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Industry Characteristics and Performance of Philippine Coffee Manufacturing Firms: MSMEs Perspective

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Abstract:*This paper builds upon Porter's five forces industrial paradigm and investigated the influence of the industry characteristics on the financial performance of Philippine coffee manufacturing Micro, Small and Medium Enterprises (MSMEs). Specifically, this paper aimed to (1) determine the degree of competitive rivalry, bargaining power of buyers, bargaining power of suppliers, threat of new entrants, and threat of substitutes in the Philippine coffee manufacturing industry, (2) assess the performance of the firms, and (3) determine if the industry characteristics influence the firms' performance in terms of return on assets (ROA), profit margin, sales growth, and market share. Using a quantitative survey administered personally and online to 106 managers of coffee manufacturing firms in the Philippines, this paper made use of descriptive statistics, bootstrap method and regression analysis to answer the objectives. Findings of the study revealed that competitive rivalry was perceived to be very high while threat of potential entrants, threat of substitutes, bargaining power of suppliers, and bargaining power of buyers were high. Perceived performance of firms indicated that coffee manufacturing firms were performing better than the target or standards.Perceived industry characteristics by the firms, in general, were found to influence the firms' performance.*

Keywords: Bootstrap, coffee manufacturing, industry characteristics, MSMEs, performance

I. Introduction

Micro, small, and medium enterprises (MSMEs) engaged in coffee manufacturing in the Philippines lack the economies of scale and resources to compete with industry leaders and foreign competition. The Philippine government, recognizing the potential of the coffee industry, extended support with the creation of the Philippine Coffee Industry Roadmap 2017-2022 to encourage growth in the sector. Philippine government agencies particularly, the Department of Agriculture (DA) and the Department of Trade and Industry (DTI) (2017)[1] recognized that there is a need to improve performance of local manufacturers that are predominantly MSMEs whose domestic market is also beset by foreign competition.

Firms' performance can be viewed as a measure of financial ability which can be measured quantitatively or qualitatively (Ibrahim Naala, et al., 2017)[2]. While performance can be measured using an objective concept based on absolute measures of performance and by a subjective concept based on self-reported measures, many researchers prefer to use subjective measures because it is cost effective and widely used to measure business performances of small enterprises, public services, and voluntary sector organizations (Noordin and Mohtar, 2013)[3]. This paper subscribes to the performance measures suggested by Pervan, et al. (2018)[4] specifically return on assets (ROA), profit margin, sales growth, and market share.

This paper discussed the industry characteristics as represented by Porter's five forces, the perceived level of financial performance by the MSMEs engaged in coffee manufacturing and the influence of these industry characteristics to firms' performance.

II. Theoretical background and research hypothesis

Michael Porter in his work Competitive Strategy in 1980 described the collective strength of industry forces namely the threats posed by rivalry, power of buyers, power of suppliers, new entrants, and substitute products that determine profit potentiality in the industry. In 2008, Porter emphasized in his update of these forces, the possibility of employing them to understand strategic implications for firms (Dobbs, 2014)[5].

The structure-conduct-performance which view performance as being determined by the structural characteristics of the market was the basis of Porter's five forces model, Porter (1979, 1981) that when related to opportunities and threats can yield strong responses for improving competitiveness and performance of firms (Pervan et al., 2018)[4]. The bargaining power of buyers is the pressure that consumers exert to firms to provide quality products and service and demand for lower prices. Industry profitability and attractiveness is diminished with greater bargaining power of buyers. Dominant suppliers on the other hand can drive up industry costs by raising prices and influence the value offered by their customers. The threat of substitutes considers the ease of switching from a business's product to another competitor. Threat of entry and competition meanwhile drive prices down (Walker and Madsen, 2016)[6].

Pervan, et al. (2018)[4] cited that Espallardo and Ballester in 2009 analyzed whether these items act as motivators or inhibitors to performance and found out that small firms invest in innovation when these forces are more intense. In addition, Pervan, et al. (2018)[4] in their study of 118 small Croatian firms found out that the industry forces affects the firm's performance negatively and that industry rivalry and bargaining power of buyers play the dominant role.

The following hypotheses were developed:

Ho: Industry characteristics have no influence on the firms' ROA, profit margin, sales growth, and market share.

Ho1: Competitive rivalry has no influence on the firms' ROA, profit margin, sales growth, and market share.

Ho2: Bargaining power of buyers has no influence on the firms' ROA, profit margin, sales growth, and market share.

Ho3: Bargaining power of suppliers has no influence on the firms' ROA, profit margin, sales growth, and market share.

