The Effect of the Pandemic on Micro, Small, and Medium Enterprises in CALABARZON.

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Abstract

This study aims to view the effects of the Coronavirus Disease 2019 (COVID-19) pandemic on Micro, Small, and Medium Enterprises (MSMEs), focusing on the area of CALABARZON, wherein it is the epicenter of the pandemic. This study aims to understand the impact of COVID-19 in terms of MSMEs' performance, measured by their ability to generate employment and sales, along with how their operation responds to the effects of the pandemic. The study would like to state if there is a connection between the restrictions and limited activities of the COVID-19 pandemic to the state and condition of businesses in CALABARZON, particularly those belonging to the micro, small and medium-scale one. This study also shows the bigger picture of the COVID-19 pandemic affecting the business sector in the provinces.
Keywords: COVID-19, MSMEs, Sales, Employment, Innovation

INTRODUCTION

Difficult situations are no stranger to Filipinos, especially since the COVID-19 pandemic started earlier in 2020. With the scarcity of employment opportunities leading to the decreasing purchasing power of the citizens due to the increasing prices of essential goods and services, the growing presence of MSMEs and their byproducts became a beacon of hope for many Filipinos. MSMEs provided them with employment opportunities and an income, albeit minimum.

Micro, Small, and Medium Enterprises (MSMEs) are considered significant contributors to the growth of the economy of many countries, in which the Philippines is no different. These MSMEs are known to be the generator of jobs for most Filipinos; predominantly that MSMEs are composed mainly of Wholesale and Retail businesses amounting to 46.1% (MSMEs in the Philippines, n.d.). MSMEs are also significant contributors to the GDP of the Philippines, wherein according to the Congressional Policy and Budget Research Development (2020), in 2018, an additional 38.7% observed in the total value added to the GDP is generated through MSMEs. It has also generated 5.7 million jobs or 63.2% of the total employment in the Philippines. However, the sector of MSMEs is not an exemption from the effect of the global pandemic that became a burden to most sectors of the Philippine economy. With the continuing crisis that the pandemic constantly provides us with, Filipinos are now more reluctant about their disposable income, unlike in the pre-pandemic. The pandemic resulted in a decrease in the revenue of MSMEs, especially in tourism, due to the travel limitations imposed by the government; resorts and travel-based organizations and businesses are encountering mass layoffs and business closures since MSMEs are financially fragile.

Another economic obstacle that individuals had to face was the implementation of lockdowns; The Enhanced Community Quarantine (ECQ), one of the two lockdown procedures used, is described by the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF) as one in which everyone was advised to remain at home and social events were prohibited. There can only be one representative for each household to go outside to purchase the necessities needed in the household. The General Community Quarantine (GCQ) is where gatherings are allowed, but to an extent, the elderly and the young are encouraged to stay home. These lockdowns result in a severely limited movement of people. Except for the "essentials," every industry has had its share of the temporary shutdown or reduced operations. Additionally, there are recently developed categories of Alert Level Status according to the IATF; similar to the

implemented lockdowns, the alert level status mitigates the spread of virus transmission within specific areas.

Around the world, many MSMEs have already ceased trading, and many more are either on the cusp of closure or remain highly vulnerable. Surviving firms will also have to deal with a changed business landscape in the future, with many old patterns of sales, distribution, and consumption being substantially and permanently altered. These changes pose challenges for the owner-managers of such enterprises, and these problems are particularly acute in less developed economies with many micro and small businesses. (UNCTAD, 2022)

The Philippines' economy contracted by -9.5 percent in 2020, that much since World War II. The economy continued to decline in the first quarter of 2021 (-4.2 percent) before recovering in the second quarter with 11.8 percent growth. Following a surge of new cases caused by the Delta variant, the government imposed the highest category of lockdowns over Metro Manila in April.

Due to restrictions on mobility and the problems regarding supply chains, there was a significant decrease in demand which affected small businesses. According to a survey by World Bank in November 2020, 7% of the 13,000 firms in the Philippines reported that they would be closing permanently. Because of the small size of their customer base and limited financial resources, small firms were especially vulnerable to the pandemic. This was particularly alarming since 99% of registered firms in the Philippines belong to micro, small, and medium enterprises (PSA cited in DTI, 2019). According to an Asian Development Bank study, when the most severe lockdowns were in effect in 2020, nearly 70% of small businesses were compelled to close their doors (Shinozaki, 2020).

This study intends to examine the COVID-19 pandemic's effects on micro, small, and medium-sized businesses in CALABARZON, the pandemic's epicenter. It aims to (1) find the relationship between the performance of MSMEs, measured through the number of employees generated and the number of COVID cases, and (2) the relationship between the performance of MSMEs and the alert level status of the area, as well as (3) the performance of MSMEs, and the (3rd variable)

According to Flaminiano et al. (2021), last September, 30.8 percent of businesses said they needed more than PHP100,000 (USD2,000) to return to or maintain full operations; by April 2021, that number had risen to 47.3 percent. Despite increasing average monthly net profits for 51.2 percent of businesses from Q3 2020 to Q1 2021, financial difficulties persist, partly due to more significant costs associated with staying afloat in the face of shifting market conditions.

