

Analysis of micro, small, medium enterprises: The cases of Singapore, Malaysia, Philippines, Thailand and Vietnam

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Abstract

Micro, small and medium enterprises (MSMEs) have a great importance in various economic systems in global scale. In early 2000s, the promotion of MSMEs has been a main key player in promoting economic activity in the region. As purported and pillared by the ASEAN Economic Blueprint, the main economic integration strategy will focus on the merging of local economies in the region through the MSMEs. However, theoretically and economically speaking, in order for integration to exist, the local markets should be moving sensitively with respect to other markets inside the economic bloc market. Thus, this study attempted to study the conditioning effect of the number of MSMEs, number of employment generation to the Gross Domestic Product (GDP) of Singapore, Malaysia, Philippines, Thailand and Vietnam. The researchers used descriptive-causal design through panel regression model using secondary data to treat and analyze data sets. The findings revealed that there was scattered pattern of growth among numbers of MSMEs in the undistributed growth among employment generation of MSMEs. Considerably, the regression revealed through a random effect model that there are no integration or movement effects of MSME contributions to their respective GDP using Singapore as reference. The study concluded that there is no country-effect sensitivity within and among the compared countries. Hence, economic integration as a status quo is not a viable economic strategy. Thereby, the researchers recommend the internal policies within nations to intensify, promote, develop and provide safety nets to strengthen the MSMEs of their respective states.

Keywords: Association of Southeast Asian Nations; Distributed lag regression model; Economic blueprint; Micro, small and medium enterprise; Random effects model.

JEL Classification: E20, E32, E66.

1. Introduction

Micro, small and medium enterprises (MSMEs) have a great part in various economic systems in global scaled (Asian Development Bank, 2021). In early 2000s, the promotion of MSMEs has seen a key strategy in promoting economic activity in the Southeast Asian Countries. Through the Association of Southeast Asian Nations (ASEAN), economic blueprint was established in the early 2010s and a full economic integration goal in 2025 was crafted (ADB, 2018).

The economy of the ASEAN has been a constant avenue for challenges on various macroeconomic shocks (Tadeo, 2016). Adopting MSME incubation and promotion strategy is one of the theoretically and practical approach to foster growth and sustainability in the region. However, the COVID-19 pandemic hit the global economy sparing no state in the world hence posed a challenge in the regional bloc.

Thus, this study determined the influence of the number of MSMEs and the employment it generates to the aggregate demand using gross domestic product (GDP) and tested the presence of interaction effects among the observed countries. This study used Singapore, Thailand, Malaysia, Philippines and Vietnam as data sets. This study may pave way to a regional policy-based approach in the ASEAN region taking to account further understanding of economic situation of MSMEs in the economic bloc.

1.1 Objectives of the Study

Generally, this study aimed to understand the integration effects of the MSMEs in the ASEAN Region using Singapore, Malaysia, Philippines and Thailand and Vietnam as country reference.

Specifically, thus study aimed to:

1. Describe the trend of number of MSMEs, number of MSMEs employment generation and the gross domestic product of Singapore, Malaysia, Philippines and Thailand and Vietnam.
2. Identify which regression model is appropriate to utilize.
3. Determine the influence of the number of MSMEs and its employment generation to the GDP of Singapore, Malaysia, Philippines and Thailand and Vietnam;
4. Identify if there is an interaction effects of the observed variables using Singapore as reference; and
5. Recommend economic insights as to the policy pathway of MSMEs in the ASEAN region.

