

Operations Management Practices and Business Sustainability of Micro Manufacturing Enterprises in the Province of Rizal

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Abstract

Micro manufacturing enterprises need to ensure effective management practices not to compete with larger companies but to sustain its existence in the market. Business sustainability can be assessed by integrating the economic, social and environmental indicators. The objective of this study is to assess the level of effectiveness of the operations management practices and its relationship with business sustainability of micro manufacturing enterprises in the Province of Rizal. The researcher used the descriptive design of research through the conduct of a survey to solicit responses from 363 respondents who are owners or managers of a micro manufacturing enterprise. Frequency, percent distribution, weighted mean and Pearson r Correlation were used to statistically determine the degree of association of operations management practices and business sustainability. The findings show that micro manufacturing enterprises assessed their operations management practices as effective and agree with the business sustainability indicators. The p-values show a significant positive relationship among operations management practices in the areas of production, finance, marketing and human resources, and the indicators of business sustainability. The researcher suggests that the micro enterprises continuously assess the effectiveness of its practices in order to sustain its business operation. Provision of safe and healthy workplace and emphasis on environmental programs are highly recommended.

ARTICLE INFORMATION

Received: 21 Feb 2023
 Revised: 28 Feb 2023
 Accepted: 19 Mar 2023
 Published: 30 Apr 2023

Keywords: Operations Management Practices, Business Sustainability, Micro Manufacturing Enterprises

1.0 INTRODUCTION

Micro manufacturing enterprises, in getting their market share, should ensure effective management practices in all aspects of operation – production, human resources, financial and marketing. Good business practices contribute to the profitability of new market entrants. Effective management influences business sustainability. Staying in the business is a big challenge to micro enterprises. Studies suggest that more than fifty percent of start-up businesses fail to survive the market in the first three years. It is difficult for micro entrepreneurs to compete with the available goods and services in the market unless what they offer is something unique and relevant. Various factors influence the sustainability of micro manufacturing enterprises in the market. Entrepreneur capacity, enterprise competitiveness, and environmental conduciveness are where the success of micro enterprises would be found (Bushe, 2019).

Sustainability is related to long-term conditions desired across society. This is an important concept in achieving the goals towards sustainable development.

However, integration of these essential concepts on statements of sustainability studies and applications is limited (Harrington, 2016). The term “sustainable development” was introduced in the World Commission on Environment and Development (Brundtland) report of April 1987 with the title “Our Common Future”. This report argues that activities undertaken currently should not deprive the needs of future generation (Shirazi & Keivani, 2017). According to Adams & Hunter (2019), a typical microenterprise emerges from a tiny entity, usually operated by one person, with a high probability of failure and only a little growth within the first four years of operation. Growth for micro enterprises is achieved when a microenterprise survives the first four years. The study of Molinillo, Sanchez and Cabanillas (2019) indicates that customer engagement influences customer loyalty as to repurchase intention, customer feedback, patronage and positive word of mouth; which results in increased number of customers.

As devised by John Elkington in 1994, “triple bottom line” argues that a firm can be managed in such a way that its focus is not only in earning financial profit but also in

giving back to improve human life and the environment. Elkington's triple bottom line (TBL) framework expands the focus of business organizations in determining business sustainability. In addition to the profit, which used to be the primary focus of entrepreneurs, same level of focus should be given to protection of the environment and the concern for the community the business is in. TBL introduced the three important 'P's of business as the bottom lines – profit, planet and people. Profit is the traditional measurement of business performance and is presented in the financial reports. Planet bottom line determines how an entity operates responsibly for the environment. People bottom line puts emphasis on how an organization works with its community, employees and business partners.

The objective of this study is to understand how micro manufacturing enterprises assess the effectiveness of established operations management practices and identify its relationship with the business sustainability in terms of economic, social and environmental indicators. This paper discusses the effective operations management practices as applied by micro manufacturing enterprises and how this impacts business sustainability. Management is divided into four areas: production, finance, marketing, and human resources. The effective operations management practices are identified and analyzed as to its correlation to business sustainability. This study seeks to identify which among the best practices are applicable to micro manufacturing enterprises for them to sustain their market share and continuously engage in profitable activities.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

This study is anchored in the Unicist Theory of Economic Growth. According to this theory, four basic elements are existent in every growth: technology, monetary circulation, competitiveness, and scarcity. In order to develop, an economy, or an entity, should focus on increasing the value of technology it is using. In business, technology does not refer only to the hardware and software it adapts to but also to the peopleware involved in conducting business. Technology involves the production and human resources management practices of an organization. Understanding how to generate money circulation in the market is also important for an economy

to grow. Money circulation is related to the financial management practices of an enterprise, covering the sources of funds and the cash flow. Competitiveness measures the power of one's influence to gain market share while learning how to defeat scarcity within and outside the organization. This is aligned with the marketing strategies adapted by the company. The integration of these four elements of growth suggests that innovation, as the driver of evolution, implies that generating added value is the key to economic growth.

The Unicist Theory of Economic Growth is adapted in this study to analyze the interrelationship of these four elements in the operations management practices of the micro manufacturing enterprises and how business sustainability indicators will foster growth and help strengthen the micro manufacturing business sector.