People's lives all across the world have changed significantly as a result of the COVID-19 pandemic's escalation. Transportation was restricted, communication was cut off, education became so difficult that many students had to give up their studies for lack of money, and some people's daily movements became painful and tragic. "COVID-19 (Coronavirus) has altered daily life and influenced the global economy," claims recent research. This pandemic has affected a large number of individuals, and the spread of the sickness is causing many of them to grow ill or die. Fever, a cold, a cough, and breathing issues are among this infection's most prevalent symptoms, which ultimately result in pneumonia. Vaccines are sadly not yet available for this readily spread illness, which is impacting people for the first time. The focus is on taking extreme care, including thorough hygiene procedures (e.g., routine hand washing, avoiding face-to-face interaction, etc.), social withdrawal, donning masks, and other measures. Regionally, this pathogen is spreading rapidly (Haleem & Javaid, 2020). The business sector has been significantly impacted by COVID-19, not just for managers and investors but most crucially for the

employees who are the backbone of these companies. The pandemic had several negative repercussions on the business sector, especially on micro, small, and medium-sized businesses.

Because of the epidemic of coronavirus illness (COVID-19), most economies around the world and the Philippines have been highly impacted. One of the areas of the COVID-19 outbreak that has been severely impacted is Micro, Small, and Medium-Sized Enterprises (MSMEs). According to a poll performed in the Philippines in February 2020, about 65 percent of respondents predicted that the COVID-19 pandemic would significantly impact the national economy. The enforcement of lockdowns throughout the country by the authorities has harmed the livelihood of the people. (Statista,2021). Luzon Island in the country was placed under a total complete lockdown between March and April of 2020, with only a few exceptions that limited the mobility of the people situated in the area. With the implementation of lockdowns, the employment rate decreased abruptly, with estimates stating that up to a million individuals lost their jobs. Furthermore, the implementation of community quarantine would bear devastating aggregate losses in the gross value added of three billion Philippine pesos in each major sector of the country. As an outcome of these circumstances, there were disruptions of supply lines, with economies being shut down virtually for a long time, and financial markets were placed in shambles. It is perceived that the world economy will undergo a recession in April 2020, a few months after discovering the first confirmed cases. There is a possibility to see two sides of a community lockdown: the slowing down of transmission of the virus, leading to a decrease in the number of affected people, and allowing the health system to administer those infected properly. On the other hand, lockdowns hinder individuals' mobility and limit their engagement in economic activities, which leads to harming the economy. According to the World Health Organization (WHO), COVID-19 is an illness that is dispersed abruptly, and cannot be contained, which results in increased quarantine and lockdowns.

This research study investigates the effect of the COVID-19 epidemic on the MSMEs in CALABARZON, from the first quarter of 2020 up to the third quarter of 2022. Specifically, it focuses on the impacts on companies and particular industries. Additionally, it is expected to contact company owners as its primary audience to convey the necessity of being equipped to encounter these circumstances. Recognizing and evaluating the impact and consequences of COVID-19 on the communities and economies are necessary for aiding and constructing the actions to the situation for local government units and partners to guarantee the safety of the individuals throughout the recovery and restoration process (UNDP, 2020).

1.   2. SCOPE AND LIMITATION

This study focuses on the COVID-19 Pandemic's impacts on CALABARZON's micro, small, and medium-sized businesses. It includes their profile in terms of age, sex, civil status, capitalization, type of business enterprise, number of workers, and their acquired sales.

The subjects of this study consist of owners of micro, small and medium-sized enterprises in CALABARZON. This study was strictly delimited on the effects of the COVID-19 Pandemic on the micro, small and medium business enterprises in CALABARZON.

1.   3. SIGNIFICANCE OF THE STUDY

This study and its results will be beneficial because they will focus on the effects of the COVID-19 Pandemic on the micro, small and medium-sized business enterprises in CALABARZON.

Hence, the following will stand to benefit from this study.

OWNERS OF BUSINESS ESTABLISHMENTS AND MEMBERS OF THE BUSINESS SECTOR. The result of this study will benefit those who belong to the line of the business industry because they will be aware of the effects of the pandemic. This will also serve as preparation for the upcoming unworthy events that may come.

PEOPLE OF CALABARZON REGION. The result of this study will benefit and inform them of the effects of the COVID-19 pandemic in their region, particularly in the sector of micro, small and medium business enterprise.

FUTURE RESEARCHERS. The outcome of this study could serve as baseline data to improve the readiness of the government sector to address this kind of pandemic or any other calamities that may occur in the near future.

2. REVIEW OF RELATED LITERATURE

This chapter presents the literature and studies taken from different books and other publications from various libraries as well as the data from the internet which are found relevant for the conceptualization of the study as well as for the essential interpretation of the findings to support the research topic and develop a comprehensive summary.

2.1 Number of COVID-19 Cases in CALABARZON to Performance of MSMEs: measured through employment generation and sales

Provided that the job proximity of MSMEs is remotely available, it is a great contributor to the country's employment rate. It generated approximately two-thirds of the country's employment and provided one-third of its income. (Philippine Department of Trade and Industry, 2003, as cited in Garambas, 2021.) According to the United Nations Conference on Trade and Development (UNCTAD), some of these MSMEs are informal, wherein they are capable of self-employment, i.e., Sari-sari stores and family-owned businesses. Thus, MSMEs have become a critical sector in the economy as it aids the masses, acting as a source of income for those individuals who did not reach certain educational attainment and the poor. (Ahmad, 2016); The informal facet of MSMEs was also considered a way of alleviating poverty, as Gunu (2010), as cited in Ahmad (2021), stated that there are numerous micro-solutions, rather than performing one-fits-all solutions that cannot solve mass poverty. In Gunu's assumption, the masses will encourage and nurture self-employment if there is proper development for entrepreneurship in microenterprises.

