

Master

Management Information Systems

Master's Final Work

Dissertation

SMEs' COVID-19 Adaptation in Macau:
Focus on Information Technology

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Abstract

It is evident that COVID-19 made an enormous impact on the business environment around the globe. Macau was not exempt from this crisis. In this master's final work, the author used qualitative methods trying to discover how the SMEs in Macau adapted to what COVID-19 had changed with the use of information technology, following the process of conducting a thematic analysis. In total, four in-depth one-on-one semi-structured interviews were conducted, transcribed and analyzed iteratively to reach adequacy of examples. The results of the analysis prove that the attitudes of the entrepreneurs and the embrace of information technology are essential in assisting SMEs in Macau to survive the crisis, improving resilience and efficiency of the enterprises and adapting to the ever-changing business conditions, which also match the existing theories.

Keywords

SME, Information technology, adaptation, Macau, COVID-19

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1 Introduction

According to the OECD and the European Commission, small and medium-sized enterprises (SMEs) are defined as having less than 250 employees (Madani, 2018). Meanwhile, SMEs are categorized into micro enterprises (fewer than 10 employees), small enterprises (10 to 50 employees) and medium enterprises (50 to 250 employees). SMEs contribute significantly to the global and local development in terms of job creation, products and services innovation, diversification, economic growth, among others (Malesios et al., 2021). As the data show, SMEs account for approximately 90% of all businesses, over 50% of global employment, 55% of GDP in developed economies and up to 40% in emerging economies (World Trade Organization, 2016).

SMEs share unique characteristics that may be positive or negative to adapt to the changing environment. In the extant literature, the 5 most frequently mentioned positive specificities are more flexibility, less complex and flatter organizational structure, high level of internal trust, higher socialization and proximity and new low-cost knowledge management tools; while the negative sides are lack of resources, less focus on knowledge storage and retention, one-person decision making, lower responsiveness to technology dynamic evolution and more informality and less rules (Sartori et al., 2020). Having the above mentioned negative characteristics make SMEs vulnerable to the fast-changing environment, however, the positive specificities can lead the survivors to turn the threats into opportunities and bounce back stronger from the adversity.

In the face of global crises, SMEs often suffer more severely than large enterprises. Recent years have been challenging to most businesses worldwide due to several significant crises. Among them, the COVID-19 pandemic which began in late 2019 made a huge impact on businesses in every corner of the world. Lockdowns, travel restrictions, and supply chain disruptions affected various industries, from services to manufacturing (Ajmal et al., 2021). The COVID-19 crisis deeply intensified the rapid digitalization, changed the technological environment, brought challenges, created opportunities and required SMEs to accommodate (Etemad, 2023). Although COVID-19

brought catastrophic effects to numerous SMEs worldwide, many have managed to adapt, undergo a digital transition and evolve into micro-multinationals (Felzensztein & Tretiakov, 2023).

Macau, a special administrative region (SAR) located on the southern coast of China, approximately 60 kilometers southwest of Hong Kong, was not exempt from COVID-19's impact. According to the data, in 2020, after adjusting for price fluctuations, the Gross National Income (GNI) of Macau experienced a 39.2% year-on-year decline in real terms, compared to a 54.0% decrease in Gross Domestic Product (GDP) (Government of Macao Special Administrative Region Statistics and Census Service, 2021). Until the moment of writing, the economy of Macau is still in the process of recovery. Although it will take time to return to the pre-COVID-19 level, the economic data seemed relatively optimistic.

Same as in every other city, most SMEs in Macau suffered a substantial decline in revenue due to the impact of the pandemic, while many were forced to close, despite the financial support from the government (Wu, 2022). Starting from November in 2022, Macau slowly relaxed the border measures and resumed quarantine-free travels (Government Information Bureau, 2022; Macao Government Tourism Office, 2023). Following the border opening, some SMEs which managed to survive thrive with greater resilience.