2.2 Manufacturing Business in the Province of Rizal

Rizal Province consists of 13 municipalities: Cainta, Taytay, Angono, Binangonan, Teresa, Baras, Morong, Cardona, Tanay, Pililia, and Jala-jala; and one city which is known as its capital, Antipolo City. Due to its proximity to Manila, Rizal became the "premier province" of the Philippines as it sustained progressive development despite its dismemberment in 1975 during the Marcos regime (<http://www.rizalprovince.ph/>). This development paved way for the province to become an economic center and a home to a progressive city and urbanized communities promising continuous development. With the availability of resources, the residents of the province of Rizal were able to develop new products made available in the market. There is a limited literature as to the manufacturing businesses in the province, but the different municipalities of the province were featured in different shows and blogs. The province is known for the production of various delicacies, wood works, garments, food products and handicrafts. According to a study done by the National Statistics Coordination Board (NSCB), Rizal province got a result of 3.4% poverty incidence rate making it become the least poor province. This rate is much lower than that in the National Capital Region. The center of trade and exchange and the capitol of the province is set in the city of Antipolo, its capital. The city is known for its rice cakes and cashew nuts which are locally produced from resources available within the province. Another famous business hub of the province is

Taytay, the garment capital of the province, where textiles are crafted into clothing which are sold nationwide. Cainta, the nearest municipality to Metro Manila is the home to various business-process outsourcing (BPO) businesses in the province, yet also famous for its rice cakes and delicacies.

2.3 Operations Management Practices

2.3.1 Production Management

Operations management models were introduced to cope with society's changing demands which include better working environment, clean production, sustainable products and improved social atmosphere. The purpose of setting up models is to undergo manufacturing procedures eliminating waste in the production (Helleno, Moraes & Simon, 2017). In a study on the automation of inventory management, Mbuvi, Namusonge, and Arani (2016) found out that automation is not fully embraced by the micro, small and medium enterprises because a high number of their employees have inadequate information technology skills.

2.3.2 Financial Management

Financial accessibility hinders businesses to invest in this. The financial problems faced by the MSMEs could be grouped into three categories: financing, operational and administrative, and sales and credit customers (Naidu et al, 2012). Since large enterprises' financial statements are clear and they have lower risks of payment default, many banks prefer to distribute their resources to large enterprises rather than to SMEs. Lending money to SMEs are riskier as the reliability of their accounting reports cannot be guaranteed (Yoshino et al, 2016). In contrast, it is observed that considering credit to MSMEs is not a high risk business because of a zero default rate as compared to loans to other businesses. Banks' point of view is that, lending to MSMEs yield higher earnings due to higher interest charged for their loans compared to large enterprises (Yadav, 2012). Results of a study on the economic impact of microfinance in the Province of Rizal reveal that respondents' assessments varied depending on the type of business they are involved in and how long they have been in operation. It is advised that the loanable amount from microfinance institutions be increased in order to raise potential capital and generate more profits,

which will help increase household income and expenditure. This will strengthen the microfinance program and the goals of microfinance institutions. To improve the economic circumstances of impoverished households, the government should support long-lasting businesses and step up its advocacy for encouraging the poor to start their own micro, small, and medium-sized firms (De Guzman, 2018).

2.3.3 Marketing Management

Marketing is the essence of business in any society as it plays a great role in establishing demand for products and services, especially to the new market entrants, whether it is a new organically grown vegetable crop, product innovation or a digital cable service. Marketing costs are estimated to range from 40% to 60% of the total costs of products based on numerous attempts on measuring these costs (Boone & Kurtz, 2015). Marketing activities encompasses all functions in business: creating, communicating and delivering value to customers including customer relationship management.

Seminars on planning, organizing, directing, and controlling small and medium-sized business operators should be held on a regular basis by the government, chambers of commerce, and other non-governmental organizations. These entrepreneurs should build up strategic marketing plan including promotional strategies such as advertising and good customer relations (Osotimehin et al 2012).

According to Rajagopal (2019), start-up enterprises should work generally on its consumer-employee relationship as the latter supports not only the manufacturing activities but also the marketing campaign of the entities on its particular market segment. In a study of the typical batik sale in Lampung City (Rinova, et.al., 2019), it is identified that giving discounts and special prices to customers is a good marketing strategy for micro, small and medium enterprises.

2.3.4 Human Resource Management

Employee orientation has a significant influence on the employees' satisfaction towards work. Workforce, which is composed of individuals who are eager to learn and continuously seek personal improvement, is important in order to maintain a 'sustainable level of success and development' and also to compete in the market (Rowland, Ruth & Ekot, 2017). In a study of high-performance work system in small and medium enterprises (Rasheed et. al., 2017), it is found that employee voice contributes to innovation within the organization as it predicts and mediates organizational innovation.

2.4 Business Sustainability

2.4.1 Economic Indicator

The study of Boso et. al. (2016) suggests that increase in sales performance occurs when product innovation and entrepreneurial orientation of the enterprise is at a high magnitude. According to Rahman (2016), micro and small enterprises find it difficult to enter the formal market due to their products' inability to meet market demands, hence, they are unable to compete with established brands. Kenyon, Meixell and Westfall (2016) argue that production outsourcing has a negative impact in the effectiveness of the operational performance, particularly in delivery lead time and equipment utilization. The study by Pham & Matsunaga (2019) found out that experience of the firms in engaging innovation and product development and investing in human capital are important in future business operations, particularly in innovation which requires investment. The study of Mor, Madan, Archer and Ashta (2020) indicates that manufacturing enterprises which require higher investment particularly on production management practices, have more chances of long-run survival as compared to trading and service-oriented businesses.

