

¹ Ha Nguyen Thi Thu² Huong Dao Thi Lan³ Duc Nguyen Manh

The Resilience of Entrepreneurship during the COVID-19 Pandemic: Evidence from Successful Entrepreneurs in Vietnam



Abstract: - Nowadays, one of the biggest global concerns is the recovery of small and medium enterprises (SMEs) after the COVID-19 pandemic, as it has caused severe consequences to many of these businesses, leading to organization collapses and closures. To overcome this crisis, SMEs need to adapt to the new reality and plan for change. This study examines the resilience of SMEs in the post-COVID-19 context by exploring entrepreneurship, innovation adaptation and networking relationships. The authors have collected data from 100 SMEs in Northern Vietnam, with 21 questions for entrepreneurs who have experienced the pandemic. The responses were extremely positive, and the Smart PLS analysis of the SEM model showed a feasible research model with an R-squared value of 0.674, Cronbach alpha of 0.681 and composite reliability. The chosen factors were closely related to each other, and their relationship was quite consistent.

Keywords: Business resilience, Covid-19, SMEs Entrepreneur, Smart PLS, innovation, entrepreneurship.

1. Introduction

The COVID-19 pandemic has had a huge impact on the global economy, leading to restrictions on movement within regions and around the world. Not only that but also challenges in transportation, affecting raw material availability and disrupting supply chains (Al-Hakimi et al., 2021; El Korchi, 2022). The pandemic has also caused a drop in demand for several products and services, as well as changes in purchasing habits and delivery methods (El Korchi, 2022; Junusi & Mubarak, 2020). The Covid-19 outbreak has posed unprecedented challenges to public health and the global economy (Ngoc Su et al., 2021). For small and medium-sized enterprises (SMEs), the Covid-19 pandemic has had some far-reaching effects (Suriyankietkaew et al., 2022). For the same reason, many hotels have had to close their operations. In Vietnam, sales revenue of small and medium enterprises decreased and many small and medium enterprises went bankrupt. Financial assistance packages are prepared to ease the strain on vulnerable individuals and businesses (Ngoc Su et al., 2021; Calzada Olvera et al., 2022). These goodwill policies are timely to support SME resilience in responding to the pandemic (Paramita et al., 2022 Calzada Olvera et al., 2022). However, until these things are realized, what will SMEs need to do with what they have on hand to adapt to the crisis? Despite these challenges, some businesses have been able to adapt and continue to operate stably and recover during and after the Covid period (Ozanne et al., 2022; Purnomo et al., 2021).

Enterprise resilience means the ability of the organization to adapt and recover from difficult circumstances (Kolade et al., 2020). SMEs are particularly vulnerable during crises such as the COVID-19 pandemic due to their limited resources (halil et al., 2022). However, some SMEs have been able to recover by using digital tools for teleworking and doing business online (Khalil et al., 2022; Forliano et al., 2023); Martín-Rojas et al., 2023 Santos et al., 2023). However, although many businesses invest a lot in digital transformation, the efficiency is not high. For small and medium enterprises, leadership is an important factor in determining the success of startups (Ismail, 2022; Kunaka & Moos, 2019) The COVID-19 pandemic has also promoted the perfection of the leadership style of entrepreneurs, helping them early acquire knowledge, skills, and have creative ideas and personal resources to lead the business industry, improves productivity, creativity, and customer engagement (Kruger & Steyn, 2021; Aramita et al., 2022). The competence of entrepreneurship in the digital age has blurred the boundaries of traditional business and spurred innovation in business models (Ismail, 2022; Seraj et al., 2022). Factors such as entrepreneurial competence, and technology utilization have been exploited and demonstrated its importance in entrepreneurial leadership (Seraj et al., 2022).

Although there are various studies on the resilience of businesses, there is still a lack of research on the recovery of entrepreneurs after Covid-19 (Hartmann et al., 2022). According to (Hartmann et al., 2022), entrepreneurship's resilience consists of two factors: the experience of overcoming challenges and the perseverance to adapt to difficulties. Entrepreneurship, especially in small and medium enterprises (SMEs), is important for new job creation, economic development, and growth, as well as for mitigating socioeconomic problems. (Martín-Rojas et al., 2023). Among them is the accumulation of experience in digital transformation as well as updating new knowledge to help entrepreneurs adapt to the new context (Dana et al., 2018; Halberstadt & Alcorta de Bronstein, 2021). Thanks to this adaptation, entrepreneurs can have full knowledge and capacity in leading and orienting

^{1,2,3} Department of Business Administration, FPT University, Greenwich Vietnam, Hanoi, Vietnam