The use of information technology on SMEs has been an exciting area of academic studies. Stemming from the uniqueness of the different cultures, the analyses on the approaches taken by SME managers may offer innovative insights (Hunter, 2004). Despite the small size of Macau's economy, it would be unfortunate to be underrepresented in academic research.

Therefore, this study collects data from COVID-19-survivor SMEs of various sectors in Macau, trying to discover the main themes in their adaptive strategies in relation to information technology by using qualitative methods, with the aim to enrich the body of

knowledge on SMEs' successful adaptive practices. In a nutshell, this master's final work attempts to answer the following research question: How did the SMEs in Macau adapt to what COVID-19 had changed with the use of information technology?

Regarding the structure of the master's final work, following the introduction, the second part will review the literature within the relevant subject areas; the third part will present the method used in the study; the fourth part will demonstrate the results which will be discussed in the fifth part and concluded in the sixth part.

2 Literature review

2.1 SMEs' adaptation and information technology in business

As Rodrigues et al. summarized, the success factors in SMEs include strategic planning, management capacity, entrepreneurship and innovation, human resources, forms of financing and network or partnerships (Rodrigues et al., 2021). Having a limited-sized nature, the leaders' resilience and entrepreneurial skills are particularly important for SMEs to confront the challenges. The attitudes toward the crisis, business characteristics, entrepreneurial characteristics, relationships with institutions, social and human capital and strategic management are identified as the main resilience factors (Portuguez & Gómez, 2020), while dynamic capability, technology capability, agile leadership and knowledge stock are highlighted for business resilience (Aldianto et al., 2021). These success factors are interconnected, and the effective combination of several factors contributes to the overall success of SMEs. Additionally, external factors such as economic conditions and market trends can also influence SME success.

Strategic adaptation could be defined as a process involving the utilization of dynamic capabilities, which are manifested through adaptive practices. Adaptive practices serve as the foundation for its abilities that empower it to adapt effectively. Dynamic capabilities are distinct from operational capabilities and refer to a company's capacity

to effectively integrate, generate and reconfigure both its internal and external resources. This adaptability allows the organization to respond and thrive under the circumstances of ever-changing business conditions. It encompasses the ability to sense and seize opportunities and threats in the business environment and then transform the company's assets and strategies to meet these challenges (Quansah et al., 2022).

New technology is essential in order to attain a robust rebound in the aftermath of the pandemic (Song & Zhou, 2020). Information technology is an essential tool for businesses today, serving a wide range of purposes across various industries. It has become an integral part of operations, allowing companies to streamline processes, make better decisions, and maintain competitiveness. Businesses utilize this technology to manage and analyze data, enhance communication and collaboration, handle customer relationships, conduct online sales, and optimize supply chains. It also plays a critical role in financial management, human resources, marketing, and customer support. Cloud computing and automation have further transformed the business landscape, offering flexibility and efficiency. Ultimately, it empowers businesses to adapt to evolving market conditions, reduce costs, and stay compliant with regulations, contributing to their overall success.

Information technology offers a mutually advantageous relationship with business resources and dynamic capabilities. Specifically, the integration of IT into SMEs fosters enhanced innovation capacity within the company and bolsters the effectiveness of business decision-making processes (Prasanna et al., 2019). In addition, the success of a business idea, an innovation or implementation of new technologies is highly related to the company's business model. Concerning adaptation to the changing environment, the business model innovation is crucial in the sense that it can respond by generating new ways leading to better value creation and capture and to balance costs and revenues (Kraus et al., 2020).

2.2 Economic environment and SMEs' post-COVID-19 adaptation in Macau

Historically, Macau's economic backbone has rested firmly on the pillars of gaming and tourism, earning it the moniker "Asia's Las Vegas". Drawing visitors from mainland China and across Asia, these industries have long been instrumental in propelling Macau's economic prosperity. In 2021, the Gaming & Junket sector accounted for 25.8% of all economic activities in Macau (Government of Macao Special Administrative Region Statistics and Census Service, 2022). Despite the impressive economic growth brought by the booming gaming industry, scholars and practitioners doubt the sustainability of this highly dependent economy. The decline in the quality of life for locals, the erosion of their cultural identity, and the displacement of local small and medium-sized businesses are some of the challenges Macau is facing (Sheng & Gu, 2018).