1.2 Conceptual Framework

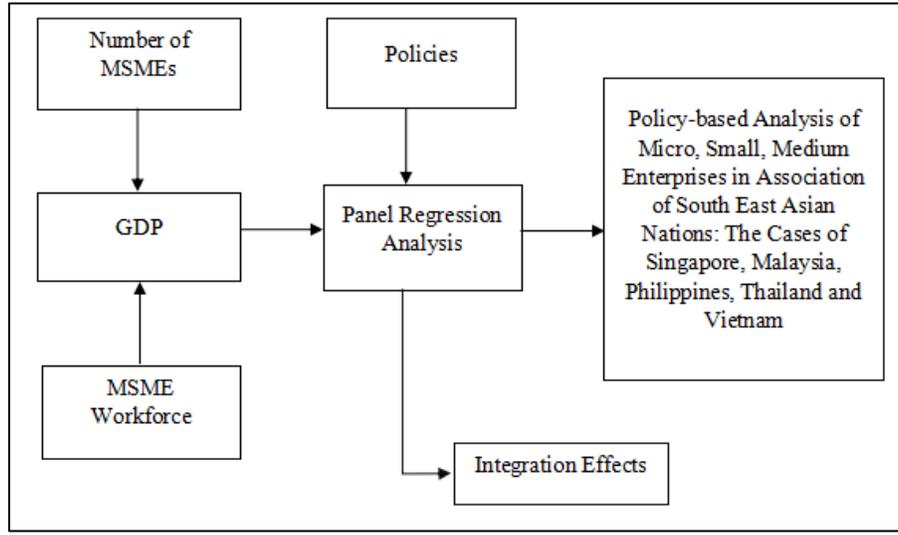


Figure 1: Study framework of policy- based analysis of micro, small, medium enterprises in collected ASEAN countries

This study utilized number of MSMEs, MSME workforce, and gross domestic product. The researchers showcased the analysis through panel regression technique to understand the integration effects of micro, small, medium enterprises among the selected Association of Southeast Asian member nations involving the countries of Singapore, Malaysia, Philippines, Thailand and Vietnam.

1. Literature Review

The selected related studies dealt in providing status quo perspectives of the interplay of MSMEs in the ASEAN region as related to growth in the region.

1.1. MSMEs During Pandemic

The COVID- 19 pandemic has an effect on numerous angles of people's lives, especially the pivotal profitable aspect. Large - scale social restriction laws made it delicate for MSME actors in the product process to promote their products during the outbreak, which dropped earnings. MSME characters are turning toe-commerce to survive the pandemic as a result of the expansion of internationalization and the operation of the online systems, which has forced a change in habits from traditional deals. Ecommerce marketing may help MSME actors operate their enterprises effectively and virtually without being confined by time or place (Agani et al., 2021). In addition to meeting specified performance targets, a company's objective is to continue to exist. Even for MSMEs, a company's long-term performance affects how sustainable it is. Furthermore, the influence of corporate networks on innovation is unaffected by gender moderation. It is well

acknowledged that innovation effectively mediates the impact of business networks on firm growth. The management ramifications call on MSME actors to aggressively innovate and capitalize on business connections to boost company growth, particularly during times of crisis or abnormal condition (Rita et al., 2022). The study of Djuniardi et al. (2020), presented an overview of the issues, driving forces, and achievements of women entrepreneurs of SMEs in Kunigan Regency, West Java as measured by their marketing performance. Women entrepreneurs advance to play a role in the growth of MSMEs. Since there are almost as many women as there are men in business, their impact on employment and economic growth is roughly equal. However, the majority of female entrepreneurs have had to overcome challenges including having a lot of obligations to both their businesses and their families and households. This shown that competitive advantage—a proxy for the performance of women entrepreneurs in SMEs—is positively and significantly influenced by technology, customer orientation, competitor orientation, and motivation.