2.4.2 Social Indicator

The results of the study of Hofer and Grohs (2018) revealed that sponsorships of activities within the community is an effective management tool in creating internal branding among the human resources. As presented by Kotey and Sharma (2015) in their study on

small and medium enterprises, smaller business enterprises have limited resources to adopt to the flexible work arrangements. However, micro enterprises should adopt to the concept of work-life balance to compete with larger sectors as the research findings of Saraih, Karim & Sakdan (2018) suggest that career satisfaction of employees is significantly affected by work-life balance and job performance. Today, finding a healthy work-life balance is a constant challenge. The competitive nature of today's global marketplace necessitates unwavering "work-life commitment" in the face of competing professional obligations. To attract and retain employees in an organizational environment, a high standard work-life balance must be upheld. This kind of practice has a profound effect on staff attitudes, behaviours, welfare, and organizational effectiveness (Pradhan, Jena & Kumari, 2016). Companies have recently begun to recognize the necessity of having practices and policies that foster a sustainable workforce, embrace the idea of work-life balance, and recognize its value as a tool for enhancing employee productivity, satisfaction, and retention. The subject is very important, particularly in the context of today's corporate world, which is characterized by intense market competition and a greater emphasis on sustainable businesses (Parakandi & Beheri, 2016). Findings in a study of food export and import firms in United Kingdom and New Zealand show that organizations which focus on relationship-oriented network performed better than those which do not (Akhtar et. al., 2017).

2.4.3 Environmental Indicator

Environmental management system helps in the reduction of micro-pollutants emission from the activities entered into by the micro enterprises (Wielgorka, 2014). These substances penetrate the soil, air and water, in the form of solid, liquid or gas, causing pollution. The respondents agree that measures are being imposed by micro manufacturing enterprises to address the environmental issues caused by the business. According to the study of Testa et. al. (2015), there is a positive relationship between environmental proactivity, investments and performance of a business organization. Environmental investment has a strong influence on performance and reports present that the concept of environmental management commitment is starting to develop in small and micro firms. The findings of Miroshnychenko, Barontini and Testa (2018) suggest that

pollution prevention, together with green supply chain management, plays a vital role in the financial performance of an organization.

2.5 Statement of the Problem

This study is anchored on correlation of the operations management practices and business sustainability of micro manufacturing enterprises in the Province of Rizal. Specifically, the study sought answers to the following questions:

- What is the business profile of the respondents in terms of number of years in operation, number of employees, capitalization, sources of funds, type of business industry, and profitability growth?
- How do respondents assess the level of effectiveness of operations management practices of micro manufacturing enterprises in the Province of Rizal in the aspect of production, finance, marketing and human resources?
- What is the respondents' agreement on the business sustainability of micro enterprises in the Province of Rizal according to economic, social, and environmental indicators?
- Is there a significant correlation between the operations management practices and sustainability of micro manufacturing enterprises in the province of Rizal?

H₀: There is no significant correlation between the operations management practices and sustainability of micro manufacturing enterprises in the province of Rizal.

3.0 METHODOLOGY

The study used the descriptive method of research, particularly the survey method. In descriptive method of research, the researcher studies the relationships of the variables. A variable is a number or feature that contains two or more mutually incompatible values or attributes of items or persons that can be classed, quantified, or labeled in various ways (Zulueta & Costales, 2003). Researchers may use descriptive research design to describe or offer a

picture of a phenomenon or phenomena under study (Christensen, et al, 2014). Descriptive research is used to learn about the current state of a phenomenon and the variables that affect the situation being studied. This method is applicable in the study of the relationship between the effectiveness of operations management practices and business sustainability of micro manufacturing enterprises in the Province of Rizal as this will provide evidence of the phenomenon as perceived by the managers and owners of micro enterprises.

3.1 Population, Sample Size, and Sampling Technique

The main sources of data are the micro enterprise managers and owners engaged in manufacturing business in the Province of Rizal. Based on the list of establishments from the Department of Trade and Industry, there are 3,324 micro enterprises engaged in manufacturing business in the Province of Rizal.

Using this information, the sample size is determined by applying Slovin's formula:

$$n = \frac{N}{1 + Ne^2}$$

where:

n = sample size

N = population size

e = marginal error at .05

Using this formula, with the population of 3,324 micro manufacturing enterprises and a marginal error of 0.05, sample size is equal to:

$$n = \frac{3,324}{1 + (3,324)(0.05)^2}$$

$$n = 357$$

The researcher identified criteria in selecting the respondents of the study. The respondents are those engaged in the manufacturing business for at least three

years and have at least three employees. The specific information was not identified in the list provided by the DTI; hence the whole population is used in computing the required samples.

3.2 Research Instrument

In this study, the researcher used a survey questionnaire to be answered by the managers of micro manufacturing enterprises in the Province of Rizal. The survey questionnaire consists of three parts. The first part refers to the business profile of the micro manufacturing enterprises as identified by the respondents. These intervening variables are (1) the number of years in business operation; (2) number of employees; (3) capitalization; (4) source of funds; (5) type of product; and (6) profitability based on the average of the past three years of operation. The second part of the survey questionnaire includes items of effective operations management practices of micro enterprises based on various literatures. The respondents are asked to assess the level of effectiveness of these practices as applicable to their enterprise. This part is divided into four sections which are (1) production practice; (2) financial practice; (3) marketing practice; and (4) human resource practice. The third part of the survey questionnaire inquires the level of agreement of the respondents on the business sustainability indicators which is divided into three sections: (1) economic; (2) social; and (3) environmental. These sections are in accordance with the Triple-Bottom Line approach.