Ho4: Threat of new entrants has no influence on the firms' ROA, profit margin, sales growth, and market share.

Ho5: Threat of substitutes has no influence on the firms' ROA, profit margin, sales growth, and market share.

III. Research methodology

This paper employed a quantitative research design with a hybrid method of personal surveys and web surveys. The study was conducted to MSMEs as listed in the database of the Department of Trade and Industry. A survey questionnaire adapted from the works of Pervan, et al. (2018)[4] to measure the level of industry characteristics using a 4-point Likert scaleand to measure performance.A total of 106 participants responded from the targeted population of 124 coffee manufacturing firms and were asked to evaluate their performance prior to the nationwide lockdown. The statistical tools used in the study were descriptive statistics (means, standard deviations) and inferential statistics particularly, regression analysis. The questions for industry characteristics were constructed in such a way that they go the same direction and so as what is postulated in the theory, the lower the value assessed by the participant on the Likert scale, the higher is the firm's perceived performance. Subsequently, minimum score interpretation is low (min 1.00 to 1.75), medium (min 1.76 to 2.50), high (min 2.51 to 3.25) and very high (min 3.26 to 4). For the performance of firms, the scale was ranging from "1-much worse than target" to "4-much better than target". The research was conducted in the Philippines from February 2020 to April 2021. Data were collected using a questionnaire by delivering it directly to participants and one created on Google Docs by online tools such as email and social networks (Facebook, FB messenger, and Facebook groups). The study made use of the bootstrap method. According to Hesterberg (2015)[7], the bootstrap is used to estimate standard errors and bias, getting confidence intervals and use for tests. Nikitina, et al. (2019)[8]described the method as a robust statistical method whose strength lies in generating data by resampling and replacing actual data without the need to rely on arbitrary processes of creating imaginary data. The controversy on whether means, standard deviations, and parametric statistics can be used for ordinal data like those that come from Likert scales was comprehensively reviewed by Dr. Geoff Norman, one of the experts in medical education research methodology. He provided compelling evidence that parametric tests can be used with ordinal data, such as data from Likert scales, and is generally more robust than nonparametric tests (Sullivan & Artino, Jr., 2013)[9]. Regression analysis and cross-sectional analysis was done to determine the influence of industry characteristics to performance.

IV. Results

Table 1 shows the industry characteristics of the coffee manufacturing firms. The intensity of rivalry in the coffee industry was very high (≈ 4). The threat of potential entrants was high (≈ 3) indicating that new companies can easily enter the coffee industry. The coffee firms perceived that the threat of substitutes was high (≈ 3). The bargaining power of suppliers was high (= 3.21) indicating that suppliers can easily increase the price or reduce the quality of their products. The coffee firms perceived that the bargaining power of buyers was high (≈ 3) because they can exert pressure to lower the prices of coffee products.

Table 1.Industry characteristics of the coffee manufacturing firms.

Industry characteristics (N = 106)	**Mean**	**Std. Dev.**	**Interpretation**
Competitive rivalry	3.48	0.78	Very high
Threat of potential entrants	2.91	0.89	High
Threat of substitutes	2.80	0.90	High
Bargaining power of suppliers	3.21	0.85	High
Bargaining power of buyers	2.93	0.91	High

The performance of the coffee manufacturing MSMEs, on the average, in terms of return on assets (ROA), profit margin, sales growth, and market share were perceived by the participants to be better than their set target. Table 2 shows the perceived performance of coffee manufacturing firms. All of the opinions for the four (4) performance measures range from a minimum of 1 (= much worse than target) to a maximum of 4 (= much better than target). The dispersion (0.63, 0.61, 0.70, and 0.72) from the mean showed low variation between the observations and average indicating that the average is a good representative of the observation and very reliable.

Table 2. The perceived performance of coffee manufacturing firms.

Performance measure (N = 106)	**Mean**	**Std. Dev.**	**Performance**
Return on assets (ROA)	2.88	0.63	Better than target
Profit margin	2.92	0.61	Better than target
Sales growth	2.91	0.70	Better than target
Market share	2.68	0.72	Better than target

Table 3shows the effects of industry characteristics to return on assets (ROA). Very high (= 3.79) bargaining power of suppliers influence a much better than target performance of coffee manufacturing firms because suppliers can easily increase the price or reduce the quality of their products due to their bargaining position and improve ROA. Very high (= 3.26) threat of substitutes influence a much better than target performance of the coffee manufacturing firms because of high substitutes available in the industry increase the chance of better ROA.