According to Nurwaesari et al. (2022), the government cannot handle the recovery of MSMEs during the pandemic on its own. As a result, cooperation between numerous parties is required. Although collaborative governance has been operating rather effectively, stakeholders have not fully included MSME activists in the Large-Scale Social Collaboration initiative, which is one of the steps in reviving MSMEs in Jakarta. In light of this conclusion, the researcher suggests a number of measures, including the need for more widespread publication and socializing to attract more partners, the need for better LSSC of MSMEs program governance and procedure, and the need to revitalize the program. As a result, the government must also take certain actions to ensure the longevity of this program. Considerably, due to the effects of the economic crisis brought by the COVID-19 outbreak, Indonesia's MSMEs are currently being put to the test. The productivity of knitting centers run by SMEs, like Binong Jati in Bandung City, also suffered as a result of this condition. Suhardi et. al (2021), analyzed the differences in productivity levels before and after the global pandemic. The authors found from the various testing that there was no change in productivity between before and after the pandemic. Affandi (2021), stated that every element of people's existence has been altered since the Covid-19 pandemic began in 2020. The community must begin a new way of life where following health rules are not only required but also a fashion statement. Online buying is one of the new practices that lots of people are beginning to use. The COVID-19 pandemic presents a chance for MSMEs in Indonesia to seize, allowing them to grow and sustain their businesses. In order to offer digital marketing to MSME players, it is important. This study aims to describe how SME deployment in the MSME sector will take place during the COVID-19 pandemic. The findings of the study demonstrate that digital marketing is very beneficial for MSME operators in Indonesia because it may raise their sales turnover thanks to its many advantages. Digital marketing hasn't been widely used in Indonesia's MSME sector,

meanwhile, for a number of reasons, from a lack of computer knowledge to insufficient infrastructure to Indonesia's challenging geography. In light of this, researchers suggest doing a few straightforward things to get a business started using digital marketing, such as setting marketing objectives, choosing a digital platform, deciding on a budget, and developing content that will draw in customers. This situation is similar in the Philippines where various activities and strategies have been employed as part of intervention to sustain and cope up with pandemic situations such as implementation of key programs that are sensitive to market environment (Dagpin et al, 2022).

1.2. ASEAN Policies for MSMEs

Solis and Tadeo (2022) have revealed that in the Philippines, macroeconomic conditions' concerning GDP through a monetarist approach calls an intensive intervention to boost national output. Considerably, the lack of access to financing is one of the main barriers to the growth of the MSME sector in ASEAN nations. MSMEs experience severe funding challenges in conventional loan and capital markets, particularly in the beginning of their operations. Because of this, the supply and demand of financing to MSMEs is more complicated than it is for larger companies. The policy efforts outlined in this paper have the potential to lessen the financial constraints experienced by MSMEs in ASEAN at the start-up stage by increasing the potential of alternative funding sources including business angel investment, crowdfunding, venture capital investment, and SME stock exchanges (Maran, 2022).

According to Ion (2020), it can be difficult to stop and consider a situation from a sustainable perspective in a time of significant scientific and technological advancements among people who are always seeking new knowledge. It is even more difficult to understand at the functional and organizational level a business and its actions from an ethical perspective. While the roots of morals are still unknown, sustainability is a concept that is widely pushed, primarily for its theatrical value. Even while the process of making ethical and sustainable business decisions is not always linear, it generally follows a predictable pattern, especially when multinational corporations serve as the unit of analysis. Small and medium-sized enterprises, however, should take a different approach, and it all starts with SME public policy. By analysing SME public policy in the ASEAN member nations and incorporating elements of business ethics and social responsibility at the level of small economic entities, the research was able to construct a narrative of frameworks and approaches within South-East Asian SME public policy.

According to Solina (2022), women are regarded as a significant component of trade, according to the 2017 United Nations Conference on Trade and Development (UNCTD). They engage in a variety of activities in the sector, including producing goods, conducting cross-border trade, managing and owning trading companies, and making up a sizable portion of the employees in

companies that focus on exports. However, despite the numerous restrictions, women's potential and trade abilities are still far too frequently limited. Accordingly, the research aims to describe the current demographics, roles, and experiences of women involved in MSMEs, provide information on current policies, programs, and services and how these are comparable to and different from one another, as well as recommend actions to address the impeding factors in the Philippines to be compared with Singapore and Myanmar using available secondary data. The research findings show that engagements through surveys and deliberate sampling have a significant impact on women's participation in economic activities, particularly in MSMEs.