While SMEs make up a substantial 99% of all businesses in Macao and contribute significantly to job creation, their current influence on the local economy remains limited. The industry faces challenges in terms of growth and lacks the dynamic vigor needed to make a substantial impact on Macao's economic landscape (Cheng et al., 2022). The particular obstacles the Macau SMEs are facing consist of weak innovation and transformation ability, lacking modern business management and brand concept, low application rate of information systems, limited access to resources and slow reaction to changes (Cuervo & Cheong, 2017).

In a bid to achieve a healthier and stronger economy, the Macau government has embarked on a path of economic diversification in recent years. This forward-looking approach involves fostering cultural and creative enterprises, expanding financial services and nurturing the growth of technology startups within the region. As claimed in the Policy Address for the Fiscal Year 2023 of the Macao Special Administrative Region, the government will remain committed to assisting SMEs in harnessing the potential

emerging from the expansion of the non-gaming sector, including measures of tax reduction, waiver of charges, among others (MSAR, 2022).

The economy of Macau was hit severely by COVID-19 due to its significant reliance on the tourism industry. With strict travel restrictions and lockdowns in place due to the pandemic, the number of visitors significantly decreased. This had a cascading effect on SMEs in sectors like hospitality, retail, and entertainment. Many businesses experienced a drastic drop in revenue, which led to financial stress and in some cases, closures. The Macau government implemented various support measures to help SMEs weather the COVID-19 storm. These included financial aid, tax relief, and low-interest loans. While these measures were helpful, they may not have been sufficient to cover the losses incurred by many businesses (Centro de Pesquisa Estratégica para o Desenvolvimento de Macau, 2021).

COVID-19 has hastened significant shifts in the way businesses operate, pushing them towards adopting new digital strategies and methods (Almeida et al., 2020). In response to the negative effects of the pandemic, some SMEs developed adaptive plans such as launching their own website, promoting on social media and offering delivery service (MBeditor, 2020).

Note that the situation is dynamic and the impact of COVID-19 on Macau's SMEs would continue to evolve, it would be important to stay up-to-date. Therefore, in this master's final work, the experiences and opinions of Macau entrepreneurs from various sectors will be collected and analyzed, intending to enrich the body of knowledge with the latest data and hoping to bring new insights for future studies.

3 Methods

This master's final work is a qualitative study based on data collected through semi-structured interviews, conducting a thematic analysis with 7 phases, which are

preparing and organizing the data for analysis, transcribing the data, becoming familiar with the data, memoing the data, coding the data, moving from codes to categories and categories to themes and making the analytic process transparent (Lester et al., 2020).

In regards to data collection, the target population are entrepreneurs in Macau, who run a business that had been founded before or during COVID-19 and survived the pandemic. In addition, since the objective of this master's final work is to discover the SMEs' adaptation in Macau, while it is impossible to interview all the entrepreneurs, the samples are preferably as diverse as possible in terms of the nature of the businesses to minimize bias and achieve data saturation.

To identify participants with specific characteristics and ensure that they fulfilled the criteria of selection, a few questions regarding the founding date, the size and the main businesses of entrepreneurs' companies had been asked before confirming the interviews. The initial participant was selected through convenient sampling. After the initial data collection, the data has been thoroughly analyzed to identify patterns that may require further exploration. Based on this analysis, the next participant was referred by the first interviewee and purposefully selected with the intention of gathering additional insights for the emerging patterns. This process continues iteratively; the following interviewees were selected based on the evolving findings from the prior data with the goal of refining the understanding of the research topic, until the same patterns emerged repeatedly in the data collected and the additional examples replicated previously identified patterns instead of bringing new ones. (Campbell et al., 2020).