However, for the proper facet of MSMEs, the by-products of the pandemic, such as implementing social distancing and confinement, lead to MSMEs being prone to mass employee layoffs compared to larger firms for the reason of lack of cash funds and the direct impact on the major divisions of MSMEs, such as tourism, transportation, and retail and trade, the characteristic of MSMEs in being dependent on the global and national supply chains. The majority of the employees who work from home are less likely to acquire a high spending rate which affects companies (Parilla, 2021). According to UNCTAD, 80% of MSMEs declared their struggle solvency problems wherein their debt-to-equity ratio is unequal, with their debt being the heavier side.

In terms of the number of sales earned by MSMEs, it is significantly impacted by the restriction or discontinuation of operating hours. (Syuhada et al., 2013; Novikasari et al., 2021; Latifah et al., 2019; Miradji et al., 2020, as cited in Andriyani et al., 2021). Considering that sales are one of the major indicators of the sustainability of businesses, a business with a relatively high amount of sales will result in a higher chance of sustainability in the long run. (Olson et al., 2003; Rezaee,

2016, as cited in Andriyani et al., 2021). Additionally, sales can be recognized as fuel for firms as it aids in the movement of the facets of a firm, with the restriction implemented due to increased transmission of the virus, and the fragile financial skeleton that MSMEs possess, most of these firms are drastically affected. Given the small margins on which most MSMEs trade, their extremely limited financial reserves (if any), and their limited access to loan financing, many small businesses are at risk of failing when sales income declines. This poses the single biggest risk to the continued economic viability of the majority of the MSME sector as a whole. (United Nations, 2022).

H.1: The number of COVID-19 Cases in the provinces of CALABARZON decreases the performance of MSMEs, focusing on the generation of employment and sales.

2.2 Alert Level Status of Provinces in CALABARZON to Performance of MSMEs: measured through employment and sales generation.

The disease's influence on society and the economy may be seen in global city lockdowns, labor mobility restrictions, travel bans, airline suspensions, and, most crucially, the economic slump. Furthermore, the International Labor Organization (ILO) estimates that 25 million people may lose their work globally, resulting in a $3.4 trillion loss in employment income (Ilo, 2020C). According to a recent Ilo poll, lockdowns affect 81 percent of all worldwide employees (about 2.7 billion people) (Ilo, 2020B).

Meanwhile, in the Philippines, in order to control the spread of the virus, the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF) adopted the guidelines for the Pilot Implementation of Alert Level System in NCR which state the following; a.) Alert Level 1 - Healthcare use is low, case transmission is low and declining, case counts are low but rising, or case counts are low and decreasing but total bed utilization and critical care unit utilization rates are rising.; b.) Alert Level 2 - Healthcare usage is low, case counts are low but rising, or case counts are low and dropping while total bed occupancy and critical care unit occupancy are rising. Case transmission is also low and declining.; c.) Alert Level 3 - refers to areas with high and/or rising case counts, increasing rates of total bed occupancy and ICU utilization.; d.) Alert Level 4 - refers to places with high and/or increasing case counts, as well as a high overall bed utilization rate and critical care unit use rate; e.) Alert Level 5 - refers to places where case counts are concerning, with overall bed utilization rate and intensive care unit usage rate both at critical levels.

Governments have been compelled to adopt these various levels of confinement measures which restricted mobility and household activities. South Asia has the most stringent containment measures and a drop in mobility within the area, owing largely to India's rigorous lockdown policies. Private consumption fell dramatically as more people stayed at home (Kumari, 2021).

Many microenterprises and SMEs have suffered significant revenue losses (one-third feared going out of business within one month), and many of these businesses have closed due to restrictions. The duration of confinement measures and the resilience of businesses will determine whether the shutdown is temporary or will result in business liquidation or insolvency. The pandemic has also resulted in severe job and income losses, with devastating effects on small businesses and microenterprises. The fast-escalating levels of job losses in such businesses point to a grave worldwide unemployment problem (Kumari, 2021)

Customers have increased online-based buying, web-based media use, web communication and teleconferencing, and streaming of videos and films as a result of the COVID-19 pandemic's

necessity for social distancing, lockdowns, and other measures. Both business-to-business (B2B) and business-to-consumer (B2C) e-commerce have increased as a result of this. B2C sales have increased in the online sales of food, home goods, and medical supplies (Kumari, 2021).

H.2: The alert level status of provinces in CALABARZON decreases the performance of MSMEs: measured through the generation of employment and sales.

2.3 The Innovation Practices and Strategies of MSMEs in CALABARZON to Performance of MSMEs: Measured through employment and sales generation.

SME PERFORMANCE AND INNOVATION PRACTICES

Researchers defined success as obtaining a set of desirable outcomes resulting from achieving marketing targets (Chittithaworn et al., 2011). According to Yldz et al. (2014), performance refers to an organization's ability to carry out its activities effectively, achieving its stated goals. (Mahmudova & Kovács, 2018) Achieving a high level of performance inherently signals enterprise success. Measuring an organization's performance can help to improve the good parts of its operations while also allowing for corrective action to address flaws (Mahmudova & Kovács, 2018).