3.3 Validation and Reliability Test

The researcher conducted pilot testing to validate and test the reliability of the questionnaire. The validation of the questionnaire was done through the content validity technique. A draft of the survey questionnaire was prepared and presented to the dissertation adviser for approval. Upon the approval of the research instrument, the researcher was advised to consult with the statistician as to the format and presentation of the data required. The researcher was not required to translate the questionnaire to Filipino language as respondents are the micro manufacturing enterprise managers. The questionnaire is submitted to the statistician and the researcher was required to distribute the questionnaire to at least 20 respondents. For the pre-test, micro manufacturing

enterprises operating in Quezon City were asked to answer the survey. Upon completion of the required number of respondents, an excel file of the data gathered was submitted to the statistician. The reliability test result was analyzed using the Cronbach's alpha:

where:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

N = number of items

c = average inter-item covariance among the items

v = equals the average variances

This formula measures the internal consistency of the items presented in the survey questionnaire. The result showed that the Cronbach's alpha coefficient for the 55 items is .957 while the Cronbach's alpha based on standardized items is .962; suggesting that the items have 'excellent' internal consistency. Upon passing the reliability testing, the researcher proceeded with the data gathering.

3.4 Data Gathering

Convenience sampling is employed in this study. During the first two weeks of data gathering, 200 questionnaires were distributed to micro manufacturing enterprises in the municipality of Pililia, Tanay, Baras, Angono, and Antipolo. From this, 183 questionnaires were retrieved from the respondents. From these, 175 responses were accepted. Eight respondents were not able to answer the questions on the back page of the questionnaire; thus 4.37% responses were rejected. This is equivalent to 95.63% response rate which is acceptable. The rest of the responses were accumulated from the online survey distributed through google form. The researcher was able to gather 188 responses from the online survey. The researcher gathered information from 363 respondents who are managers of micro manufacturing enterprises operating for at least three years and with at least three employees. The personal profile of the respondents is not included in the study as it is considered to not have an impact in the study conducted. The business profile is identified as this is considered as intervening variables. Majority of the

respondents have been operating for three years to less than five years, with three to four employees and a capitalization of not more than Php300,000.00. They are engaged in the food and beverage industry, acquired financial resources from their own savings and/or from their friends, and have been earning an average income of 8% or more.

3.5 Statistical Treatment of Data

After gathering the data required for the study, the researcher tabulated the results through the spreadsheet and submitted to the statistician for analysis. The following statistical tools and techniques were used:

Frequency Distribution. This is a function showing the number of times the distinct values among the variables occur.

Percentage. This shows how a distinct value is represented compared to the total number of responses. This is calculated using the following formula:

$$P = (f \times 100) / n$$

Where:

P = percentage of distribution

f = frequency of responses

n = total number of respondents

100 = is given as constant

Weighted Mean. This is the average of the values at which some data points contribute more weight than the other data points. The formula is:

$$X_w = \Sigma fw / n$$

Where:

X_w = weighted mean

Σfw = summation of the product of the frequency

n = total number of respondents within the same

Pearson's Correlation Coefficient / Pearson R. This is also known as the product moment correlation coefficient (PMCC) or simply "correlation". This is the test statistics that measures the statistical relationship or association between two continuous variables.

The formula for Pearson's correlation coefficient is below:

$$r_{xy} = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n \sum x_i^2 - (\sum x_i)^2} \sqrt{n \sum y_i^2 - (\sum y_i)^2}}$$

Where: r_{xy} = Pearson r correlation coefficient between x and y

n = number of observations

x_i = value of x (for ith observation)

y_i = value of y (for ith observation)

The correlation coefficient and its descriptive meaning is presented below:

Correlation Coefficient	Descriptive Meaning
± 1.00	Perfect Correlation
± .81 – .99	Very High Correlation
± .61 – .80	Substantial Correlation
± .41 – .60	Moderate Correlation
± .21 – .40	Weak Correlation
± .01 – .20	Negligible Correlation
± .0	No Correlation

4.0 RESULTS AND DISCUSSION

4.1 Profile of the Respondents

The study revealed that 137 or 37.7% of the respondents are operating for three years to less than five years while 61 or 16.9% of the respondents have been operating for seven years to less than nine years. In terms of the number of employees, 131 or 36.1% of the respondents have three to four employees while 54 or 14.8% of the respondents hired seven to eight employees. According to capitalization, 255 or 70.2% of the respondents have Php300,000 or less capitalization, while 22 or 6.1% have Php2,000,000 to Php3,000,000 capitalization. 179 or 49.3% of the respondents sourced funds from their savings and loans from friends while 38 or 10.5% entered into microfinancing for their business'

financial needs. In terms of the type of products, 118 or 32.5% of the respondents are engaged in the manufacturing of food and beverage while 43 or 11.8% of the respondents are engaged in wood, leather and paper business. In terms of profitability, 111 or 30.6% of the respondents earned more than 8% average profit in the past three years of operations while 19 or 5.2% have negative growth.