{ hant1194 , huongdtl16 } @fe.edu.vn Ducnmgbh210130@fpt.edu.vn

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small and medium-sized enterprises that can soon recover (Castro & Zermeño, 2020). Digital entrepreneurship capabilities include opportunity identification, creativity, leadership, communication, networking, and problem-solving skills, along with digital, financial, and legal know-how to deal with uncertainty and risk (Guan et al., 2019; Alnahedh & Alrashdan, 2021; Kotsios, 2023). These skills increase the entrepreneur's resilience and make the entrepreneur resilient, ready to deal with risks (Kotsios, 2023). Entrepreneurial competence is an important predictor of entrepreneurial resilience (Kotsios, 2023; Ayala & Manzano, 2014). In particular, entrepreneurship recovery is important for micro and small businesses to have the necessary capacity to thrive (Kotsios, 2023; Ayala & Manzano, 2014 Junusi & Mubarak, 2020).

Businesses in Vietnam, have felt the unforeseen impact of the COVID-19 epidemic. SMEs in Vietnam play an important role in the economy (Ngoc Su et al., 2021; Le & Nguyen, 2022). More than 93% of businesses in Vietnam today are small and medium enterprises. After Covid, an average of 400 businesses declared bankruptcy every day, more than the world average index. Studying the factors that help businesses survive and recover from Covid-19 are issues of current concern in Vietnam to identify risks and get timely support (Le & Nguyen, 2022). The purpose of this study is to explore the factors of entrepreneurs' adaptive capacity to digital transformation, entrepreneurship and personal connections in operating businesses in Vietnam recovering from the COVID-19 Pandemic. Businesses that survive and develop stably after the Covid-19 period are indispensable for the entrepreneurial spirit, the ability to adapt to digital transformation and the connection network of entrepreneurs. This study explores the importance of these factors in the business recovery process through the following research questions:

Q1: Does the entrepreneur's personal network affect the business's recovery after Covid-19?

Q2: Does the innovation capacity of entrepreneurs help entrepreneurs recover the entrepreneurial spirit early? Q3: Can the entrepreneurial spirit of entrepreneurs help businesses recover from Covid?

The next part of this study is structured as follows: Part 2 presents some definitions and related studies, Part 3 is the methodology, the results are presented in Section 4, and finally, the discussion and conclusion are presented.

2. Literature Review

2.1 Business Resilience

Corporate success and resilience have been viewed as an important issues in management research (Ayala & Manzano, 2014; Khalil et al., 2022). It is defined as the ability of a business to survive, recover and even thrive after a crisis disrupts business operations (Khalil et al., 2022 Ismail, 2022; Bürgel et al., 2023). Enterprise resilience is the ability of an enterprise to address major strategic problems through the adaptive capacity to ensure business continuity (Bürgel et al., 2023). Resilience is therefore defined as the ability to anticipate and adapt to changing environmental disruptions, or to emerging conditions (Bürgel et al., 2023). Resilience is not just survival but also involves adapting, and proactively seizing opportunities in challenging business environments (Bürgel et al., 2023). An enterprise is a system operating in a dynamic and changing environment that threatens the sustainability of the business over time. Many SMEs typically do not last more than five years. The main challenge is the transition from maturity to sustainability. Organizational resilience has been studied extensively in many fields, including the tourism and hospitality industries (Khalil et al., 2022). Logistics businesses are often technology businesses (El Korchi, 2022; Al-Hakimi et al., 2021), but the main approach is to study the resilience of businesses to events outside like a disaster. The COVID-19 pandemic has encouraged many researchers to explore industry coping mechanisms from different angles and different variables. Leadership competencies and entrepreneurship were also explored for their impact on business recovery

(Schiuma et al., 2022). Other external factors include policy and financial or technological support (Khalil et al., 2022; Shu et al., 2018; Halberstadt & Alcorta de Bronstein, 2021).

In Vietnam, about 93% of the total number of enterprises today are small and medium-sized enterprises, of which 80% are state-owned enterprises belonging to the group of small and medium enterprises, in the private economic sector medium and large enterprises. Small businesses account for 97% in terms of capital and 99% in terms of labor compared to the total number of enterprises in the country (Van Tien, 2022). Small and medium-sized enterprises account for a large or even overwhelming proportion of the total number of existing enterprises. Small and medium-sized enterprises also play a role in stabilizing the economy and also make great and important contributions to budget revenue, job creation, and GDP contribution to Vietnam (Ngoc Su et al., 2021).). The study of factors that help businesses recover after Covid-19 is a central issue of the Vietnamese Government today (Ngoc Su et al., 2021; Van Tien, 2022). Because the number of small and medium enterprises announced to suspend operations in 2022 is about 143,200 enterprises. In the first quarter of 2023, 60,241 enterprises withdrew from the market, up 17.4% over the same period in 2022.