According to published studies, innovation capabilities have a favorable impact on SME success (O'Cass & Sok, 2014; Oura et al., 2016; Zhang, et al., 2018). The efforts made to develop various innovations, according to Zulu-Chisanga et al. (2016), are the key reason for the improvement in SMEs' financial metrics. Previous research has found a link between SMEs' innovation capacity and their success (O'Cass & Sok, 2014; Oura et al., 2016; Zhang et al., 2018). As a result, we claim that SMEs' innovation strategies can favorably impact business performance in all environmental scenarios, including the COVID-19 pandemic.

SME SURVIVAL AND INNOVATION PRACTICES

SME survival is threatened during times of crisis (O'Reilly III & Tushman, 2011). Crises hinder the growth of SMEs and imperil their projects because their detrimental effects permeate every aspect of the external business environment (Dhochak & Sharma, 2015). For instance, SMEs' access to funding is constrained during times of crisis because of the poor performance of the capital markets, a lack of pertinent information, and flaws in several economic components (Bester & Hellwig, 1989; Binks et al., 1992; Cowling et al., 2012; Hillier & Ibrahimo, 1993; Mason & Harrison, 2015).

Numerous studies have demonstrated the link between corporate innovations and survival. Any company's survival depends on its ability to innovate (Ortiz-Villajos, 2014). As a result, this study contends that SMEs' different creative initiatives to mitigate the adverse effects of the COVID-19 pandemic can provide beneficial outcomes for these businesses.

SMES AND OUTSIDE ASSISTANCE

The assistance offered to the company is known as external support (Global, I, 2018). Governments, advocates, and other organizations and agencies offer SMEs external help to preserve their lives, accelerate their growth, foster innovation, and increase their capacities by enhancing management and marketing skills, guaranteeing that they contribute more to the national economy (Chrisman & McMullan, 2004; Mason & Brown, 2013). Governments, on the other hand, encourage SMEs to look for outside help in order to better realize their business

potential, enhance their performance, increase their competitiveness and support the expansion and growth of their businesses (Cliff, 1998; Gimeno et al., 1997; Storey et al., 2010).

Small businesses may receive direct or indirect outside support. In order to solve financing shortfalls, direct external support is frequently provided in the form of financial assistance that may be utilized for the purchase of assets, the procurement of technology, or the execution of development plans. It is frequently supplied in accordance with particular government policies or conditions imposed by financial intermediaries (Freitas & Von Tunzelmann, 2008; Nishimura & Okamuro, 2011). Many additional researchers have stressed the favorable relationship between an organization's performance and its usage of outside assistance (Bylund & McCaffrey, 2017; Matlay et al., 2005).

The researchers claim that an additional factor acting as a moderating factor is necessary to explain the relationship between innovation strategies and business performance (Covin & Slevin, 1989; Jones & de Zubielqui, 2017; Li & Atuahene-Gima, 2001). According to Rosenbusch et al. (2011), this moderator is anticipated to appear from the enterprise's surrounding environment.

Furthermore, the performance and survival of an organization are impacted by external natural conditions and catastrophes like the COVID-19 outbreak (Holmes et al., 2010). According to this study, the external assistance that SMEs got to lessen the effects of the COVID-19 epidemic increased the relationship between innovativeness and performance of an enterprise on the one hand and the relationship between innovation practices and company survival on the other.

One way in which policymakers can mitigate the effect of lockdowns on MSMEs is to encourage smaller firms to move online. This can allow them to reach new groups of potential customers, operate direct sales and delivery services to existing customers, and develop alternate access to markets. Many firms have quickly embraced this option, such as those in the food delivery, personal entertainment, and clothing sectors. Whilst many small firms may already have had some form of digital presence,186 declining sales and revenue has now led many more MSMEs to embrace digital tools on a far greater scale than has previously been the case.

H.3: The Innovation Practices and Strategies of MSMEs of provinces in CALABARZON increase the performance of MSMEs: measured through the generation of employment and sales.

2.4 Synthesis

The two independent variables (The number of COVID-19 cases in CALABARZON and the Alert level status of the provinces in CALABARZON) should affect the performance of MSMEs negatively if the variables have a positive value, indicating an inverse relationship between the variables. While the remaining independent variable (innovation strategies and practices of MSMEs in CALABARZON) should affect the performance of MSMEs positively if the variable has a positive value, indicating a direct relationship between the variables.

2.5 Theoretical Framework

Fig. 1 contains the conceptual framework showing the links between the independent variables, namely, the number of Covid-19 cases in CALABARZON, the alert level status of the provinces in CALABARZON, innovation strategies and practices of MSMEs in CALABARZON, and the dependent variable which is the performance of MSMEs in CALABARZON, measured through the generation of employment.

First, to be analyzed is the direct relationship between the number of Covid-19 cases in CALABARZON and the performance of MSMEs (H1). Then, the direct link between the alert level status of the provinces in CALABARZON and the performance of MSMEs (H2). Lastly, the direct association between innovation strategies and practices of MSMEs in CALABARZON and the performance of MSMEs (H3).

