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MARSLAND PRESS
Multidisciplinary Academic Journal Publisher

Mathematics and the Growth of Small Scale Enterprises

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Abstract: This study investigates mathematics and the growth of small scale enterprises in Port-Harcourt. The research used a survey design. The sample of the research comprises of one hundred and twenty (120) small scale entrepreneurs. The research was conducted in different business areas of Port-Harcourt through a simple random technique. The researches comprise two Research questions and two hypotheses to guide the study. The instrument of data collection was questionnaires and interviews. Arithmetic mean was used to analyze the result. The result of the data analysis shows significant difference in the mean scores of the small scale entrepreneurs without mathematical skills and the small scale entrepreneurs with mathematical skills in favour of the small scale entrepreneurs with mathematical skills. The finding also revealed that male entrepreneurs with mathematical skills grow their business higher than their female counterparts. It was therefore, recommended that the operators of small scale enterprises should acquire mathematical skill to enhance their business growth.
[Wokoma, D. S. A. and Nwiganale A. E. **Mathematics and the Growth of Small Scale Enterprises.** *Rep Opinion* 2020;12(1):17-20]. ISSN 1553-9873 (print); ISSN 2375-7205 (online). http://www.sciencepub.net/report. 4. doi:10.7537/marsroj120120.04.

Keywords: mathematical skills, Port-Harcourt, entrepreneurs, small scale enterprises.

1. Introduction

Mathematics is a significant actor in several success stories throughout the world. Common among the various themes are the technical advantages and cost savings that accrue from clever modeling, analysis and computations. The vital role played by mathematics in the contemporary society accounts for the importance accorded to it in the school curriculum from the primary to the secondary levels Odili (2006).

Mathematics and its applications have central position in Sciences, Business, Technology, Engineering, Social Sciences, Agriculture and even Law. Both Jegede (1984) and Ali (1994) stressed that Mathematics is indispensable because of its substantial use in the other human activities, including school subjects. In Nigerian secondary schools, Mathematics has been made compulsory for all students.

According to Odili (2006) the study of Mathematics will form in the students, the habit of clarity, brevity, accuracy, precious and certainty in expression and this will go a long way in giving us much needed unity in our homes, offices, play grounds, market places and even in the country at large through logical arguments. The influence of gender on Mathematics and growth of small scale business was considered as there are always different views among researchers on the outcome of gender. While some researchers found significant differences in the growth of small scale enterprises managed by male and female gender, others still found there is no significant difference in the growth of small scale enterprises managed by of male and female gender.

This conflicting view and results' reports call for a further investigation on the subject matter. This study therefore, seeks to investigate the effect of Mathematics in the growth of small scale business enterprises. It is also important to note that small scale enterprises in now becoming a subject of interest among the academics and researchers. The mainstream of businesses around the world is small scale enterprises, and these enterprises play key role in the world economy and its development.

The importance of small scale enterprises lies in job creation, innovation and stimulation of private ownership and entrepreneurial and Mathematical skills. Moreover, small businesses are flexible and able to adapt quickly to a changing environment, which is becoming important in times of economic crises. Small scale enterprises generally employ the bulk of the active working population and sometimes, they are considered to be more essential than large firms and corporations.

The definition of small business is not standardized and varies in different countries, as well as in individual sectors. In European countries, a small business is usually defined as a company that has less

than fifty employees. The purpose of this study is to determine the role played by Mathematics in the growth of small scale enterprise in Port-Harcourt. In specific terms, the study sought to:

i. To determine the mean growth of small scale business managed by entrepreneurs with mathematical skills and growth of small scale business managed by entrepreneurship without mathematical skills.

ii. Investigate the mean growth of small scale enterprise managed by male entrepreneurs and the mean growth of small scale enterprise managed by female entrepreneurs in Port-Harcourt.

1.1. Research Questions:

RQ1: What is the mean growth of Small Scale enterprise managed by entrepreneurs with Mathematical skills and the mean growth of Small Scale enterprise managed by entrepreneurs without Mathematical skills in Port-Harcourt?

RQ2: What is the mean growth of small scale enterprises managed by Male entrepreneurs and the mean growth of small scale enterprises managed by Female entrepreneurs in Port-Harcourt?

1.2 Hypothesis

HO1: There is no significant difference in the mean growth of small scale business enterprises managed by business entrepreneurs with mathematical skills and mean growth of small scale business enterprise without mathematical skills in Port-Harcourt.

HO2: There is no significant difference in the mean growth of small scale business enterprises managed by male entrepreneurs and the mean growth of small scale business enterprises managed by Female entrepreneurs in Port-Harcourt?

1.3 Scope to the Study

This study was carried out in selected business areas in Port-Harcourt. From the findings, we were able to make recommendations.

2. Research Methodology

The study adopted a simple questionnaires and interviews. Both the research questions and the hypotheses were answered and treated using the statistical mean and t-test respectively.

2.1 Area of the Study and Sample and Sampling Technique

The research was carried out on small scale enterprises in Port-Harcourt. Samples of 120 small scale enterprises were used for the study. A random sampling technique was used to select the small scale enterprises.