2.2 Entrepreneur's Resilience

Entrepreneurs play a pivotal role in the businesses and economies of countries as employers, job creators, and innovators (Hartmann et al., 2022). Every decision of entrepreneurs affects not only themselves but also their businesses, customers and stakeholders, especially in small and medium enterprises (Hartmann et al., 2002; Ismail

2022; Kunaka & Moos, 2019). Entrepreneurial resilience is an individual's ability to adapt and respond to adverse circumstances and factors in life (Paramita et al., 2022). Entrepreneurs with resilience will remain optimistic in the face of setbacks or be able to hedge the risks ahead to maintain their business operations stably and sustainably (Suriyankietkaew et al., 2022). Research on entrepreneurship as an important factor in promoting SME development has been published in many publications (Hartmann et al., 2022 Ismail, 2022 Kunaka & Moos, 2019 Suriyankietkaew et al., 2022). However, in the time of Covid, the recovery of entrepreneurs is even more important because factors including: the intrinsic capacity of the entrepreneur, the entrepreneurial spirit, as well as the entrepreneur's networks are considered weak core factors to help businesses survive and stabilize after the pandemic (Suriyankietkaew et al., 2022; Ismail 2022; Kruger & Steyn, 2021).

A. *Entrepreneurship*

Entrepreneurship promotes employment, productivity, innovation, and the commercialization of innovations (Martín-Rojas et al., 2023; Kruger & Steyn, 2021). For entrepreneurs, the spirit of entrepreneurship is an important factor to help have a resilient spirit and overcome all difficult circumstances (Schiuma et al., 2022). Although research on entrepreneurship under adverse, even dangerous conditions is scant. For entrepreneurs, the more resilient are the ones who are more likely to start over when a business opportunity presents itself or gets in the way (Schiuma et al., 2022). In many situations, resilient entrepreneurs are less likely to be discouraged by problems and can overcome arising issues by formulating actions and strategies. Resilient entrepreneurs thus possess intangible resources and competencies that help them get through stressful times (Martín-Rojas et al., 2023). Entrepreneurship contributes to improved entrepreneurial behavior and performance (Suriyankietkaew et al., 2022; Martín-Rojas et al., 2023).

Entrepreneurship creates a passion for all activities related to entrepreneurial endeavors (Suriyankietkaew et al., 2022). People who are enthusiastic and serious about the business they are running will definitely give their best to the success of the business. Accordingly, an entrepreneur with a passion for his business will devote his time and energy to making it run successfully. Therefore, the spirit of entrepreneurship is considered an important factor in the early recovery of enterprises.

H1. Entrepreneurial spirit positively impacts business recovery

B. *Entrepreneur's personal networking*

Personal networking is a network consisting of all people connected to each other by a certain type of relationship (Alnahedh & Alrashdan, 2021; Bratkovič Kregar & Antončič, 2010). An important feature of these private networks is their ability to facilitate or limit the actions of network entrepreneurs. A personal network can be thought of as Entrepreneur's most important resource (Alnahedh & Alrashdan, 2021). Entrepreneurs get through this network is information for the development of the business (Bratkovič Kregar & Antončič, 2016). Entrepreneurs' personal networks can provide entrepreneurs and their companies with information, support, and access to scarce resources (Alnahedh & Alrashdan, 2021). In addition, networks can facilitate entrepreneurs in identifying, gathering and allocating resources, helping entrepreneurs see new opportunities and acquire new knowledge (Bratkovič Kregar & Antončič, 2010). Numerous studies have shown that entrepreneurial networks confirm that entrepreneurs receive a large part of their support through their personal networks (Bratkovič Kregar & Antončič, 2010). Businessmen establish and expand their personal network by establishing and developing relationships within both in their personal lives as well as in their professional careers (through participation in conferences, meetings, social events, etc.) (Alnahedh&Alrashdan, 2021; Shu et al., 2018). The personal network of entrepreneurs is represented by a combination of friendships, business relationships and other related relationships (Shu et al., 2018) This personal relationship offers entrepreneurs a wide range of opportunities and support (Shu et al., 2018). External resources are especially important for many small businesses with limited resources. Every entrepreneur or small business owner is different and needs different ways of support (Alnahedh & Alrashdan, 2021). Small businesses always need to have effective support mechanisms for all stages of the business process to promote the continuity of businesses (Alnahedh & Alrashdan, 2021). Challenges encountered, such as sales, marketing, and fundraising require the entrepreneur to seek outside advice to stay relevant and successful (Bratkovič Kregar & Antončič, 2016). Many SMEs use external accounting to help fill internal human resource gaps. Entrepreneurs who intend to improve their knowledge and skills in areas such as marketing, business management, profitability, revenue, employment and market coverage are more likely to pursue and benefit from it outside advice or support (Alnahedh & Alrashdan, 2021).