2.6 Simulacrum

Fig. 1 The conceptual research model
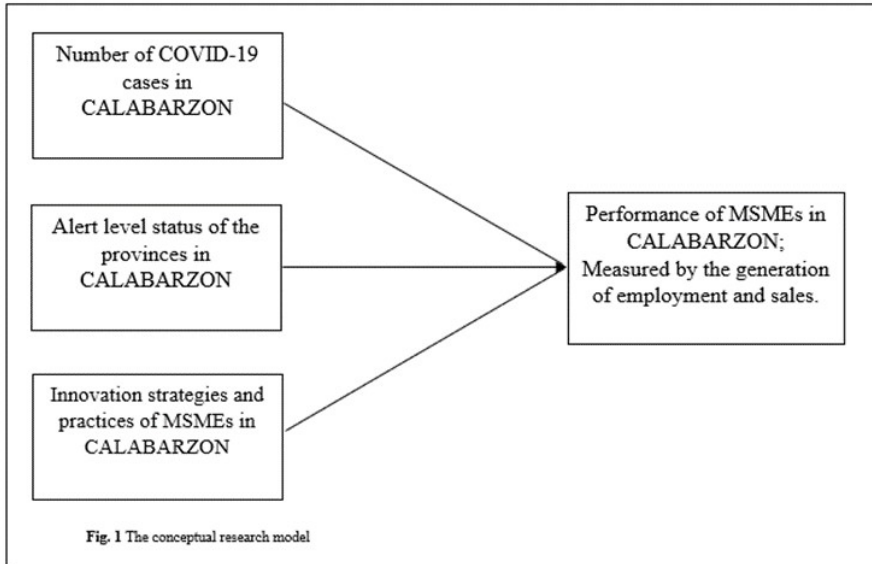
RESEARCH METHODS

This study utilizes a descriptive quantitative design, collecting primary data through an online questionnaire. This aids the researchers in gathering a range of data to help establish and describe the relationships between the variables.

The study is confined to MSMEs situated in CALABARZON, Philippines. This study utilizes a stratified random sampling method. It focuses on MSMEs owners classified by the number of their employees ranging from one (1) to 199 employees, and their capitalization ranges from less than Php 3,000,000 and Php 100,000,000. The online questionnaire was prepared through Google Forms to ease further the method of distributing and collecting data; According to Bryman & Bell, 2014, as cited in Adam & Alarifi, 2021, online questionnaires also decrease expenses and aid the process of collecting by acquiring bulk responses within a short amount of time. The online questionnaire is written in English, which can also be translated into Filipino if requested for further ease and understanding of the respondents. The online questionnaire consists of the research summary and purpose, a letter of gratitude for the respondents, permission to use confidential data, demographics, and various questions to supplement the study with its needed data. In conveying the questionnaire to the respondents, an email containing the link to the online questionnaire will be sent to randomly selected MSMEs owners.

The online questionnaire will be distributed to 384 MSMEs owners in CALABARZON, with the sample size derived from Slovin's Formula.

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where,

Z is the confidence rate or the z-value found in the Z table,
p is the estimated percentage of the population that possesses the questioned characteristic,
q is 1-p,
e is the level of precision intended.

Slovin's Formula is used to aid the researchers in calculating the optimum sample size adhering to the level of precision desired and confidence level without compromising the scale of the population, the Slovin's Formula is also an ideal formula for this significant population as there is no distinct characterization in terms of the behavior of the overall population of CALABARZON.

The researchers will be using a standard multiple linear regression which looks into the relationship between one dependent variable and two or more independent variables. The multiple regression analysis is a statistical tool that will be used to understand how much each independent variable (number of COVID-19 cases in CALABARZON, alert level status of the provinces in CALABARZON, innovation strategies and practices of MSMEs in CALABARZON) affects the dependent variable (performance of MSMEs in CALABARZON measured by the generation of employment and sales).

Online Questionnaire

The Effects of the Pandemic on Micro, Small, and Medium-Sized Enterprises in CALABARZON.

Good day! We are inviting you to participate in the making of a study regarding the "EFFECTS OF COVID-19 PANDEMIC ON THE MICRO, SMALL, AND MEDIUM-SIZED ENTERPRISES IN CALABARZON." This research aims to provide policies and recommendations that will further aid MSMEs on their journey as they recover and prepare their operations in the new normal.

In line with this, the researchers are humbly requesting a few minutes to answer this questionnaire truthfully. Rest assured that all information submitted will be treated with the utmost confidentiality and will be used solely for this purpose.

For clarifications and inquiries, feel free to contact any of the following researchers

jonamarie.fernandez.comm@ust.edu.ph

alessandramae.ramos.comm@ust.edu.ph

winonamiranda.suministrado.comm@ust.edu.ph

In accordance with Republic Act 10173, otherwise known as the Data Privacy Act of 2012, by answering this form, you consent for the above-listed researchers to access, collect, and process any information for the sole furtherance of the said research study.

_____ By completing this form, I hereby give my consent and permit the researchers to access, collect, and process the data to be gathered herein, solely for the furtherance of their research study entitled "Effects of COVID-19 Pandemic on the Micro, Small, and Medium-Sized Enterprises in CALABARZON."

By continuing, I acknowledge that I am an owner of any of the categories of MSMEs.