2. Methodology

1.3. Research Design

The researchers have used descriptive and regression research designs in the conduct of this study. Specifically, the researchers described the trends of the understudy variables of gross domestic product (GDP) in dollar units using 2018 as deflator factor, number of MSMEs and the employment generated by MSMEs in the countries of Singapore, Malaysia, Thailand, Philippines and Vietnam. Regression analysis was employed to understand the behavioural characteristics of the influencing factors of number of MSMEs and the employment generated by the MSMEs to the GDP of the mentioned ASEAN member countries.

1.4. Sources of Data

The researchers have used secondary data from the World Bank (WB) and the Asian Development Bank (ADB). The data set for the MSMEs were derived from the ADB data bank whilst the GDP data set were obtained from the World Bank Statistical data bank. Related studies were also obtained from the published journals, academic articles and scholarly online references.

1.5. Statistical Treatment

The researchers used the distributed lag model regression model (DLMR) for the period of 2014 to 2020 with lag lengths following the lag value provided by Akaike Information Criterion (AIC).

Table 1. Summary of Statistical Treatment

Statistical test	Purpose	Result
Augmented Dickey Fuller test	Unit Root	Stationary at Third Difference
Durbin Watson Test	Autocorrelation	Autocorrelation detected, corrected
Variance Inflation Factor	Multicollinearity	No Multicollinear variables
Jarque Bera	Normality	Normal Distributed and Residuals are distributed within acceptable range
Breusch-Pagan Test	Heteroscedasticity	Residuals are distributed on equal variances.

Pooled Least Squares

$$GDP_{tk} = \beta_0 + \beta_1 NOM_{tk} + \beta_2 EOM_{tk} + \mu_{tk} \quad [\text{equation 1}]$$

Whereas

GDP_{tk} = GDP of selected ASEAN countries

β_0 = intercept

β_1, β_2 = parameters

NOM = Number of MSMEs of selected ASEAN countries

EOM = Employment generated by MSMEs of selected ASEAN countries

Random Effects Model

$$GDP_{tk} = \beta_0 + \sum_{i=0}^k \beta_{it1} NOM_{t-k} + \sum_{i=0}^k \beta_{it2} EOM_{t-k} + \mu_{tk} \quad [\text{equation 2}]$$