4.2 Effectiveness of the Operations Management Practices

Table 1 presents that the statement “strict compliance to the standard operating procedures as to workflow” has the highest weighted mean among the group of 4.42 which is interpreted as “extremely effective” followed by the statements “identification of weak points/areas in production (i.e. production bottlenecks)” and “assignment of tasks to workers with the right skills in the right places” both with weighted mean of 4.30 or “extremely effective”. Two other statements were also interpreted as “extremely effective”: “organized storage of materials, documents, and equipment” with a weighted mean of 4.25, and “guidelines as to material waste management” with a weighted mean of 4.23. The statement “proper layout of production floor/area to maximize efficiency” got a weighted mean of 4.16 which has an interpretation of “very effective”. The statement “regular conduct of training and seminars on production and innovation” has a weighted mean of 4.06 while the statement “preventive maintenance program of the manufacturing equipment” got 4.04 and the statement “utilization of machines and equipment at maximum capacity” got 4.02. These three statements are presented as “very effective”. The statement “reduction of human intervention in processing (e.g. use machines in production)” got the lowest weighted mean of 3.85 which is also interpreted as “very effective”. The overall weighted mean is 4.16 which has a verbal interpretation of “very effective”. This means that focus is given on strict compliance to set standards in the production process which includes the identification of weak points and work assignments rather than the proper utilization of the manufacturing equipment. In addition, it shows that micro manufacturing enterprises have not yet embraced the transition to the use of machine in reducing human intervention in the production process.

Table 1. Effectiveness of Production Management Practices of Micro Enterprises

Production	Mean	Verbal Interpretation
Strict compliance to the standard operational procedures as to work flow	4.42	Extremely Effective
Identification of weak points/areas in production (i.e. production bottlenecks)	4.3	Extremely Effective
Assignment of tasks to workers with the right skills in the right places	4.3	Extremely Effective
Preventive maintenance program of the manufacturing equipment	4.04	Very Effective
Reduction of human intervention in processing (e.g. use machines in production)	3.85	Very Effective
Utilization of machines and equipment at maximum capacity	4.02	Very Effective
Guidelines as to material waste management	4.23	Extremely Effective
Regular conduct of training and seminars on production and innovation	4.06	Very Effective
Proper layout of production floor/area to maximize efficiency	4.16	Very Effective
Organized storage of materials, documents and equipment	4.25	Extremely Effective
Grand Mean	4.16	Very Effective

According to Helleno, Moraes and Simon (2017), operations management models were introduced to cope up with the society’s changing demands which include better working environment, clean production, sustainable products and improved social atmosphere. The purpose of setting up models is to undergo manufacturing procedures eliminating waste in the production. In a study regarding the automation of inventory management, Mbuvi, Namusonge, and Arani (2016) found out that automation is not fully embraced by the micro, small and medium enterprises because a higher number of their employees have inadequate information technology skills. Moreover, financial accessibility hinders businesses to invest on this.

Table 2. Effectiveness of Financial Management Practices of Micro Enterprises

Finance	Mean	Verbal Interpretation
Preparation of budget on an annual basis	4.27	Extremely Effective
Updates/modification of budgets on a quarterly basis	4.00	Very Effective
Monitoring of the performance as to monthly sales quota	4.00	Very Effective
Borrowing funds from the bank/s	3.36	Somewhat Effective
Deposit of collections on a daily basis	3.59	Very Effective

Use of cash box/vault to safe-keep cash on hand	3.71	Very Effective
Paying suppliers earlier to avail discount	3.84	Very Effective
Issuance of check as payment to suppliers	3.63	Very Effective
Extending credit to customers	3.50	Very Effective
Setting up petty cash or revolving fund for daily cash disbursement needs	3.75	Very Effective
Grand Mean	3.77	Very Effective

Table 2 presents the respondents' assessment on the level of effectiveness of operation management practices of micro manufacturing enterprises in terms of finance. The statement "Preparation of budget on an annual basis" obtained the highest weighted mean of 4.27, verbally interpreted as "Very Effective." This is followed by 8 statements that were rated as "Effective." These are: "Updates /modification of budgets on a quarterly basis" and "Monitoring of the performance as to monthly sales quota" both with weighted mean of 4.00, "Paying suppliers earlier to avail discount" (WM=3.84), "Setting up petty cash or revolving fund for daily cash disbursement needs" (WM=3.75), "Use of cash box/vault to safe-keep cash on hand" (WM=3.71), "Issuance of check as payment to suppliers" (WM=3.63), "Deposit of collections on a daily basis" (WM=3.59), and "Extending credit to customers" (WM=3.50).

The statement "Borrowing funds from the bank/s" obtained the lowest weighted mean of 3.36, verbally interpreted as "Somehow Effective." Borrowing from banks is usually one of the last options for business owners when it comes to funding their venture. This is because banks require a great deal of information from prospective business owners before making a loan. Borrowing money from a bank to start a business is not an apparent choice for potential business owners, according to Steyn (14 July 2017). Unless one is well-known and have a track record of launching and operating profitable businesses, no official sources of finance are likely to invest in in the early stages of the new firm. Banks typically require an operating history to mitigate risk. According to Stell (cited by Steyn, 2017), "Banks love collateral. They swoon over profits. And they get positively dizzy over long-term performance records. Because of this, it is difficult to get a loan from a bank to start a new business, which does not have any collateral, profits or long-term success to back up your loan application."

Table 3 shows the respondents' assessment on the level of effectiveness of operation management practices of micro manufacturing enterprises in terms of marketing. The statement "establishment of good customer relationship" has the highest weighted mean of 4.33 among this group which has a verbal interpretation of "extremely effective". This is followed by the statement "customers' feedback for goods and services rendered" with a weighted mean of 4.28 and "continuous improvement of goods and services' with a weighted mean of 4.26. Both statements are also identified as "extremely effective". The statement "identification of the needs of the target customers" got a weighted mean of 4.19 followed by the statement "sales promotion programs (buy1take1, loyalty points, discount vouchers, factory sale)" with a weighted mean of 4.15 and the statement "setting prices lower than the competitors' prices" with a weighted mean of 4.00 which are all identified as "very effective".