H2. Entrepreneur's personal network helps businesses recover soon

Personal networks are seen as a supportive and valuable asset for entrepreneurs (Alnahedh & Alrashdan, 2021). For example network size, number of connections and contacts, strongly influence a company's growth when it comes to creating new ventures. The personal success of the entrepreneur and the success of the company is often attributed to personal relationships or social networks. Entrepreneurs have access to a variety of valuable resources, information, advice, and emotional support through their personal networks.

H3. A strong personal network has a positive impact on the entrepreneurial spirit of an entrepreneur.

C. Entrepreneur Innovation competency

Self-efficacy is one of the determinants of an entrepreneur's resilience (Suriyankietkaew et al., 2022; Suriyankietkaew et al., 2022). Self-efficacy helps an entrepreneur to confidently make decisions and not be afraid to face the risk of failure, expect positive results and achieve business growth (Suriyankietkaew et al., 2022; Ismail, 2022). Therefore, the impact of capacity on the resilience of entrepreneurs becomes very important, especially in the context of small and medium enterprises facing disaster.

Entrepreneurial competencies include: knowledge, skills. Knowledge is acquired from accumulation in the educational process as well as the regular updating of new knowledge (Kruger & Steyn, 2021 ; Suriyankietkaew et al., 2022). Knowledge can be obtained from self-study, self-study or taking short courses to supplement missing or incomplete knowledge (Kruger & Steyn, 2021). An entrepreneur with a solid educational background and knowledge can guarantee more confidence. In addition to the knowledge and skills of entrepreneurs, including management skills, skills in handling business situations, updating skills for digital transformation, etc. In the context of the digital economy, these knowledge and skills Digital transformation capabilities help entrepreneurs become more confident and operate their businesses more efficiently (Kruger & Steyn, 2021 ; Schiuma et al., 2022).

Entrepreneurial competence has a positive effect on business innovation (Schiuma et al., 2022). Constantly adding knowledge from learning can pave the way for the development of new ideas, which can provide opportunities to create valuable services and products for customers. On the other hand, innovation can help SMEs maintain stability by enabling continuous improvement in production and marketing processes (Schiuma et al., 2022; Ismail, 2022; Seraj et al., 2022). How to innovate through product reprocessing, rebranding, re-design and repackaging. Furthermore, innovative business ideas can help strengthen a company's brand. Innovation improves product quality and reduces costs in the manufacturing process. Many studies have found that combining consumer ideas with creativity can inspire business profits (Seraj et al., 2022). The role of business innovation is considered crucial to entrepreneurship and SME sustainability.

Digital technology is an important asset to accelerate organizational transformation, due to its disruptive nature and systemic impact on the organization (Bürgel et al., 2023). Digital technology blurs process boundaries and increases product performance (Bürgel et al., 2023; Forliano et al., 2023). Digital technologies are the source of innovation and internationalization that help shape ecosystems, create new business models, and position strategies (Forliano et al., 2023).

In times of pandemic, when entrepreneurs have to reinvent their businesses, entrepreneurship and digital technology have emerged as a path to entrepreneurship resilience thus impacting the existence of the business (Santos et al., 2023). A digital age entrepreneur will understand how applying digital technologies to business operations will change modern business and management thinking (Bürgel et al., 2023).

H4a. Knowledge to support the innovation capacity of entrepreneurs

H4b. Skills have a positive impact on entrepreneurs' ability to innovate

The emergence of new digital technologies has transformed the entrepreneurial spirit and helped prevent many business ventures from going bankrupt during the COVID-19 pandemic (Khalil et al., 2022). The digital transformation of innovation and enterprise (Bürgel et al., 2023) enables productivity and innovation improvements in business models (Forliano et al., 2023), production processes and interactions with customers (Forliano et al., 2023).

In addition to the internet, mobile connectivity, cloud computing, robotics, smart manufacturing, business intelligence, software and artificial intelligence, among other new digital technologies that are constantly emerging, Entrepreneurs during the pandemic with digital capabilities have applied tools to support online transactions, improve technology awareness to build online communities, and market to customers and information suppliers through a virtual environment . Various platforms and software packages have rapidly become available to assist entrepreneurs in their novel daily business activities due to the social distancing and social distancing requirements imposed in the era of the pandemic. (Khalil et al., 2022). Finally, and more importantly, the level of readiness and willingness to use digital technologies to build resilience also varies widely across industries and business models, depending on capabilities, management, culture and working environment of the enterprises.

Several studies explore the impact of business innovation on SME sustainability. It is seen that sustainability is the result of competence and innovation. Therefore, this study's findings can help entrepreneurs to see that positive capacity improvement coupled with innovation increases the chances of SME's sustainable development.

