yahya and Ha (2013) since they reveal that environmental issues are responsible for firms' successful accomplishment. The negative association may reflect the fact that the managers are unsuccessful in cultivating the green culture among the employees. They ignore, also, environmental protection in daily operations. Finally, due to COVID-19 concerns, the managers do not prepare, also, to bring sustainable development to SMEs.

Furthermore, from our findings we conclude that F19 has a negative and significant effect on BS (H4 supported). These results are consistent with the findings of numerous researchers like Fransson and Gärling (1999), Johansson and Winroth (2010), Ahorsu *et al.* (2020). They claim that F19 has a negative and significant effect of F19 on BS and attitudinal performance. Our results suggest that F19 appears as a negative emotional state which creates depression and anxiety among the managers. Therefore, it affects the firms' business plans and performance (Johansson and Winroth, 2010; Ahorsu *et al.*, 2020). This study's results underline that SMEs' managers of manufacturing sector of Saudi Arabia are quite afraid and feel uncomfortable when they think about the consequences of COVID-19 pandemic. They become worried when they ponder about contracting COVID-19. They are, also, frightened about pandemic's threat to their lives.

In conclusion, our study's findings show that CP19, IC, EC, and F19 negatively and significantly affect BS. In simple terms, on the one hand, CP19, IC, EC, and F19 play a negative role in the development of BS. These factors have seriously affected the plans and business strategies, adversely impacting the business performance of the manufacturing firms in Saudi Arabia.

6. Limitations, Implications And Future Research Avenues

We experienced a few limitations in conducting this study. We restricted this study only quantitative methods based mainly on cross-sectional data. We employed a single tool (survey

questionnaire) and a convenience sampling method to collect the Saudi Arabian SMEs managers' online responses. We did not underpin our conceptual framework with a concerned theory. We employed the SEM analysis to identify the outcomes. Finally, we restricted our study to data collected after the second wave of COVID-19.

Our study contributes significantly by addressing the intolerable challenges caused by the COVID-19. In the light of our findings, we recommend that business practitioners develop a conducive and fearless work environment by providing the employees with protection and safety to reduce their anxieties, fears and concerns about the environment. The results are valuable in improving the firms' products and profitability once they control the employees' fears about the complicated situations arising during the pandemic. Our study's findings provide the paths to follow in controlling the business concerns and the destructive factors that may affect the industries during the COVID-19 pandemic. We have identified the challenges that firms need to confront if the waves of the COVID-19 pandemic continue.

The study offer the understanding and guidelines for policymakers and planners to overcome the barriers in improving BS and performance. Our study's findings support, also, the SMEs and environmental management to know the impact IC, F19, environmental concerns and the perceptions about COVID-19 that, ultimately, harm BS. It also make a unique contribution because we tested a recently developed BS model, environmental views, and, more specifically, in COVID-19 pandemic. The results of our study also add to the literature in the fields of business, management, and environmental science, particularly concerning COVID-19.

In future, we recommend that more longitudinal studies are conducted to compare the effects of the different waves of the COVID-19 pandemic. More particularly, we recommend that to further examine BS future studies focus on motivations, entrepreneurial attitudes and intentions, lockdown outcomes, and working from home. Furthermore, we recommend that mixed methods (qualitative and quantitative) investigations be used to investigate the business and environmental concerns during a pandemic. Finally, to know the pandemic's other effects, we recommend that future studies focus on large samples based on entrepreneurs, employees, and workers.

institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the deanship of scientific research ethical committee, King Faisal University (project number: GRANT2639, date of approval: 13 January 2023).

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