The statement "acquiring services of a middleman/agent to sell the goods and services" earned a weighted mean of 3.94 with a verbal interpretation of "very effective". The statements "giving discounts to loyal customers" with a weighted mean of 3.51 "giving discount to credit customers who pay earlier than the due date" with a weighted mean of 3.45 both got the verbal interpretation of "very effective". The statement "giving discounts to first-time customers" got the lowest mean of 3.37 among this group which is interpreted as "somewhat effective".

Table 3. Effectiveness of Marketing Management Practices of Micro Enterprises

Marketing	Mean	Verbal Interpretation
Identification of the needs of the target customers	4.19	Very Effective
Customers' feedback for goods and services rendered	4.28	Extremely Effective
Establishment of good customer relationship	4.33	Extremely Effective
Setting prices lower than the competitors' prices	4.00	Very Effective
Giving discounts to loyal customers	3.51	Very Effective
Giving discounts to first-time customers	3.37	Somewhat Effective
Giving discount to credit customers who pay earlier than the due date	3.45	Very Effective
Continuous improvement of goods and services	4.26	Extremely Effective

Acquiring services of a middleman/agent to sell the goods and services	3.94	Very Effective
Sales promotion programs (buy1take1, loyalty points, discount vouchers, factory sale)	4.15	Very Effective
Grand Mean	3.95	Very Effective

In summary, the respondents assessed the level of effectiveness of marketing management practices of micro manufacturing enterprises at a weighted mean of 3.95 which has a verbal interpretation of “very effective”. The assessment of the level of effectiveness of operations management practices as to the marketing aspect got an overall weighted mean of 3.95 and a verbal interpretation of “very effective”. The result shows that good customer relationship is the top priority of micro manufacturing enterprises with the consideration of the market needs and giving importance on the customer feedback. Giving discounts to customers, especially to the first-time customers is not the primary focus of these enterprises.

According to Rajagopal (2019), start-up enterprises should work generally on its consumer-employee relationship as the latter supports not only the manufacturing activities but also the marketing campaign of the entities on its particular market segment. Hence, proper consumer segmentation should be identified, and easy accessibility and availability of the products and relevant services should be provided to gain competitive advantage. This advantage is necessary in increasing the market share of micro-enterprises. In a study of the typical batik sale in Lampung City (Rinova, et.al., 2019), it is identified that giving discounts and special prices to customers is a good marketing strategy for micro, small and medium enterprises. However, this practice is more of a defensive approach as this strategy is applied to avoid selling and profit losses in a market where a large number of competitors exists.

Table 4. Effectiveness of Human Resource Management Practices of Micro Enterprises

Human Resources	Mean	Verbal Interpretation
Hiring qualified individuals who are trainable and committed	4.29	Extremely Effective
New employee orientation or on-boarding program (on his/her first day)	4.30	Extremely Effective
Providing fair and performance-based compensation	4.15	Very Effective

Providing other incentives and benefits (bonus, commission, tip share)	4.22	Extremely Effective
Paying employees on a semi-monthly basis	3.90	Very Effective
Observation of occupational health and safety of the employees	4.19	Very Effective
Annual employee performance evaluation	3.74	Very Effective
Recognition of exemplary performance of employees	3.88	Very Effective
Training employees in relevant skills	4.13	Very Effective
Involvement of workers in business planning and implementation	3.79	Very Effective
Grand Mean	4.06	Very Effective

Table 4 presents the assessment of the respondents on the level of effectiveness of operations management practices as to human resource. The statement “new employee orientation or on-boarding program (on his/her first day)” got the highest weighted mean of 4.30 and a verbal interpretation of “extremely effective”. This is followed by the statement “hiring qualified individuals who are trainable and committed” with the same remarks and a weighted mean of 4.29. The statement “providing other incentives and benefits (bonus, commission, tip share)” also got the verbal interpretation of “extremely effective” with a weighted mean of 4.22. The statement “observation of occupational health and safety of the employees” got a weighted mean of 4.19; the statement “providing fair and performance-based compensation” got a weighted mean of 4.15; and the statement “training employees in relevant skills” got a weighted mean of 4.13. These three statements showed a verbal interpretation of “very effective”. The statement “paying employees on a semi-monthly basis” was found to be a “very effective” practice with a weighted mean of 3.90 together with the statement “recognition of exemplary performance of employees” with a weighted mean of 3.88. The statement “involvement of workers in business planning and implementation” earned a weighted mean of 3.79 and the statement “annual employee performance evaluation” got a weighted mean of 3.74. These two statements have a verbal interpretation of “very effective”. Overall, the assessment of the level of effectiveness of the operations management practices as to human resource has a weighted mean of 4.06 and a verbal interpretation of “very effective”. The result implies that micro manufacturing enterprises give importance to the proper orientation of its

newly hired qualified employees who are trainable and committed. Employee performance evaluation and their involvement in business planning implementation is effectively practised but with a lower level compared to other practices.

According to the study of Rowland, Ruth & Ekot (2017), employee orientation has a significant influence on the employees’ satisfaction towards work. They emphasized that a workforce, which is composed of individuals who are eager to learn and continuously seek personal improvement, is important to maintain a ‘sustainable level of success and development’ and also to compete in the market. In a study of high-performance work system in small and medium enterprises (Rasheed et. al., 2017), it is found that employee voice contributes to innovation within the organization as it predicts and mediates organizational innovation.