3. Results

3.1 Research Questions 1:

What is the mean growth of Small Scale enterprise managed by entrepreneurs with Mathematical skills and the mean growth of Small Scale enterprise managed by entrepreneurs without Mathematical skills in Port-Harcourt?

Table 1 shows the result showed that the mean growth of small scale business operators with mathematical skills were 62.26 and 48.92 with standard deviation of 22.18 and 17.63. The small scale enterprise operators with mathematical knowledge score higher than the group without mathematics knowledge. Higher standard deviation group showed that score were dispersed from the mean.

Table 1: Mean growth of entrepreneur with mathematical skills

No.	Mean	Standard Deviation
60	62.26	22.18
60	48.92	17.63
120	111.18	39.81

3.2 Research Question 2:

What is the mean growth of small scale enterprises managed by Male entrepreneurs and the mean growth of small scale enterprises managed by Female entrepreneurs in Port-Harcourt?

From Table 2 above, the result shows that the mean growth scores of male and female operators with mathematical skills were 60.03 and 51.60 respectively. The standard deviation of 28.09 and 21.50 showed that the male entrepreneurs with mathematical skills grow business higher than their female counterparts.

Table 2: Mean Score of Male and Female Operators of Small Scale Enterprise

Group	No.	Entrepreneurs without Mathematical Skills	STD	Entrepreneurs with Mathematical Skills	STD	Mean
Male	29	33.03	17.02	60.03	28.09	27.00
Female	31	32.87	16.76	51.60	21.50	18.73
Total	60	65.90	33.78	111.63	49.59	45.73

3.3 Hypotheses:

HO1: There is no significant difference in the mean growth of small scale business enterprises managed by business entrepreneurs with mathematical skills and the mean growth of small scale business enterprises managed by business entrepreneurs without mathematical skills in Port-Harcourt.

The result on Table 3 showed that there is difference in the growth of the operators with mathematical skills as compared to Entrepreneurs

without mathematical skills. The calculated t-test value of 13.86 is higher that the critical t-value of 1.98 at 118 degree of freedom. Therefore, Hypotheses one which states that there is no significant difference in the mean achievement scores in the growth of small scale business Entrepreneurs having mathematical skills and those who did not was rejected.

Table 3: T-Test of Growth Difference of Small Scale Enterprise Operators having Mathematical skills and Entrepreneurs without Mathematical Skills

Groups	Numbers	Mean	SD	DoF	t-cal	t-crit	Sig Level	Decision
Entrepreneurs With Mathematical Skills	**60**	**62.26**	**22.18**					**HO1**
				118	**13.86**	**1.98**	**0.05**	
Entrepreneurs With Mathematical Skills	**60**	**48.92**	**17.63**					**Rejected**

3.4 Hypotheses

There is no significant difference in the mean growth of small scale business enterprises managed by male entrepreneurs and the mean growth of small scale business enterprises managed by Female entrepreneurs in Port-Harcourt.

Table 4 showed that there is a significant difference in the growth business managed by male and female entrepreneurs having mathematical skills. The calculated t-value of 6.56 is higher than the critical t-value of 2.01 at 58 degree of freedom. Therefore, Hypotheses which state that there is no significant difference in the mean growth of small scale enterprises of male and female entrepreneurs having mathematics knowledge was rejected.

Table 4: T-Test Growth Difference Between Male and Female Entrepreneurs of Small Scale Enterprises

Gender	N	Mean	SD	DoF	t-cal	t-crit	Sig Level	Decision
Male	29	60.03	28.09					HO1
Female	31	51.61	21.50	58	6.56	2.01	0.05	Rejected

4. Discussion

The findings of this study revealed that there was a significant difference in the mean growth scores of male and female entrepreneurs with mathematical skills and that of male and female Entrepreneurs without mathematical skills. This agrees with the findings of Ifamuyiwa and Onakoya (2013) which found out a significant difference in the mean achievement scores of entrepreneurs exposed to such instructional strategy.

Mathematics is vital for the growth of small scale enterprise business and the rest of the world. This current research reveals that there are a number of factors that hinders the growth small scale enterprises operators. Such factors are cultural perceptions, education, age and gender. Government should make efforts to address the factors that hinder growth of small scale enterprise. Apart from creating awareness by banks on credit facilities, Government agencies also have a role to play to assist small scale enterprises owners through the provision of training programs for entrepreneurs.

4.1. Conclusion

Mathematics is a way of life and vital in life endeavour. The growth of a small scale business enterprise depends largely on Mathematical skills. The importance of Mathematics to small scale enterprise can be compared with the importance of oxygen to animals and water to plants. Though finance may posed a threat to business growth but the fact remains that an articulated and well-disciplined mind will always overcome such challenges.

The research further reviewed that business Entrepreneurs with mathematical skills tend to grow their business than business entrepreneurs without mathematical skills. It also shows that there is a significant difference in the growth of business among the male business entrepreneurs than their female counterparts.

4.2 Recommendations

i. Small scale business Entrepreneurs need to acquire mathematical skills so as to enhance the growth and business management.

ii. Business organizations should organize workshop and seminar on the relevance of Mathematics in business management.

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1/25/2020