_____ I understand

1. **Business Location**
    1. **Cavite**
    2. **Laguna**
    3. **Batangas**
    4. **Rizal**
    5. **Quezon**
2. **How much is your capitalization?**
    1. **Below Php 3,000,000**
    2. **Php 3,000,001 - Php 15,000,000**
    3. **Php 15,000,001 - Php 100,000,000**

3. **Kind of business**
    1. **Trading/Retailing (Grocery store, Online selling, Distributorship, etc.)**
    2. **Manufacturing (Garments, Bakeries, Book Publishing, Agriculture & Fishery, etc.)**
    3. **Services (Salon, Hotel & Accommodation, Restaurants, Construction Business, Delivery Services, Transport Services, etc.)**
    4. **Other: _____**
4. **What is your estimated sales pre-pandemic? _____**
5. **Indicate your average monthly sales and average number of employees from January 2020 to September 2022. _____**
6. **How many are regular employees? _____**
7. **How many are contractual employees? _____**
8. **Number of employees pre-pandemic? _____**
9. **Indicate your estimated average number of employees from January 2020 to September 2022? _____**
10. **During the pandemic, did you provide financial assistance to your employees? In what form?**
    1. **No**
    2. **If yes, please specify.**

3. Other: _____

11. **Did you hire additional employees during the pandemic?**
   1. **Yes**
   2. **No**

12. **What were the challenges your business encountered during the ECQ (Enhanced Community Quarantine)?**
   a. **High losses**
   b. **Reduced sales volume**
   c. **Inability of meeting contract terms**
   d. **Reduction in staff numbers**
   e. **Temporary obligatory closure of business operations**
   f. **Difficulty in obtaining supplies/resources for business operations**

13. **How were you able to overcome those challenges?**
   a. **Innovation through new technology**
   b. **Innovation through new management processes**
   c. **Innovation through new products**
   d. **Innovation through new processes**
   e. **Employing new marketing strategies**
   f. **Other: _____**

14. **Were you able to get financial support to continue your business operation during the ECQ?**
   1. **Yes**
   2. **No**

15. **Aside from your business, did you engage in other business during ECQ?***
   1. **No**
   2. **If yes, please specify**
   3. **Other: _____**

RESULTS AND DISCUSSION

The undisciplined transmission of COVID-19 became an invasive threat to most industries shortly after its first appearance. As the spreading of COVID continued, it began to diminish and dissolve more businesses, especially MSMEs.

The paper aims to discover the challenges faced by the MSMEs situated in CALABARZON, which is the epicenter of the COVID-19 Pandemic, covering the area of one of the highest COVID cases in the country, therefore having the most effect on the industry. The researchers intend to provide policies and recommendations to serve as a guide for future and present MSME owners to exercise their activities in the new normal. In acquiring the needed information to present and provide the recommendations properly, the researchers conducted an online survey utilizing stratified random sampling. Upon completing the survey, the researchers gathered the following data:

Table 1. Distribution of MSMEs

Business Location	Frequency	Percentage Frequency
Cavite	10	17%
Laguna	8	13%
Batangas	11	18%
Rizal	6	10%
Quezon	25	42%
	60	100%

Table 2. Business capitalization

Starting Capital	Frequency	Percentage Frequency
Below Php 3,000,000	26	43%
Php 3,000,001 - Php 15,000,000	19	32%
Php 15,000,001 - Php 100,000,000	15	25%
	60	100%

Table 3. Classification of Business

Business	Frequency	Percentage Frequency
Trading/Retailing	30	50%
Manufacturing	13	22%
Services	17	28%

	60	100%

Challenges	Frequency	Percentage Frequency
High losses	31	17%
Reduced sales volume	48	26%
Inability of meeting contract terms	6	3%
Reduction in staff numbers	18	10%
Temporary obligatory closure of business operations	33	18%
Difficulty in obtaining supplies/resources for business operations	43	24%
Others	3	2%
	182	100%

Table 5. Innovation Practices Exercised to Overcome Challenges

Practices	Frequency	Percentage Frequency
Innovation through new technology	24	17%
Innovation through new management processes	27	20%
Innovation through new products	21	15%
Innovation through new processes	22	16%

Employing new market strategies	38	28%
Others	6	4%
	138	100%

Table 6. MSME Owners' Decision to Invest in Other Businesses

Answer	Frequency	Percentage Frequency
Yes	16	27%
No	44	73%
		100%

Figure 1. Descriptive Statistics

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                Mean        Median      Minimum      Maximum
covid           8223.7      3706.0      0.0000       42705
alert           4.0909      6.0000      0.0000       8.0000
sales           9.2771e+05  77273       0.0000       4.7727e+06
employment      4.8788      1.0000      1.0000       30.000
innovation      0.27273     0.0000      0.0000       1.0000

                Std. Dev.   C.V.        Skewness     Ex. kurtosis
covid           10663       1.2966      1.6618       2.2066
alert           3.1361      0.76661     -0.048212    -1.6792
sales           1.5178e+06  1.6360      1.4809       0.68307
employment      6.4409      1.3202      2.1384       5.0426
innovation      0.45227     1.6583      1.0206       -0.95833