Prior to the interviews, a semi-structured interview guide had been developed based on the literature review. As mentioned in the previous section, in the extant papers, the importance of being resilient and adopting new technologies has been discussed. With the aim to answer the research question of this master's final work, the interview will focus on real-world practices, personal experiences and thoughts of the entrepreneurs concerning the COVID-19 pandemic and their businesses in Macau, intending to discover their reactions to this ever-changing entrepreneurial environment and their

strategies and further explore the SMEs' post-COVID-19 adaptation and its relation to information technology:

1. As we can see, in recent years COVID-19 brought a lot of changes to Macau. How did it affect your company?
2. Among the changes you mentioned, what did you identify as opportunities / threats?
3. Do you think the use of information technology helped you lead your company to survive COVID-19 / overcome the obstacles / grasp the opportunities in any way? Please explain how.

Before each interview started, a written consent form was sent to the participants to sign in order to ensure that they understood the purpose and the procedure of the interview. The interviews were conducted online via Zoom or Wechat, as the participants' wish. The interview language was Cantonese, which is the mother tongue of the interviewer and the interviewees and can lead to more natural and genuine responses, as the interviewees can express themselves more fluently and accurately.

The interviews were audio-recorded by a pre-installed voice recording app on mobile phone. To convert the recording into usable text, the first draft of the transcript was generated with AI technology (i.e. iFLYTEK transcribe service). The draft was then proofread and rewritten manually by the author in order to make sure the interview was transcribed verbatim and correctly and to get familiar with the data.

The first stage of data coding was performed in an unstructured manner, generating short and descriptive codes. During this procedure, the material was characterized line by line with a low level of abstraction, dividing the data into smaller and meaningful segments, which were mostly short phrases in this work. The codes were marked in the same file of the transcripts, separating two columns, having the raw data on the left and the codes on the right, which could make the comparison easier.

Secondly, important codes and reflections were identified and the codes which were most relevant to the topic were selected and grouped together by their similarities. As codes accumulated, similar codes were grouped together to form initial categories. The categories were then conceptualized and encapsulated. These categories were not predetermined but emerged from the data and were allowed to evolve as the coding process proceeded.

Finally, after repeatedly comparing the raw material, codes and categories and abducting in all stages of the analysis process, the link among the key themes were found and described. In the meantime of the whole research process, memos and observational notes were made to aid the interpretation and integration.

The process of transcribing and data analysis was performed in Chinese in order to keep the originality and validity of the interviewees' words. After discovering and extracting the essential ideas, the most representative excerpts from the transcript were translated and explained in English in the next section.

4 Results

In total, four in-depth one-on-one interviews have been conducted. Each interview lasted 15 to 30 minutes and each transcript was approximately 20 pages long. The basic information of these 4 entrepreneurs and their business are presented below as A, B, C, D:

- A was founded in 2020. It is a franchise education institution that aims to help students get better grades in school. There are 2 full-time employees at the moment.
- B was founded in 2013. The core business is buying, investing, empowering and selling intellectual properties. There are 20 full-time employees and up to 400 casual workers and freelancers according to the situation.

- C was founded in 2019. It is a yoga studio having 4 full-time employees and 15 part-time instructors.
- D was founded in 2019. It is a company offering online marketing and digitalization strategies to its clients. There are 6 employees at the time of writing.

After the process of data analysis, 3 main themes have been discovered.

4.1 COVID-19 was a huge challenge

"The Education and Youth Development Bureau of Macau enforced a school closure and restricted everyone from going out. The students could not come to class. Our revenue was zero while we still had to pay rent." - A

In the interviews, Macau entrepreneurs from different perspectives share their experiences during the COVID-19 pandemic, particularly regarding the impact on their businesses. The Education and Youth Development Bureau's decision to close schools and restrict movement severely impacted the revenue for entrepreneur A, as students couldn't attend classes. The suspension of classes led to zero income, yet expenses like rent had to be maintained.