Whereas

GDP_{tk} = GDP of selected ASEAN countries

β_{it0} = intercept

β_{it1}, β_{it2} = parameters

NOM_{t-k} = Number of MSMEs of selected ASEAN countries

EOM_{t-k} = Employment generated by MSMEs of selected ASEAN countries

2. Results and Discussion

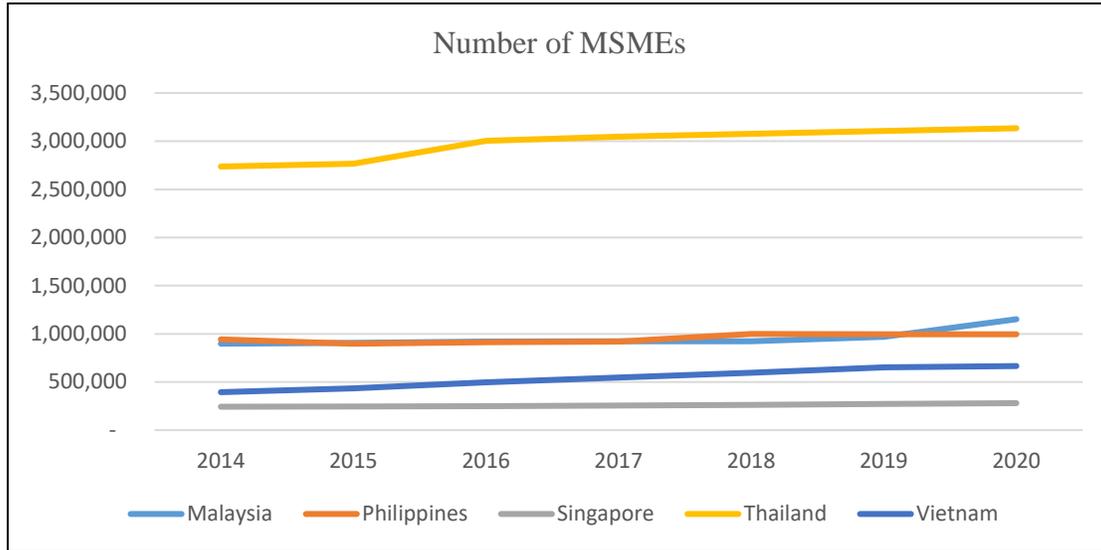


Figure 2: Number of MSMEs in five ASEAN countries

The graph presented the number of MSMEs of five ASEAN member countries namely: Malaysia, Philippines, Singapore, Thailand, and Vietnam. The findings showcased that Singapore maintained the number of MSMEs from 2014 to 2020. Moreover, it showed that there was an increase in number of MSMEs in Malaysia, Thailand, and Vietnam. However, in the same year, the result showed that the number of MSMEs in the Philippines decreased.

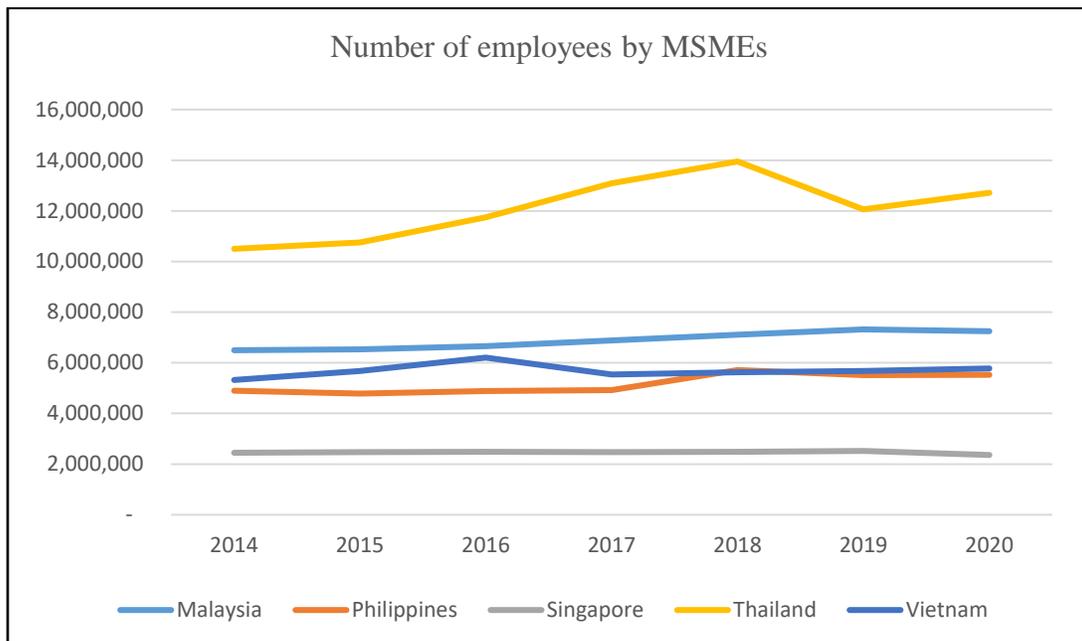


Figure 3: Number of employees by MSMEs in five ASEAN countries

The graph showcased the number of employees by MSMEs of five ASEAN member countries respectively: Malaysia, Philippines, Singapore, Thailand, and Vietnam. The findings implied that the number of employees by MSMEs in Malaysia, Philippines, Thailand, and Vietnam was fluctuated yearly. Furthermore, it showed that the findings of number of employees by MSMEs in Singapore was unaltered from 2014 to 2022.