                5% perc.    95% perc.   IQ range     Missing obs.
covid           0.0000      36397       12028        0
alert           0.0000      8.0000      6.0000       0
sales           0.0000      4.6772e+06  1.3676e+06   0
employment      1.0000      18.800      5.5000       0
innovation      0.0000      1.0000      1.0000       0
```

Figure 2. Effect of COVID Cases, Alert Level, and Innovation on Sales

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```
Model 80: OLS, using observations 2020:01-2022:09 (T = 33)
Dependent variable: sales

                    coefficient      std. error    t-ratio    p-value
          ─────────────────────────────────────────────────────────────
          const          1.03506e+06    420770        2.460      0.0201   **
          covid         -1.45025         21.2947      -0.06810    0.9462
          alert       -148542           83917.0       -1.770      0.0872   *
          innovation     1.87824e+06    487870         3.850      0.0006   ***

Mean dependent var    927706.2    S.D. dependent var     1517760
Sum squared resid     2.69e+13    S.E. of regression     963340.8
R-squared             0.634908    Adjusted R-squared     0.597140
F(3, 29)              16.81071    P-value(F)             1.61e-06
Log-likelihood       -499.3723    Akaike criterion       1006.745
Schwarz criterion    1012.731     Hannan-Quinn           1008.759
rho                  -0.004858    Durbin-Watson          1.974218

Excluding the constant, p-value was highest for variable 1 (covid)
```

Figure 3. Effect of COVID Cases and Alert Level on Employment

```
Model 81: OLS, using observations 2020:01-2022:09 (T = 33)
Dependent variable: employment

                    coefficient      std. error    t-ratio    p-value
          ─────────────────────────────────────────────────────────────
          const          6.03986       2.05706        2.936      0.0064   ***
          covid         -1.91606e-05   0.000104105   -0.1841     0.8553
          alert         -0.668177      0.410252       -1.629     0.1142
          innovation     6.34315       2.38510         2.659     0.0126   **

Mean dependent var    4.878788    S.D. dependent var     6.440873
Sum squared resid     643.2216    S.E. of regression     4.709570
R-squared             0.515470    Adjusted R-squared     0.465346
F(3, 29)              10.28392    P-value(F)             0.000089
Log-likelihood       -95.82967    Akaike criterion       199.6593
Schwarz criterion    205.6454     Hannan-Quinn           201.6735
rho                   0.153673    Durbin-Watson          1.204278

Excluding the constant, p-value was highest for variable 1 (covid)
```

Figure 4. Testing for Multicollinearity

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```
Variance Inflation Factors
Minimum possible value = 1.0
Values > 10.0 may indicate a collinearity problem

      covid    1.778
      alert    2.388
 innovation    1.679

VIF(j) = 1/(1 - R(j)^2), where R(j) is the multiple correlation coefficient
between variable j and the other independent variables

Belsley-Kuh-Welsch collinearity diagnostics:

                        --- variance proportions ---
  lambda     cond      const    covid     alert innovati~
   2.570    1.000      0.021    0.038     0.020    0.009
   1.106    1.524      0.008    0.042     0.009    0.293
   0.245    3.239      0.122    0.801     0.090    0.184
   0.079    5.708      0.849    0.120     0.882    0.514

 lambda = eigenvalues of X'X, largest to smallest
 cond   = condition index
 note: variance proportions columns sum to 1.0
```

Figure 5. Testing for Heteroskedasticity

```
Breusch-Pagan test for heteroskedasticity
OLS, using observations 2020:01-2022:09 (T = 33)
Dependent variable: scaled uhat^2

              coefficient    std. error    t-ratio    p-value
  -----------------------------------------------------------------
  const        1.63916       0.299124        5.480    6.01e-06  ***
  covid       -3.70826e-05   1.72309e-05    -2.152    0.0396    **
  alert       -0.0696318     0.0607768      -1.146    0.2610

  Explained sum of squares = 8.98712

Test statistic: LM = 4.493561,
with p-value = P(Chi-square(2) > 4.493561) = 0.105739
```

Figure 6. Testing for Autocorrelation

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```
Breusch-Godfrey test for autocorrelation up to order 12
OLS, using observations 2020:01-2022:09 (T = 33)
Dependent variable: uhat

                coefficient      std. error      t-ratio     p-value
       ---------------------------------------------------------------
       const        333859          642003         0.5200      0.6098
       covid       -8.11966         27.7452       -0.2927      0.7733
       alert       -19334.2         121058        -0.1597      0.8750
       innovation  -446530          726729        -0.6144      0.5471
       uhat_1        0.0101774      0.249195       0.04084      0.9679
       uhat_2       -0.345429       0.257015      -1.344       0.1966
       uhat_3       -0.0828725      0.297836      -0.2782      0.7842
       uhat_4       -0.491444       0.284094      -1.730       0.1018
       uhat_5        0.0300860      0.318504       0.09446      0.9258
       uhat_6       -0.400168       0.311894      -1.283       0.2167
       uhat_7        0.0983268      0.337876       0.2910       0.7746
       uhat_8       -0.145911       0.382919      -0.3810       0.7079
       uhat_9        0.246741       0.397690       0.6204       0.5432
       uhat_10      -0.0817732      0.414042      -0.1975       0.8458
       uhat_11      -0.0304096      0.461094      -0.06595      0.9482
       uhat_12      -0.177592       0.487710      -0.3641       0.7202

   Unadjusted R-squared = 0.241452

Test statistic: LMF = 0.450935,
with p-value = P(F(12,17) > 0.450935) = 0.917

Alternative statistic: TR^2 = 7.967901,
with p-value = P(Chi-square(12) > 7.9679) = 0.788

Ljung-Box Q' = 5.38979,
with p-value = P(Chi-square(12) > 5.38979) = 0.944
```