H5. Entrepreneurial innovation ability helps businesses quickly recover and grow

H6. Entrepreneurial innovation capacity has a positive impact on entrepreneurial spirit

3. Methodology

3.1 Study design

This study identifies knowledge gaps on the influence of entrepreneurs' skills and knowledge on entrepreneurial innovation capacity, entrepreneurial spirit factors as well as business relationships, helping businesses overcome the pandemic. A quantitative approach was applied to explore relationships and test hypotheses in this study. Then questionnaires were carried out and samples from entrepreneurs in small and medium enterprises in Vietnam were taken. The questionnaires were designed on Google Form and sent to small and medium enterprises for survey.

3.2 Sampling technique

Sampling technique used in this study is clustering technique by groups of fields: business, tourism, fashion, education. The target audience is entrepreneurs of small and medium enterprises in Vietnam. Firms located in this sector were selected to ensure that the selection was representative of the study population.

The data of this study were collected from many sources. Secondary data is collected from related articles and websites to understand the research context and formulate hypotheses, we also find gaps in the research and propose a research conceptual framework. First, we created a questionnaire and sent it to the participants. We then use this data to test the hypothesis in the SEM model using the Smart PLS tool.

3.3 Research hypothesis and research model

At the individual level, resilience has been defined as a mental or behavioral attribute. In small and medium enterprises, the resilience of entrepreneurs is most important because they are a central role in the direction and operation of the business. Our research has put forward 07 important hypotheses. Among them, there are 07 hypotheses as follows:

- H1. Entrepreneurial spirit positively impacts business recovery
- H2. Entrepreneur's personal network helps businesses recover soon
- H3. A strong personal network has a positive impact on the entrepreneurial spirit of an entrepreneur. H4a.
- Knowledge to support the innovation capacity of entrepreneurs
- H4b. Skills have a positive impact on entrepreneurs' ability to innovate
- H5. Entrepreneurial innovation ability helps businesses quickly recover and grow.
- H6. Entrepreneurial innovation capacity has a positive impact on entrepreneurial spirit

The figure 1 below is the conceptual framework of this research

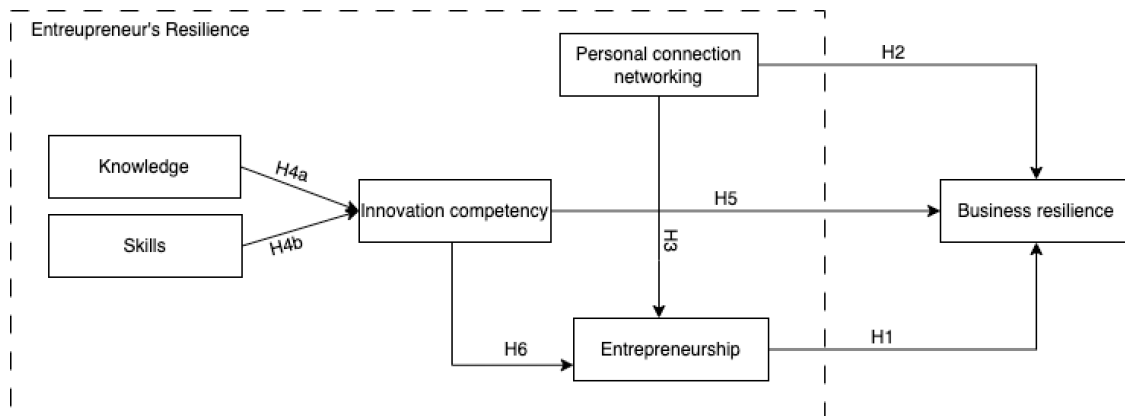


Figure 1. Research Model

With 21 questions we have designed, we have taken a survey of 100 samples. There are two main parts of the questionnaire. In the first part, the participants are asked to fill in basic information such as gender, working position, education background. In the second part, the questions are equivalent to 04 independent factors, 01 intermediate factor and 01 dependent factor including: knowledge, skills, entrepreneurship, personal networking, innovation competency and business resilience. Entrepreneurs were then asked to rate them on a scale from 0 (Strongly disagree) to 5 (Strongly agree). With a total of 100 usable samples, we use SmartPLS 4 software to test the proposed hypotheses. Table 1 below lists the observed variables that have been coded.