"All classes had to suspend, zero income, and still had to pay rent and salaries... It was a huge challenge. Like everything stopped, and I had to think about if I should keep going or give up." - C

Entrepreneur C faced similar adversity as entrepreneur A and expressed mixed feelings of doubt, exhaustion but also a desire to persist.

"COVID-19 completely affected our company. During the first year of the pandemic, our business was literally dead... If you asked me whether I had felt lost and made any wrong decisions, the answer was yes. Because it was not possible to predict when the pandemic was going to end." - B

Business B from another industry also experienced significant disruptions due to the pandemic and saw a sharp decline in the business, leading to feelings of disorientation and difficult decision-making. The unpredictability of when the pandemic would end added to the uncertainty.

Overall, COVID-19 presented a huge challenge to the entrepreneurs in various industries in Macau. The financial interruption was highlighted in particular, which also caused negative emotions to the entrepreneurs.

4.2 In the middle of every difficulty lies opportunity

“Now people have started to accept online classes, which should be an opportunity... Before that, we had to order paper books all the time and it could cause a massive waste of paper... Let’s take the recent typhoon as an example, for the students who took online classes, they could stay home and learn as usual, no impact at all. In contrast, the study of the students who signed up for on-campus classes was interrupted.” - A

While being asked about their adaptation, all interviewees showed an optimistic attitude. As the entrepreneur A highlighted the positive aspects of the shift to online classes brought about by COVID-19, which was seen as an opportunity to reduce paper waste and adapt to unforeseen circumstances like a typhoon. It was also pointed out that online students faced less disruption compared to those attending in-person classes.

“Thanks to COVID-19, it made me see more clearly the weakness [of the company] so that we developed a new way of operation and started using big data and algorithms to help us navigate... For example, due to the pandemic, more and more people started to have cats as their pets. It was a good opportunity to follow this trend the big data showed me and launch related products.” - B

Concerning the opinion of entrepreneur B, it was acknowledged that the pandemic exposed weaknesses in the operations but it was considered as an opportunity to innovate. Big data and algorithms have been used to adapt to changing consumer trends, such as increased pet ownership during the pandemic. This perspective highlighted the importance of adaptability and leveraging data-driven insights.

“I did not wait till the end of COVID-19 to start running [my business]. So I rented this studio in this location, which other competitors would like to rent as well, but I came here first and got it... It is easier to gain trust from clients now that the pandemic is over, because they think we have survived that and believe in our future prospects.” - C

Entrepreneur C discussed seizing opportunities during the pandemic. The interviewee took the initiative to secure a prime location, underlining the importance of proactive decision-making. It was also mentioned that the pandemic allowed the company to gain trust from clients by demonstrating resilience. This perspective emphasized the value of foresight and building trust during challenging times.

“COVID-19 was a great opportunity for us because our main business was online. Before the pandemic, most businesses in Macau only used offline and traditional ways to do marketing. Now that the restrictions forced them to switch it online and they saw the results were satisfactory. So more and more people know about it now and ask us to assist in their transformation.” - D

Entrepreneur D centered around the transformation of businesses from offline to online due to COVID-19 restrictions. The interviewee's business, which was primarily online, benefited from this shift as more businesses sought help with their digital transformation. This aspect underscored the importance of being in the right place at the right time and capitalizing on emerging trends.

4.3 Information technology attracted more and more attention in Macau

“...and now we have started doing online marketing... officially using social media this year...and started using information systems for ordering and organizing teaching materials.” - A

Regarding the adaptive strategies with a focus on information technology, the opinions of the interviewees revolved around the adoption of online marketing and information systems. Entrepreneur A started implementing information systems to streamline the process of ordering and organizing teaching materials and began using social media for official online marketing activities in the current year, which was a proactive approach to embracing digital tools for both marketing and operational efficiency.

“...we do some things online... using FaceBook, Instagram, Wechat... mainly because it is convenient for promoting and marketing... and we started using information systems for the students’ registration.” - C

Entrepreneur C was also leveraging popular social media platforms like Facebook, Instagram, and WeChat for promotional purposes due to the convenience they offer. Additionally, information systems have been applied for registration processes, which implied recognition of the effectiveness of online marketing through social media and the importance of information systems in managing administrative tasks.