4.3 Sustainability Measures of Micro Enterprises

Table 5 presents that the respondents “Agree” to the statement “The number of clients of the company increases every year.” (WM=4.09). The respondents also agree on “The company sets aside cash equivalent to 1% of sales for future investment.” (WM=4.05) and “The company considers outsourcing projects.” (WM=4.02). They agree on “Sales increase by 7% per year.” (WM=4.01) and “The company invests in other profit-making ventures.” (WM=4.01).

Table 5. Economic Indicators of Business Sustainability

Economic Indicator	Mean	Verbal Interpretation
The number of clients of the company increases every year.	4.09	Agree
Sales increase by 7% per year.	4.01	Agree
The company considers outsourcing projects.	4.02	Agree
The company sets aside cash equivalent to 1% of sales for future investment.	4.05	Agree
The company invests in other profit-making ventures.	4.01	Agree
Grand Mean	4.04	Agree

According to Adams & Hunter (2019), a typical microenterprise emerges from a tiny entity, usually operated by one person, with a high probability of failure and only a little growth within the first four years of operation. Growth for micro enterprises is achieved when

a microenterprise survived the first four years. However, only a little portion of these enterprises will convert into small and medium enterprise the following years. This is evidenced by the larger percentage of micro enterprises compared to small, medium and large enterprises. Moreover, in this study, 62.3% of the respondents are operating as micro enterprises for five years and longer; confirming that microenterprise growth results in increased number of customers and increased sales.

It can be seen from Table 6 that the respondents “Strongly Agree” to the statement “The company provides its employees with a safe and healthy environment to work” (WM=4.34). This may imply that the respondents recognized worker safety and health is the most important in creating a positive workplace culture and developing and maintaining healthy lifestyle practices. The respondents also strongly agree on “The company evaluates practices of suppliers before acquiring their goods/services” (WM=4.23) and “The company promotes work-life balance among its employees” (WM=4.22). They agree on “The company sponsors activities/events within the community more than once a year” (WM=4.14) and “The company involves its suppliers in the community programs they participate in” (WM=4.08).

Table 6. Social Indicators of Business Sustainability

Social Indicator	Mean	Verbal Interpretation
The company sponsors activities/events within the community more than once a year.	4.14	Agree
The company promotes work-life balance among its employees.	4.22	Strongly Agree
The company provides its employees with a safe and healthy environment to work.	4.34	Strongly Agree
The company involves its suppliers in the community programs they participate in.	4.08	Agree
The company evaluates practices of suppliers before acquiring their goods/services.	4.23	Strongly Agree
Grand Mean	4.20	Agree

According to the blog written by Fit for Work team (13 February 2015), “by creating a positive, safe and healthy environment for employees, you can increase morale, improve your employees’ work-life balance and, in turn, positively impact your business.” This is in

contrary to the observation of Top, Adanur and Oz (2016) in the wood product enterprises, most of which are micro-sized. They summarized that occupational health and safety practices among these enterprises is poor. Personal protective equipment is insufficient. Workers remove some of the parts which were intended for safety. Despite this scenario, employees have not reported any occupation-related disease. Work-life balance solutions fully moderate the association between work pressures and manufacturing business performance, according to Ganiyu, Atiku, and Fields (2018). In an organizational setting, maintaining a high-quality work-life balance is crucial to luring and keeping personnel. The impact of this type of practice on employee attitudes, behaviours, wellbeing, and organizational effectiveness is enormous (Pradhan, Jena & Kumari, 2016). The subject is very important, particularly in the context of today's corporate world, which is characterized by intense market competition and a greater emphasis on sustainable businesses (Parakandi & Behery, 2016). It has a positive impact to the manufacturing firm's business performance; thus, it is recommended for management to redesign work-life balance strategies, particularly in the family aspect pf employees.

(WM=4.08) and “The company carries out specific initiatives to reduce water consumption.” (WM=4.07).

In a study of food export and import firms in United Kingdom and New Zealand, findings show that organizations which focus on relationship-oriented network performs better than those which do not (Akhtar et. al., 2017). Environmental management system helps in the reduction in micro-pollutants emission from the activities entered into by the micro enterprises (Wielgorka, 2014). These substances penetrate the soil, air and water, in the form of solid, liquid or gas, causing pollution. The respondents agree that measures are being imposed by micro manufacturing enterprises to address the environmental issues caused by the business.

Governments in both developing and developed nations are putting sustainability-related policies in place to encourage high compliance by businesses in ensuring that operations take into account having the three pillars of sustainability—profit, people and planet—equally balanced. Other stakeholders, like non-governmental organizations (NGOs), are also working to advance the sustainability agenda by urging policymakers to adopt environmental, social, and governance (ESG)-related policies in an effort to persuade and persuade businesses to change the way they run their current businesses in a more sustainable way (Mahmood & Rosnan, 2022).

Table 7. Environmental Indicators of Business Sustainability

Environmental Indicator	Mean	Verbal Interpretation
The company emphasizes to business partners its concern for the environment.	4.20	Agree
The company has programs in pollution prevention.	4.11	Agree
The company carries out specific initiatives to reduce material wastes.	4.10	Agree
The company carries out specific initiatives to reduce water consumption.	4.07	Agree
The company carries out specific initiatives to reduce energy consumption.	4.08	Agree
Grand Mean	4.11	Agree

Table 7 shows that the respondents “Strongly Agree” to the statement “The company emphasizes to business partners its concern for the environment.” (WM=4.29). The respondents agree on “The company has programs in pollution prevention.” (WM=4.11) and “The company carries out specific initiatives to reduce material wastes.” (WM=4.10). They agree on “The company carries out specific initiatives to reduce energy consumption.”