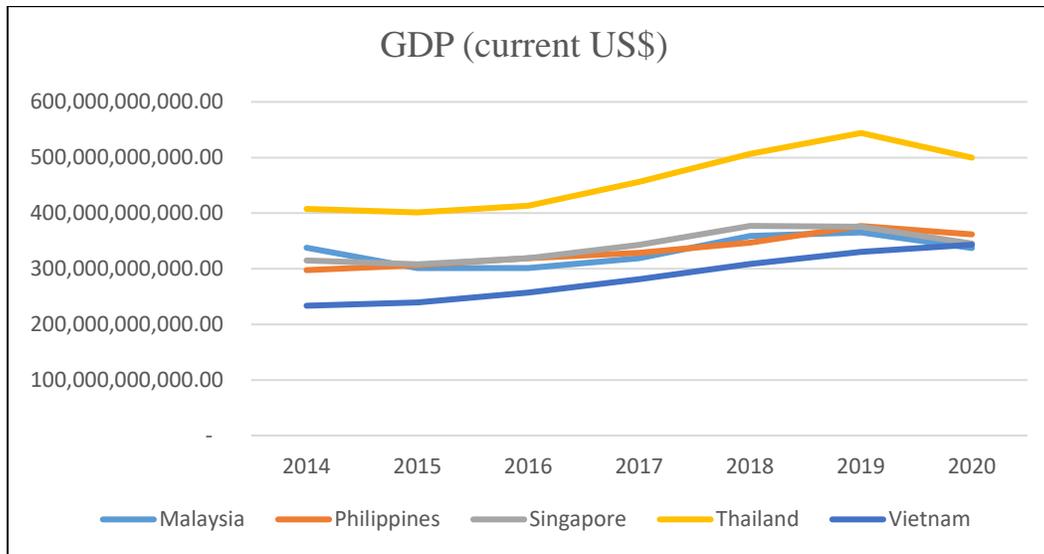


Figure 4: Gross domestic product of five ASEAN countries

The graph depicted the gross domestic product (GDP) of selected ASEAN members namely: Malaysia, Philippines, Singapore, Thailand, and Vietnam. The graph showed that the GDP decreased in all countries except Vietnam, which increased from 2019 to 2020. Moreover, the graph clearly showed that GDP in Thailand fell significantly between 2019 and 2020.

Table 2. PLS Initial Model

GDP = 14.95 + 4.12 NOM + 0.80 NOM_{t-1} + 0.08 EOM + 0.0005 EOM_{t-1}						
<i>t-Statistic</i>		(7.01)		(-0.44)		(2.52) (-2.16)
	R²	=	0.77		Adj R²	= 0.63
	F(4,35)	=	28.09		DW	= 5.28
Critical Values						
	F(4,35)	=	404.366		DW	<u>dU</u> 1.230
	t-ratio(0.05)	=	1.645			<u>dL</u> 1.786
	(one-tail test)					4-dU 0.64

The computed d-statistic of 3.36 from the initial pooled regression is higher compared to the critical dU value of 1.230, it means that there is a negative autocorrelation detected.

Hence, the pooled least square regression model was corrected and tested.

Table 3. PLS Corrected Model

GDP = 27.32+7.79 NOM + 0.89 NOM_{t-1} + 0.005EOM + 0.0008 EOM_{t-1}					
<i>t-Statistic</i>		(4.52)	(-0.58)	(6.37)	(-3.54)
	R²	=	0.7435	Adj R²	= 0.6487
	F(4,30)	=	43.25	DW	= 2.17
	F(4,30)	=	38.90	DW	<u>dU</u> 1.160
	t-ratio(0.05)	=	1.658		<u>dL</u> 1.803
	(one-tail test)				<u>4-dU</u> 2.197

The table shows the corrected PLS model for autocorrelation. The calculated Durbin-Watson statistic of 2.17 is generally higher than the critical value of dU of 1.803 and lesser than critical 4-dU Durbin-Watson statistic value of 2.197 at 95 percent confidence level. Thereby, the calculated model has no autocorrelation on positive and/or negative values, in the corrected PLS model.