Although statistically not significant, the high (= 2.93, ρ = 0.118) bargaining power of buyers suggests to influenced a better than target performance on the coffee manufacturing firms because intense buying power can exert pressure to lower the prices of products and increase the ROA.

On the other hand, a perceived medium (= 2.48, disagree) level of potential entrants influenced a worse than target performance on the coffee manufacturing firms because new companies can easily enter the coffee industry and lower the returns on assets (ROA). The medium (= 2.27, disagree) level of competitive rivalry suggests a worse than target

performance of the coffee manufacturing firms because of high intensity of rivalry in the coffee industry lowers the return on assets (ROA).

The results on cross-analysis of industry characteristics to return on assets (ROA) showed that very high or intense rivalry and potential entrants of new companies in the coffee industry decrease the return on assets of coffee manufacturing firms. High bargaining powers of suppliers and buyers increase the return on assets (ROA) performance.

The level of significance showed that competitive rivalry (ρ = 0.012), potential entrants (ρ = 0.033), threat of substitutes (ρ = 0.001), and bargaining power of suppliers (ρ = 0.001) influenced return on assets (ROA) at 5% level of significance. The bias corrected accelerated (Bca) bootstrap with 5,000 times resampling showed that four (4) B-parameters were between the lower and upper limits of the 95% confidence interval. The results showed that the estimate for the population mean is approximately between the lower limit and the upper limit at 95% confidence interval.

Table 3.Industry characteristics that influence return on assets (ROA).

		Standardized Coefficients		BCa 95% Confidence Interval		
	B	Beta	Sig. (2-tailed)	Lower	Upper	Equiv.
(Constant)	0.804		0.001	0.468	1.068	9.34
Competitive rivalry	-0.197	-0.217	0.012	-0.363	-0.03	2.27
Potential entrants	-0.097	-0.129	0.033	-0.179	-0.014	2.48
Threat of Substitutes	0.168	0.224	0.001	0.089	0.233	3.26
Bargaining power of Suppliers	0.287	0.338	0.001	0.121	0.486	3.79
Bargaining power of Buyers	0.071	0.096	0.118	-0.014	0.156	2.93

Table 4shows the influence of industry characteristics to profit margin. Threat of substitutes indicated a high (≈ 2.97) influenced to profit margin because high substitutes available in the industry increase the chance of better profit margin. Bargaining powers of suppliers (≈ 3.46) and buyers (≈ 3.02) suggested a very high influenced to profit margin because suppliers can easily increase the price or reduce the quality of their products due to their bargaining position and buyer's intense buying power can exert pressure to lower the prices of products and increase the profit margin of coffee manufacturing firms.

On the other hand, high (-0.137, = 2.39) competitive rivalry decrease the coffee manufacturing firm's performance on profit margin. Although not statistically significant (ρ = 0.743), the result suggests that the potential entrants in the coffee industry lowers the profit margin performance of coffee manufacturing firms.

The level of significance showed that competitive rivalry (ρ = 0.050), threat of substitutes (ρ = 0.013), bargaining power of suppliers (ρ = 0.022), and bargaining power of buyers (ρ = 0.004) influenced profit margin at 5% level of significance. The bias corrected accelerated (Bca) bootstrap with 5,000 times resampling showed that four (4) B-parameters were between the lower and upper limits of the 95% confidence interval. The results showed that the estimate for the population mean is approximately between the lower limit and the upper limit at 95% confidence interval.

Table 4. The influence of industry characteristics to profit margin.

			Standardized Coefficients		BCa 95% Confidence Interval		
	B	antilog	Beta	Sig. (2-tailed)	Lower	Upper	Equiv.
(Constant)	0.795	2.214		0.001	0.526	1.030	9.16
Competitive rivalry	-0.137	0.872	-0.161	0.050	-0.274	0.011	2.39
Potential entrants	-0.013	0.987	-0.018	0.743	-0.080	0.057	2.68
Threat of Substitutes	0.085	1.089	0.121	0.013	0.021	0.138	2.97
Bargaining power of Suppliers	0.217	1.242	0.273	0.022	0.043	0.405	3.46
Bargaining power of Buyers	0.101	1.106	0.145	0.004	0.031	0.170	3.02

Table 5 shows the influence of industry characteristics to sales growth. Bargaining powers of suppliers (= 3.37, very high) suggested a very high influenced to sales growth because suppliers can easily increase the price or reduce the quality of their products due to their bargaining position. Bargaining power of buyers (= 3.15, high) have a high influenced to sales growth because buyer's intense buying power can exert pressure to lower the prices of products and increase the sales growth of coffee manufacturing firms. Threat of substitutes was not statistically significant at 5% level ($\rho = 0.115 > 0.05$) though the positive sign of B-coefficient suggests an increase influence to sales growth.