Table 1. List of observed variables

Variables	Coding	Describing	References
Skills	Skill 1	I use social media to help make business decisions I use digital marketing to increase marketing	Kotsios, 2023 ; Castro & Zermeno, 2020 ; Buang, 2012 ;
	Skill 2	Use of ICT tools to communicate at a distance	

	Skill 3	I feel I can handle many things at a time at my business with ICT and digital tools	
Knowledge	Kn 1	We attend too many training sessions a year and often go out to study.	Buang, 2012 ; Ayala & Manzano, 2014 ; Seraj et al. 2022
	Kn 2	I update my knowledge regularly according to new business trends.	
	Kn 3	I have a knowledge base that ensures flexible application in any situation	
Innovation competency	Adap 1	I think innovation is more about reform , and I follow it	Guan et al., 2019 , Schiuma et al., 2022 , Ismail , 2022; Bürgel et al., 2023
	Adap 2	I can adapt to change	
	Adapt 3	I like new technology and can apply it for my business	
Personal connection network	Connection 1	Suppliers / sales / customers really support my business	Alnahedh & Alrashdan, 2021 ; Shu et al., 2018 ; Bratkovič Kregar & Antončič, 2016 ; Bratkovič Kregar & Antončič, 201 0
	Connection 2	The Municipal Government supports my efforts	
	Connection 3	I join enterprises alliances for receiving support and information	
Entrepreneurship	Entre 1	I can get through difficult times at my business since I have experienced difficulties before.	Ismail , 2022; St-Jean and Audet , 2012
	Entre 2	My efforts were able to generate opportunities even from a crisis situation	
	Entre 3	I consider myself a strong person facing difficulties	
	Entre 4	I am able to handle whatever happens and I try to find the positive side of things	
	Entre 5	Have a greater feeling of capability as an entrepreneur or small business owner, persist and do not easily give up	
Business Resilience	BR1	My business can stand tall and can survive	Azazz & Elshaer, 2022 ; Kotsios , 2023
	BR1	My business is capable of identifying and solving problems	
	BR1	My business has managed to stay on the market even in crisis conditions	
	BR1	My business is fast taking action and flexible	

4. Results

4.1 Sample statistics

After submitting the questionnaire, 107 individuals participated in the survey. We calibrate and use 100 post-correction samples to test the proposed hypotheses. According to statistics, the proportion of men participating in the survey accounts for 77% and women is 23%. Table 2 represents the demographic information of the survey samples.

Table 2. Demographic

Demographic variables	n	%
Gender Male	77	77%
Female	23	23%

Qualification Undergraduate	69	69%
Postgraduate	22	22%
Others	9	9%
Position in enterprises CEO, Director, Founder, Vice director	42	42%
Sales managers	47	47%
Sales staff	11	11%
Business Experience 1-3 years	26	26%
3-5 years	58	58%
> 5 years	16	16%

In which, 22/100 people have postgraduate degree, accounting for 22%; university is 69/100 reaching 69%. In the end, 11 people under university with a rate of 11%. The working position of the surveyed people in the business, including those currently holding the position of directors, deputy directors, founders, accounts for 42%, the head and deputy of the sales department is 47%; sales staff 11%. The research model includes 21 observed variables including 02 intermediate variables. The dependent variable is business recovery, the remaining 03 independent variables include: knowledge, skills, personal network and entrepreneurial spirit. The SEM model is designed as shown in Figure 2 below.