“Before 2019, they (the local businesses in Macau) mainly did traditional offline marketing... COVID-19 forced them to transform and start doing online marketing... now they have seen the advantages of that and keep doing it.” - D

Entrepreneur D, as a practitioner in the information technology industry, provided a broader perspective, emphasizing the significant shift in marketing strategies within the local business landscape in Macau. Before 2019, most businesses relied on traditional

offline marketing methods. However, the COVID-19 pandemic acted as a catalyst, forcing them to transition to online marketing. Moreover, the businesses have continued with online marketing even after the pandemic, having recognized its advantages.

To conclude, in the face of the formidable challenge posed by the COVID-19 pandemic, Macau entrepreneurs encountered a myriad of difficulties, ranging from financial struggles to emotional exhaustion. The enforced closure of schools by the Education and Youth Development Bureau significantly impacted businesses, exemplified by the firsthand experiences of entrepreneurs A, B, and C, who grappled with zero income, continued expenses, and uncertain futures. However, amidst the adversity, a prevailing theme of resilience and adaptation emerged. As the entrepreneurs reflected on their experiences, a shared sentiment of determination to navigate through the crisis became evident. The middle of every difficulty, it seemed, harbored opportunities waiting to be seized. Entrepreneurs A, B, C, and D showcased remarkable optimism, highlighting the positive aspects of the pandemic-induced changes. The shift to online classes, technological innovation, proactive decision-making, and the embrace of information technology were identified as key strategies to not only survive but thrive in the transformed business landscape. The narrative weaves together the challenges faced, the resilience displayed, and the opportunities seized, illustrating a dynamic and adaptive response by Macau entrepreneurs in the wake of the unprecedented disruptions brought about by the global health crisis.

5 Discussion

In the context of Macau's economic environment, historically reliant on gaming and tourism, the pandemic exacerbated challenges for SMEs (Government of Macao Special Administrative Region Statistics and Census Service, 2022; Sheng & Gu, 2018). Different sectors were affected to varying degrees; while sectors like gaming and hospitality were hit hard, others, such as pharmaceuticals and e-commerce, may have seen growth during the pandemic. The sudden disruptions and financial burdens

caused by lockdowns and restrictions made it a difficult period for the entrepreneurs to navigate.

Many SMEs in Macau traditionally conducted business in a brick-and-mortar setting. The pandemic accelerated the need for digitalization, which posed challenges for businesses that were not prepared (Etemad, 2023). The limitations and obstacles faced by Macau SMEs, as highlighted by Cheng et al. (2022) and Cuervo & Cheong (2017), further underscore the need for adaptive strategies, especially in the face of unexpected disruptions like the COVID-19 pandemic.

The experiences of SMEs in Macau during the COVID-19 pandemic, as discussed by entrepreneurs A, B, C, and D, align closely with the literature on SMEs' adaptation and the role of information technology in business resilience. The interviewees collectively highlighted the adaptability and resilience of entrepreneurs and businesses in response to the changing environment caused by the pandemic. They showed that while COVID-19 brought many difficulties, it also created opportunities for innovation, growth, and positive change. The key is that being flexible, proactive, and open to change can lead to success even in the face of adversity.

The success factors outlined by Rodrigues et al. (2021), including strategic planning, management capacity, entrepreneurship, and innovation, proved crucial for SMEs in Macau grappling with the unprecedented challenges brought about by the pandemic. The resilience factors identified by Portuguez & Gómez (2020), such as attitudes toward the crisis, business and entrepreneurial characteristics, played a pivotal role in shaping how these entrepreneurs responded to the adversity.