One-tail t-test was utilized for the exogenous variables, NOM was significant at 5 percent critical value of significance. The NOM was computed t-value of 4.52 which is higher than the significant critical having 1.658 in its calculated t-value. It means that, ceteris paribus, if the number of MSMEs by one unit, the GDP will increase by 35.11 unit-contribution to GDP. Considerably, the computed lagged by one value of the NOM was not significant having a computed t-value of 0.58 with a calculated probability value of 0.95 which was higher than the provided significant value conditions of 99 percent, 95 percent, 90 percent and 80 percent level of acceptability. Thus, using the PLS model, the null hypothesis that the Gross Domestic Product of Singapore, Philippines, Malaysia, Thailand and Vietnam is not influenced significantly by the number of MSMEs, was not accepted.

Likewise, EOM and EOM_{t-1} was significant at 95 percent acceptability level because the calculated t-value of 6.37 as wells as 3.54 is higher than the computed critical 1.658 t-value. It means that ceteris paribus, if the employment generated by MSMEs increase by one unit, the GDP will increase by more than 35 unit-contribution. Considerably, the 0.02 units GDP today is the influence of value of the employment generated by the MSMEs. The result revealed by the computed lagged value of broad money which is one as provided by the Akaike Information Criterion (AIC) was satisfied and was consistent with the theoretical expectation presented and purported by the distributed lag model. Hence, utilizing the PLS model, the null hypothesis that the Gross Domestic Product of the economies of Singapore, Philippines, Malaysia, Thailand and Vietnam is not significantly affected by the Employment Generated by MSMEs, was rejected.

The calculated value of F-Statistic was at 43.25 which exceeds the 95 percent significance level of acceptability, under the computed critical F-value set at 38.90, with four and 30 as its computed degrees of freedom. This showcases that the calculated PLS model was significant statistically. Thus, using the PLS model, the null hypothesis that the Gross Domestic Product in the economies of the ASEAN-5 is not significantly affected by the quantity of MSMEs in the region and the jobs induced by MSMEs, was rejected.

The value of the adjusted R-squared of 0.6487 shows that the 67.87 percentile of different changes in the endogenous variable is the effect of the changes in exogenous variables taken aggregately. Thereby, means that there is 32.13 percent were left unexplained by the regression model subject the other variables that were not took into consideration in formulating the economic model.

Table 4. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.23102	4	0.9874

The results showed the calculated the probability of 0.9874 is higher compared to the significance level, therefore the null hypothesis that the preferred model is random effect regression model is accepted. Hence, fixed effect model (FEM) is not appropriate, thereby disregarding interaction effects using Singapore as the base country.

Table 5. Random Effects Model

GDP = 25.24+ 5.47NOM + 0.39NOM_{t-1} + 0.0041 EOM + 0.000025 EOM_{t-1}					
<i>t-Statistic</i>	(5.53)	(-0.28)	(2.57)	(-2.12)	
	R2 =	0.6487	Adj R2 =	0.6125	
	F(4,35) =	18.09	DW =	3.26	
	F(4,35) =	193.7846	DW	dU	1.768
	t-ratio(4,35) =	1.645		dL	1.230
	(one-tail test)			4-dU	2.232

NOM was significant at 95 percent statistical significance having a calculated 5.53 t-value with a computed 0.01 probability value which is higher than the critical 1.645 t-value. The REM coefficient tells us that if the number of MSMEs, all other things equal, will increase by 1 unit, the GDP will increase by 30.71 units. Therefore, in the random effects regression model, the null hypothesis that the National Aggregate Output in the economies Singapore, Philippines, Malaysia, Thailand and Vietnam is not significantly affected by the number of MSMEs is rejected.