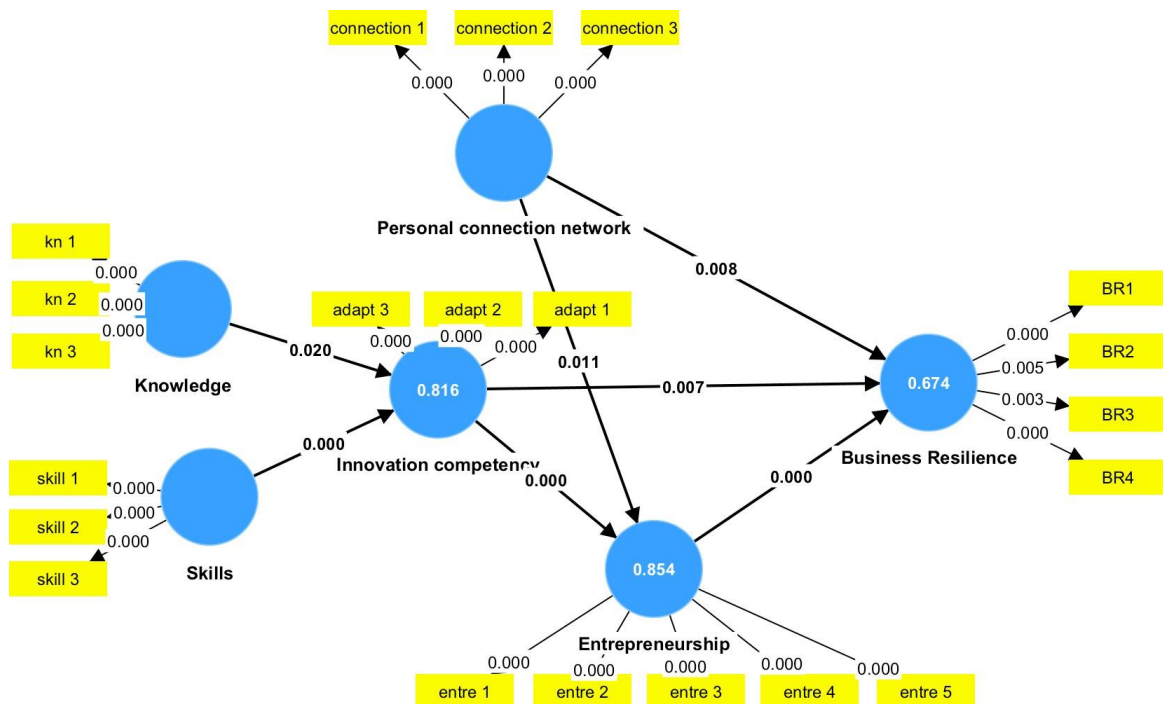


Figure 2. SEM model

Multicollinearity is a phenomenon where the independent variables in the regression model are linearly dependent on each other. Evaluating the multicollinearity of the SEM model by checking the IVF values of the variables found that the values of the variables are in the range of 1...1.307, so there is no multicollinearity in the model. The outer loading coefficient is used to evaluate the quality of the observed variables. The value of this coefficient is in the range 0...1. closer to 0 may indicate that the variable does not contribute much to the corresponding factor and may be excluded from the model. Outer loading coefficients of the variables in the model with values as in Table 3 below. Usually values ≥ 0.7 will be reliable enough in the model. Only variable Entre 1 and variable kn 1 with values below 0.7 can be removed from the model.

Table 3. Outer loading of observation variables

	Business Resilience	Innovation competency	Personal connection network	Entrepreneurship	Knowledge	Skills
BR1	0.793					
BR2	0.731					
BR3	0.765					
BR4	0.708					
adapt 1		0.853				
adapt 2		0.786				
adapt 3		0.788				
connection 1			0.721			
connection 2				0.752		
connection 3				0.734		
entre 1				0.675		
entre 2				0.826		
entre 3				0.784		
entre 4				0.793		
entre 5				0.779		
kn 1					0.669	
kn 2					0.728	
kn 3					0.872	
skill 1						0.706
skill 2						0.796
skill 3						0.721

4.2 Model test results

Construct reliability allows you to evaluate the degree to which a variable or a set of variables fits a measurement result. Where Cronbach's Alpha Reliability Coefficient only shows that the measures are related to each other. In Table 4, it shows that Cronbach's Alpha coefficient >0.6 combined with R-square is greater than 0.6, showing that the model is significant. Accept the model with variables: Business Resilience, Entrepreneurship, and Innovation competency.

Table 4. Construct reliability

	R-square	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Business Resilience	0.674	0.684	0.748	0.533
Entrepreneurship	0.854	0.695	0.751	0.577
Innovation competency	0.816	0.702	0.751	0.502

In Table 5 below, the Heterotrait-Monotrait (HTMT) correlation index between hidden variables has results greater than 0.7. There are 02 variables Entrepreneurship and skills with a correlation coefficient of 0.668, variables Entrepreneurship and knowledge. This shows that the hidden variable shares a large variability with other variables.

Table 5. Heterotrait-Monotrait

	Business Resilience	Entrepreneurship	Innovation competency	Knowledge	Personal connection network
Business Resilience					
Entrepreneurship	0.897				
Innovation competency	0.836	0.731			

Knowledge	0.704	0.651	0.877		
Personal connection network	0.766	0.876	0.806	0.854	
Skills	0.724	0.668	0.771	0.765	0.837

A path coefficient that indicates the direct effect of one variable -that is considered to be the cause on another variable- that is considered to be the effect. To evaluate impact relationships, use the Path Coefficients results of the Bootstrap analysis. The results will decide whether to accept or reject the research hypothesis. The results of testing the variables of the model are as shown in Table 6 below:

Table 6. Hypothesis test results

	Path	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Results
H 1	Entrepreneurship -> Business Resilience	0.37	3,695	0	support
H 5	Innovation competency -> Business Resilience	0.362	2,683	0.007	support
H 6	Innovation competency -> Entrepreneurship	0.045	19,146	0	support
H 4a	Knowledge -> Innovation competency	0.057	2,331	0.02	support
H 2	Personal connection network -> Business Resilience	0.127	2,634	0.008	support
H 3	Personal connection network -> Entrepreneurship	0.053	2,54	0.011	support
H 4b	Skills -> Innovation competency	0.041	20,418	0	support

With the results of hypothesis testing according to the above table, the study accepts the main hypotheses by p-value <0.05. This means accepting hypotheses H1, H2, H3, H4a, H4b, H5, H6.