The literature emphasizes the importance of dynamic capabilities and technology capability for business resilience (Aldianto et al., 2021). Entrepreneur A's adoption of online classes and the utilization of information systems for ordering and organizing teaching materials align with the notion that dynamic capabilities involve adapting practices and effectively integrating internal and external resources (Quansah et al.,

2022). This adaptive approach not only helped mitigate the immediate impact of COVID-19 on traditional classroom learning but also presented an opportunity to reduce paper waste and adapt to unforeseen circumstances, such as typhoons.

Entrepreneurs B, C, and D's responses align with the literature on the pivotal role of information technology in business resilience (Song & Zhou, 2020). Entrepreneur B's use of big data and algorithms to identify trends, particularly the surge in pet ownership during the pandemic, exemplifies the integration of IT for strategic decision-making. Entrepreneur C's emphasis on gaining trust by demonstrating resilience during the pandemic highlights the importance of leveraging technology for reputation management. Entrepreneur D's acknowledgment of the transformative power of online marketing and digital transformation for businesses in Macau reflects the broader trend observed globally due to COVID-19 (Almeida et al., 2020).

The proactive adoption of online marketing, information systems, and the recognition of business model innovation as a response to changing environments align with the insights provided by Prasanna et al. (2019) and Kraus et al. (2020). The dynamic interaction between information technology and business resources, as described in the literature, is evident in the experiences of Macau entrepreneurs who seized opportunities presented by the pandemic to enhance their innovation capacity and decision-making processes.

The COVID-19 pandemic served as a catalyst for the adoption of information technologies, which will likely continue to play a pivotal role in businesses in Macau. As Song and Zhou suggested, new technologies are pivotal for the businesses to rebound after suffering the crises (Song & Zhou, 2020). For the interviewees, embracing online marketing and information systems not only helps businesses survive during challenging times but also positions them for long-term growth and success in an increasingly digital world. It's a positive step toward staying competitive and relevant in the evolving business landscape. The importance of leveraging information technology

tools for reaching a wider audience, promoting products or services, and improving operational efficiency should not be neglected (Prasanna et al., 2019).

Overall, the experiences of SMEs in Macau during COVID-19, as narrated by entrepreneurs, align with the theoretical frameworks presented in the literature. The challenges faced, adaptive strategies employed, and the role of information technology in resilience underscore the interconnected nature of success factors for SMEs, especially in the ever-changing business landscape influenced by external factors such as economic conditions and global events. As the situation continues to evolve, the insights gained from this study contribute to the ongoing discourse on the adaptability of SMEs in response to unprecedented disruptions, providing valuable lessons for future research.

6 Conclusion

Despite having limitations, as the findings could be constrained in their applicability due to the qualitative nature of the study and the relatively small size of the sample, and that due to the unique economic and geographic characteristics of Macau, the results of this study might be limited in terms of generalization, this paper has provided insights into the experiences and strategies of the SMEs in Macau in response to the challenges posed by the COVID-19 pandemic, with a focus on information technology. Considering the limitation of this master's final work, it would be interesting that the future study could include more diverse and longitudinal examples, which may further minimize possible bias and enhance applicability.

It is evident that the pandemic presented significant challenges to SMEs in Macau and affected various sectors of the economy. The sudden disruptions and financial burdens caused by lockdowns and restrictions made it a difficult period for the entrepreneurs to navigate. However, amidst the challenges presented in the results, the entrepreneurs

found opportunities for growth and innovation. The interviews with entrepreneurs who led their business survive the pandemic in Macau revealed an optimistic attitude and a willingness to adapt to the changing circumstances.

The importance of adaptability, resilience, and proactive decision-making emerged as key themes in the responses of the interviewed entrepreneurs. The ability to pivot and embrace new technologies and approaches proved essential for SMEs in Macau to survive and thrive in a challenging environment. Furthermore, the paper highlighted the growing importance of information technology, particularly online marketing through social media platforms and the application of information systems, in the business landscape of Macau.

Even after the pandemic, businesses continued to recognize the advantages of information technologies for reaching a wider audience, connecting with potential customers and improving the operational efficiency. As SMEs continue to navigate the ever-changing business environment, their ability to adapt and innovate is expected to remain crucial for long-term success.

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