4.4 Significant Relationships between Operations Management Practices and Indicators of Business Sustainability

Table 8. Correlation of Operations Management Practices and Indicators of Business Sustainability

Practices	r-value			P-val	Dec.	Rem.
	ECO IND	SOC IND	ENV IND			
Production	0.58	0.513	0.475	0	Reject Ho	Sig.
Financial	0.43	0.281	0.493	0		
Marketing	0.35	0.378	0.354	0		
Human Resource	0.47	0.494	0.442	0		

All Pearson values were positive which means that there is a direct correlation among operations management practices and economic indicator of sustainability. All p-values were below the assumed level of significance of 0.05, therefore, operations management practices and economic indicators of sustainability are

statistically significant. The p-values are all equal to 0.000. Since this is less than the assumed level of significance of 0.05, the null hypotheses were rejected. This means that statistically, there is a significant relationship between operation management practices and business sustainability.

In order to gain a competitive edge, the manufacturing industry has recently searched for organizational performance outcomes relating to economic and environmental performance. Environmental performance contributes to the success of economic performance, whereas economic performance is seen as a long-term goal for the organization (Ibrahim et al, 2022).

5.0 CONCLUSION

There was a significant direct correlation between the level of effectiveness of operations management practices of micro manufacturing enterprises in terms of production, finance, marketing and human resources management and the level of agreement of micro manufacturing enterprises in terms of economic, social, and environmental indicator of business sustainability.

On economic indicators, the significant direct correlation between financial management and marketing management and investment in other profit-making ventures is weak. On social indicators, the significant direct correlation between financial management practices and provision for a safe and healthy work environment is negligible. All other indicators are assessed to have a weak or moderate correlation with the operations management practices. On environmental indicators, the significant direct correlation between production management practices and emphasizing environmental concerns to business partners is weak. All other environmental factors are assessed to have a weak or moderate correlation with the operations management practices.

5.1 Recommendations

For financial management practices, micro manufacturing enterprises may consider obtaining funds through microfinancing from banks and other financial institutions for their financial needs. Offering credit terms

to customers will increase sales, however, collection policy should be set for this matter. Companies should identify proper cash management practices. This includes depositing cash collections on a daily basis and using check for payments to suppliers, if possible. They should prepare the budget on an annual basis and revisit it on a quarterly or monthly basis and consider setting aside cash for future investment or expansion of the business.

For marketing management practices, micro manufacturing enterprises may provide promotional activities as part of their marketing program. This includes giving discount to first-time customers and incentives for loyal customers. If applicable, give prompt payment discount to credit customers and acquire services of sales agent. They may consider reseller programs to increase market reach of their products. Acquiring customers' feedbacks on the offered goods and services is also recommended.

For human resource management practices, they need to evaluate employees' performance on an annual basis. The evaluation should be utilized in identifying trainings required from employees and should be used as basis for salary increase. Employers should recognize the exemplary performance of the employees. Enterprises may involve employees in business planning and closely monitor implementation of plans in business operations. They should continue hiring qualified individuals who are willing to be trained and should consider provision of safe and healthy work environment for its employees.

For production management practices, it is highly encouraged to practise strict implementation of the compliance to the standard operational procedures as to work flow in the production department and related areas. They should utilize machines and equipment in the production process at maximum capacity and conduct regular trainings and seminars for its workers and ensure proper monitoring on preventive maintenance of equipment and machines used in business operation.

As to business sustainability, micro manufacturing enterprises should focus on the economic indicators first, then environmental indicators. Micro enterprises should improve operations management practices to generate higher sales. Sales quota should be set for the whole year and should be monitored daily, weekly and monthly. Control measures should be identified in case sales quota was not reached for a particular period. Companies need

to consider which is beneficial to the organization in the long run when investing in other business ventures that may be related to the current business operations. They should take initiatives in reducing water consumption. Proper maintenance of water pipes should be practised. This includes monitoring and fixing of leaks in pipes and manufacturing equipment. They may reduce energy consumption through proper maintenance of machines and equipment used in production. They may consider organizing community projects on an annual basis. Suppliers should be involved in this endeavour, may be in the form of sponsorship and partnership.

The government agencies should help the micro manufacturing enterprises in its endeavour to increase its sales and profit. Specifically, programs on microfinancing and trainings for production and innovations should be made available to these companies. The local government, down to the barangay level, should be proactive in the information dissemination of the programs available to the micro enterprises. Government agencies offering programs for the manufacturing sectors should prioritize micro enterprises on their projects.

The researcher highly recommends future study on the subject matter specifically in terms of micro business sustainability and microfinancing. The researcher would also like to recommend future researchers and business to make use of this paper as reference.

Author Contributions: This paper is conceptualized and finalized by the only author, Joannamarie Uy Santos.

Funding: This research received no external funding.

Acknowledgments: This research is made possible through the support and courage by the Faculty of College of Business and Accountancy of Our Lady of Fatima University and the assistance of the College of Business Administration Graduate School of the Polytechnic University of the Philippines. The author appreciates all the hard work that was put in towards completing this paper.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results”.

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