H1. Entrepreneurial spirit positively impacts business recovery

H2. Entrepreneur's personal network helps businesses recover soon

H3. A strong personal network has a positive impact on the entrepreneurial spirit of an entrepreneur. H4a.

Knowledge to support the innovation capacity of entrepreneurs

H4b. Skills have a positive impact on entrepreneurs' ability to innovate

H5. Entrepreneurial innovation ability helps businesses quickly recover and grow.

H6. Entrepreneurial innovation capacity has a positive impact on entrepreneurial spirit

Because the model has intermediate variables including: Innovation competency, Entrepreneurship. The study continues to use the results of the Bootstrap to measure these paths through a specific indirect effect. The results are given in Table 7 below with p-values < 0.05, acceptable paths.

Table 7. Specific Indirect effect

	T statistics (O/STDEV)	P values	Results
Skills -> Innovation competency -> Entrepreneurship	14,158	0	support
Knowledge -> Innovation competency -> Entrepreneurship -> Business Resilience	2.097	0.036	support
Knowledge -> Innovation competency -> Entrepreneurship	2.335	0.02	support
Knowledge -> Innovation competency -> Business Resilience	2.037	0.042	support
Innovation competency -> Entrepreneurship -> Business Resilience	3.461	0.001	support
Skills -> Innovation competency -> Entrepreneurship -> Business Resilience	3.253	0.001	support
Personal connection network -> Entrepreneurship -> Business Resilience	2.48	0.013	support

Skills -> Innovation competency -> Business Resilience	2.509	0.014	support
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5. Discussion and Conclusion

Business recovery after the Covid-19 pandemic is a top concern of many businesses. One way for SMEs to recover financially is to apply modern technology. By incorporating technology into business models, companies can operate more flexibly, minimize the negative impacts of natural disasters, the environment and other force majeure factors, and have the ability to better resistance to unexpected events. Future research on post-Covid-19 business recovery may focus on remote working, which leads to a growing demand for secure and reliable video conferencing software, tools VPN and cloud-based collaboration platform (Santos et al., 2023).

Using quantitative research method, some findings were obtained in this study. This research method is based on mathematical principles and statistical analysis, making it a scientific and easy to understand method for interpreting collected data. The convenience sampling method used in the research allows survey respondents to easily access information. However, this method does not account for sampling error and may not make accurate conclusions for the population based on sample results. In addition, errors in the wording of survey questions can lead respondents to misinterpret the situation or topic, which can also affect research results. However, the main theories that are still accepted suggest that the entrepreneurial spirit, innovation capacity and personal network of entrepreneurs help with business recovery after Covid-19. Entrepreneurial spirit is positively influenced by the knowledge and skills of entrepreneurs in the digital age. Accessing digital tools and digital solutions strengthens entrepreneurs' adaptive skills. In addition to updating skills, the knowledge and experience of entrepreneurs also help them easily overcome the pandemic.

Entrepreneurship has a significant influence on measuring business performance and supporting H6. The results are consistent with previous studies on entrepreneurship capacity (Schiuma et al., 2022; Suriyankietkaew et al., 2022). Entrepreneurship is significantly related to the relationship between the internal resources of the organization and the performance of the company. Furthermore, entrepreneurship also significantly improves the performance of firms

(Suriyankietkaew et al., 2022).

The entrepreneur's personal network factor has an impact on business recovery after Covid-19. This result is found in studies (Alnahedh & Alrashdan, 2021; Bratkovič Kregar & Antončič, 2016). The relationship between the entrepreneur's personal network variable and business recovery in this study = 0.706, which means this relationship has a positive effect and this hypothesis is accepted, as well as answering the research question number 1.

The entrepreneurial spirit of entrepreneurs helps small and medium enterprises recover soon after Covid-19. The entrepreneurial spirit of the entrepreneur shows resilience and the effort to overcome difficulties. This result has also been found in previous studies (Kunaka & Moos, 2019). With the coefficient = 0.897, it shows a positive influence of entrepreneurship on the recovery of enterprises. This hypothesis helps to solve research question number 3.

In this study, we also explore other related relationships including: entrepreneur's personal network and entrepreneurial innovation capacity also positively affect entrepreneurial spirit of entrepreneurs. For entrepreneurs with the ability to innovate to adapt to the situation or a good personal network, it will increase the entrepreneur's confidence, helping the entrepreneur's will to stay firm in all adversities.

Through this research, we realize that in order to help small and medium-sized businesses recover from Covid-19 soon, the personal factors of entrepreneurs need to be taken care of. In particular, the government can support to build the information network for businesses, provide courses to strengthen skills and knowledge about ICT and innovation, help to strengthen the innovation capacity of entrepreneurs, and at the same time, improve the entrepreneurial spirit of entrepreneurs.

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