On the contrary, competitive rivalry indicated a negative influence (= -0.238, = 2.20, worse than target effect) to sales growth performance of coffee manufacturing firms. Although statistically insignificant ($\rho = 0.430 > 0.05$), potential entrants suggest a negative influenced to sales growth performance of coffee manufacturing firms.

The level of significance showed that competitive rivalry ($\rho = 0.001$), bargaining power of suppliers ($\rho = 0.005$), and bargaining power of buyers ($\rho = 0.002$) influenced sales growth at 5% level of significance. The bias corrected accelerated (Bca) bootstrap with 5,000 times resampling showed that three (3) B-parameters were between the lower and upper limits of the 95% confidence interval. The results showed that the estimate for the population mean is approximately between the lower limit and the upper limit at 95% confidence interval.

Table 5. The influence of industry characteristics to sales growth.

			Standardized Coefficients		BCa 95% Confidence Interval		
	B	antilog	Beta	Sig. (2-tailed)	Lower	Upper	Equiv.
(Constant)	0.932	2.540		0.001	0.756	1.104	12.67
Competitive rivalry	-0.238	0.788	-0.265	0.001	-0.346	-0.130	2.20
Potential entrants	-0.038	0.963	-0.051	0.430	-0.140	0.052	2.62
Substitutes	0.071	1.074	0.096	0.115	-0.009	0.154	2.93
Suppliers	0.195	1.215	0.232	0.005	0.056	0.341	3.37
Buyers	0.138	1.148	0.188	0.002	0.050	0.217	3.15

Table 6 shows the effect of industry characteristics to market share. Bargaining power of buyers has a very high (= 3.83) influenced to much better than target market share performance of the coffee manufacturing firms because of exert pressure to lower the prices of coffee products. Potential entrants exert a very high (= 3.29) influenced to the coffee manufacturing firms to reach a much better than target market share performance because entrants of new companies made the operation of existing coffee manufacturing firms efficient and sustainable.

However, competitive rivalry (= 2.29, medium) lowers the market share to worse than target performance in the coffee industry. Although not statistically significant ($\rho = 0.415 > 0.05$), bargaining power of suppliers suggests a decrease in market share performance of the coffee manufacturing firms.

The level of significance showed that competitive rivalry (ρ = 0.002), potential entrants (ρ = 0.001), and bargaining power of buyers (ρ = 0.001) influenced market share at 5% level of significance. The bias corrected accelerated (Bca) bootstrap with 5,000 times resampling showed that three (3) B-parameters were between the lower and upper limits of the 95% confidence interval. The results showed that the estimate for the population mean is approximately between the lower limit and the upper limit at 95% confidence interval.

Table 6.The effect of industry characteristics to market share.

			Standardized Coefficients		BCa 95% Confidence Interval		
	B	antilog	Beta	Sig. (2-tailed)	Lower	Upper	Equiv.
(Constant)	0.752	2.121		0.001	0.590	0.928	8.34
Competitive rivalry	-0.189	0.828	-0.178	0.002	-0.315	-0.073	2.29
Potential entrants	0.174	1.190	0.197	0.001	0.075	0.267	3.29
Substitutes	0.009	1.009	0.011	0.871	-0.093	0.112	2.74
Suppliers	-0.058	0.944	-0.059	0.415	-0.177	0.069	2.57
Buyers	0.294	1.342	0.337	0.001	0.153	0.436	3.83

V. Conclusion

The perceived industry characteristics of the MSMEs engaged in coffee manufacturing were found to be very high in terms of competitive rivalry, and high in terms of threat of potential entrants, threat of substitutes, bargaining power of suppliers, and bargaining power of buyers. The performance of these firms, on the average, in terms of return on assets (ROA), profit margin, sales growth, and market share were perceived by the participants to be better than their set target. Perceived industry characteristics by the firms, in general, were found to influence the firms' performance with four (4) parameters affecting return on assets (ROA) and profit margin, while three (3) parameters influencing sales growth and market share. The paper is limited to pre pandemic evaluation of the performance of the MSMEs engaged in coffee manufacturing from the perception of the participants. The findings however can serve as a guide in crafting programs and policies through a better understanding of industry characteristics that can influencethe performance of the MSMEs engaged in coffee manufacturing. The results can be a reflection of, but not the situation in other countries, owing to similarities and differences in culture, and other factors. Hence further studies can be conducted in other areas as well.

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