Table 2. Hypotheses vs Actual Regression Results

Hypotheses	Expectation	Actual

H.1: The number of COVID-19 Cases in the provinces of CALABARZON decreases the performance of MSMEs, focusing on the generation of employment and sales.	-	-
H.2: The alert level status of provinces in CALABARZON decreases the performance of MSMEs: measured through the generation of employment and sales.	-	-
H.3: The Innovation Practices and Strategies of MSMEs of provinces in CALABARZON increase the performance of MSMEs: measured through the generation of employment and sales.	+	+

The variables are encoded on Gretl as follows: For COVID, the number of cases in CALABARZON were acquired for each month, and for ALERT, the alert levels since January 2020 were encoded such that 0 reflects the alert levels before COVID and 6 is the strictest lockdown in the country (ECQ). For SALES and EMPLOYMENT, the survey included questions for the respondents inquiring about their average monthly sales and number of workers since January 2020 and a question as well indicating if they have innovative practices during the pandemic. As such, if the respondents declared that they have innovative practices in their business, it is encoded as "1" in the Gretl dataset and "0" if otherwise.

From Figure 1, we can see the mean, median, minimum and maximum values for continuous variables such as covid, sales, and employment. As such, the average number of COVID-19 cases from January 2020 to September 2022 is 8,224 cases, with the peak being 42,705 in a month. In terms of the monthly sales of MSMEs, the average is at P927,710, with the highest record of sales being ~P4,772,700. For employment, the average number of employees of these MSMEs is at 4-5 workers, with the highest being 30.

The Ordinary Least Squares (OLS) Regression was used to verify the relationship between a dependent variable and an independent variable. For this study, the independent variables included the average monthly COVID-19 cases in CALABARZON *(covid)*, as well as the alert level number *(alert)* of these places. There are two dependent variables in the study: *sales* which reflect the average monthly sales of MSMEs in CALABARZON, and *employment* which reflects the number of workers of MSMEs in CALABARZON.

Given that the study utilizes two dependent variables, two regression equations are formed:

$$Sales = \beta_0 + covid\,\beta_1 + alert\,\beta_2 + \epsilon$$
$$Employment = \beta_0 + covid\,\beta_1 + alert\,\beta_2 + \epsilon$$

From the first OLS model, we can see that the independent variables ALERT and INNOVATION are all statistically significant (ALERT at 10% and INNOVATION at 1% level of significance). As such, this indicates that a unit increase in the alert level is associated with a Php 148,542 decrease in monthly sales of MSMEs. Meanwhile, the presence of innovation practices for MSMEs is associated with a Php 1,878,240 increase in sales.

From the second OLS model, we can see that the independent variable INNOVATION is statistically significant at the 5% significance level as its p-value is less than 0.05. As such, this indicates that a unit increase in COVID cases is associated with an increase in employees by 6 workers.

When independent variables in a regression model are correlated, multicollinearity emerges. Because independent variables should be independent, this association is problematic. If the degree of correlation between variables is strong enough, it can cause difficulties in terms of fitting the regression model and analyzing the findings. When VIF is higher than 10, there is significant multicollinearity that needs to be corrected. In the case of our data, no multicollinearity problem is present.

In testing for Heteroskedasticity, the null hypothesis states that there is no presence of heteroskedasticity in the model, while the alternative hypothesis states that there is heteroskedasticity in the model. After conducting the Breusch-Pagan test, the p-value is greater than 0.05, which means we accept the null hypothesis that there is no presence of heteroskedasticity in the model.

In testing for autocorrelation, the null hypothesis states that there is no presence of autocorrelation in the model, while the alternative hypothesis states that there is autocorrelation in the model. After conducting the Breusch-Godfrey test, the p-value is greater than 0.05, which means we accept the null hypothesis that there is no presence of autocorrelation in the model.

Comparing our expectations with our hypotheses and the actual regression results, we can see that the regression results for COVID, ALERT, and INNOVATION are consistent with the expectations of the hypotheses.

CONCLUSION & RECOMMENDATIONS

Overall, the study aims to view the impact of the Coronavirus Disease 2019 (COVID-19) pandemic on Micro, Small, and Medium Enterprises (MSMEs), focusing on the area of CALABARZON, wherein it is the epicenter of the pandemic. This objective was met by gathering data on business owners of MSMEs in CALABARZON, taking note of their sales and employment data throughout the pandemic. As such, through a regression analysis, we were able to identify that there is a significant inverse relationship between the country's alert level and the sales of MSMEs, as well as a strong positive correlation between MSMEs' innovative activities and employment and sales in CALABARZON.

With these significant findings, it is essential that businesses have backup plans and can quickly adapt even when alert level restrictions are implemented in the region. As such, it is ideal for MSMEs to have innovative practices, as well as diverse ways of doing business, in order to

maintain a stable income stream during months where COVID-19 cases are very high and lockdowns are in places. Having innovative practices can also maintain stability in a business, and there would be less need to lay-off employees.

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