Likewise, the lagged value of NOM was found to be insignificant at all levels since the calculated 0.39 t-value is lesser than the computed t-value of 1.645. Considerably, the insignificance of the computed lag through Akaike Information Criterion as to the number of MSMEs follows theoretical expectation as purported by the distributed lag model. Thus, under the REM, the null hypothesis that National Aggregate Output in the economies of Singapore, Philippines, Malaysia, Thailand and Vietnam is not significantly affected by the lag of number of MSMEs is accepted.

Moreover, EOM was identified to be significant at 95 percent significant level since the calculated t-value of 2.57 is higher than that of the critical 1.645 t-value with the 0.01 probability value. The coefficient of the employment generated by MSMEs tells us that, *ceteris paribus*, if the employment generated by MSMEs amplified by a unit, the GDP will rise by 25.24 units. Therefore, using the REM regression model, the null hypothesis that the GDP in the economies of Singapore, Philippines, Malaysia, Thailand and Vietnam is not significantly affected by the employment generated by MSMEs is rejected.

Considerably, the lagged value of EOM was significant at 95 percent significant level since the calculated 2.12 t-value with the 0.04 probability value is higher than the 1.645 critical t-value. The calculated AIC lag value of the employment generated by MSMEs tells that, all other things equal, if the employment generated by MSMEs increased by a unit in the previous year, the current real GDP is expected to increase by the about .000025 units. Thus, in reference to REM, the identified null hypothesis that the GDP of Singapore, Philippines, Malaysia, Thailand and Vietnam is not significantly affected by the lag of employment generated by MSMEs is rejected.

The computed F-Statistic of 18.09 is greater than the 95 percent accepted significant level with a computed F-value of 16.13, with four and 35 set as its degree of freedom (n-1). Noting that in the REM design, the dependent variable explains the independent variable because according to the Wald test, the assumption that the dependent variable does not influence the independent variables is rejected. Hence, under REM calculations and assumptions, the null hypothesis that the GDP in the economies of Singapore, Philippines, Malaysia, Thailand and Vietnam is not significantly affected by the number of MSMEs, first lag of the quantity of MSMEs, labor-yield generation of MSMEs, and the first lag of employment generated by MSMEs, is hereby rejected.

The calculated Adjusted R-squared value of 0.6125 means that the 61.25 percent of the different variations of the exogeneous variables reflect the changes in the endogenous variables taken collectively. This implies that there is 38.75 percent which are unexplained by the REM regression design as a possibility of the unexplored factors that have not been involved in the crafting of the model.

Finally, the random effect model had incurred the value of 2.232 in Durbin Watson – this means that there is a presence of autocorrelation. The presence of autocorrelation is detected.

3. Conclusion and Recommendation

After the analysis and inferences of this study, the researchers concluded that:

1. Generally, there is a rising trend or movement of GDP, number of MSMEs and its employment generation before the pandemic and declined during the pandemic in Singapore, Philippines, Thailand, Vietnam and Malaysia.
2. The random effect model was deemed as the appropriate model to utilize in understanding the influence of quantity of MSMEs and the generated employment of MSMEs to the GDP of selected ASEAN countries.
3. Number of MSMEs and the employment generated by MSME positively influences GDP in the selected ASEAN countries.
4. There are no interaction effects among countries observed.

Considerably, the researchers recommend the following:

1. Strengthen government support to MSMEs through provisions of policies that addresses enterprises productivity and health compliance due to pandemic to continue the operations and mitigate profitability among enterprises, enhancement of government services related to re-stimulating enterprise activities and provision of safety nets in their respective countries.
2. Respective MSMEs should capacitate themselves in risk and crisis management adaptability to new normal and balancing health compliance and enterprise productivity.
3. Other variables can be explored such as breakpoints and sensitivity points to further understand the collective effect of the pandemic using other related sets of comparative variables in MSMEs.

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