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The Role of Statistics in Entrepreneurship Development in Nigeria

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Abstract

In this study, a Sequential and Long-Term Experiments (SE & LTE) were utilized to assess the expansion and advancement of entrepreneurial abilities. The analytical methods employed in this paper will aid the government in strategizing and managing a range of abilities in entrepreneurial growth by choosing the participants, determining the process by which those participants are supervised or evaluated, and ascertaining whether the evaluation aligns with the targeted entrepreneurship objectives. The sequential experiment (SEs) utilized in this research will assist in spanning numerous years as long as fullness is not achieved regarding the pursuit of reaching the objectives of the proficiency, the plan will consistently assess the abilities every three months or annually. The utilized in this research will span a considerable duration but it will conclude once there are adequate enhancements in the abilities before the investigator will make deductions from their results. For things to bode well throughout the implementation of both experiment (SEs & LTEs) they must be straightforward in structure with straightforward analysis for all the parties to comprehend their respective roles as well as training and retraining of member of such parties needs to grasp the essence of entrepreneurship skill and its effectiveness in achieving the economic growth of Nigeria.

Keywords: Sequential Experiment (SE), Long-Term Experiment (LTE), Entrepreneurship.

Introduction

In most domains where decision-making is involved, statistical techniques are used to draw reliable conclusions from analysis results. To solve our everyday problems, inference requires the application of statistical theory and methods. For example, statistical methods are applied in business analytics, a quickly evolving process, to generate new insights for assessing opportunities and business performance. The foundation of entrepreneurship development is statistics, which act as a pivot to increase GDP [1]. According to Okeke, entrepreneurship is a system that entails evolutions, opportunity detection, assessment, and exploitation through the introduction of fresh creativity [2]. A useful tool for processing essential data on how to market raw materials into finished goods is statistics. [3]. Utilizing statistical processes in the development of entrepreneurship can facilitate the utilization of potential skills for economic growth. According to UNIDO-Nigeria, statistics data has contributed to rebranding Micro, Small, and Medium-Sized Enterprises (MSMEs), which will serve as the engine of the Nigerian economy provided they have enough knowledge about how to utilize its resources [4].

Statement of the Problem

The Nigerian government failed to acknowledge the significance of statistical data in the industrialization process, despite the fact that statistics is a flexible tool that can foster the development of entrepreneurial skills. We saw that a number of policy interventions were implemented to encourage the growth of small and medium-sized businesses through entrepreneurship development, but that there was a lack of an appropriate information system to aid in the creation of programs that would aid in skill planning and control. This paper aims to present a novel approach to the design of a scheme that will assist in assessing trainee performance in entrepreneurship skills based on their performance on pre-tests conducted during training and post-tests conducted following training.

The objectives of this Study

- This paper will design a sequential experiment scheme that will assist the government to plan and monitor the entrepreneurship skill.
- It will assist in evaluating the performance of each trainee on entrepreneurship skill base on their performance before and after the training.

Literature Review

According to Thaddeus, who referenced a National Bureau of Statistics report on the influence of entrepreneurial skill on economic growth in Nigeria, in 2010 [5]. Nigeria has one of the fastest growing economies in the world, with a GDP growth rate that ranges from 6 to 8 percent. Due to Nigeria's robust entrepreneurship development, businesses founded during that time have demonstrated an ability to increase output above average returns. The highest returns on investment, capital market, stock exchange market, real estate and property, entrepreneurship, etc., have all been made possible by the introduction of entrepreneurship skills into the Nigerian economy [6, 7]. "That entrepreneurship has contributed positively on micro, small and medium enterprises (MSMEs) to Nigeria Gross Domestic Product, it has bettered the life of average Nigerian from the years 2002 to 2019," according to a National Bureau of Statistics statistics report from Onyebueke, citing NBS (2019) [8]. "Statistics is the reality of people's and how they live," according to Ogundele [9]. Statistics play a crucial part in the growth of a country. It is impossible to overstate the value of timely and accurate statistics on the socioeconomic conditions of a sovereign state. For example, a number of objectives have come to be recognized as the main aims of economic development and policy. These include the following: the capacity to pinpoint the exact moment at which an event occurs, the ability to determine a potential course of action, the degree of accuracy required, and the importance of accurate statistics in establishing and maintaining an atmosphere that supports robust, equitable development. Furthermore, the stages of country policy framework formulation and execution frequently make use of timely, precise, and trustworthy statistics.

According to Amadasun, statistical data is a way to keep track of each observation from which a conclusion is made [10]. Data that will help achieve a defined planned goal is necessary for the ongoing process of monitoring. Statistics is essential for monitoring and evaluating ongoing economic reform initiatives since it provides the information on performance indicators that are used to gauge the effects of policies and initiatives that have an impact on human development. Therefore, these concerns' statistics serve as monitoring indicators, which are essential for development plans.

Methodology

This study employed a sequential experiment by simulation with pre- and post-test groups receiving Kogi State Polytechnic's entrepreneurial instruction. The substantial difference between pre-test and post-test training on students' performance in entrepreneurship skill was tested in this paper using SE and LTE. The pre-test was given prior to the lesson on entrepreneurial education. Prior to the lecture at the first session, we administered a pre-test exam. Following the students' receipt of the entrepreneurship lectures, the post-test was evaluated. A test was conducted on this group every seven week. Students received their materials over the seven weeks of the entrepreneurship education course, and they were free to choose the trade they wanted to engage in.

Selection Process

All Participants in this study were divided into two groups using sequential approach to categorize the groups each student belongs to namely: the treatment group and the control group. The treatment group is a group of a students from School of Applied sciences who took entrepreneurship as service courses, while the control group is a group of a student from school of Management studies. The selection of students majoring in management as a control group was based on the reason that they took the course as core courses. In this experimental study, the control group is expected to increase internal validity.

Research Design

O1 Pre-Treatment Group	Entrepreneurship Training class	O2 Post Test Treatment Group
O3 Pre-Control group test	-	O2 Post Test Treatment Group

Experimental Procedures Using SE and LTE

Step i.. After all students read the instruction in the practical manual, they were given time to ask questions, but the questions were limited only to technical issues that may arise in each skill the student belong.

Step ii. Before grouping the students into their various trade group using SE and LTE methods you must ensure that the students understand the purposeful of entrepreneurship skill, this will assist the instructors to know the trade that is suitable for the student.

Step iii. All trainees in this experiment are students of applied sciences and management studies. Students majoring in Management who take entrepreneurship courses as core become control group, while applied sciences students become treatment group. Experiments on the two groups were conducted in two stages. The first stage experiments for both groups will be held in the first week of the semester, specifically for the treatment group will be conducted before the lecture at the first meeting of entrepreneurship class in the classroom. The second period of the experiment will be conducted in the seventh weeks, for the control groups after they have completed their classes.

Process of Measurement

The scale of measurement in both experiment SE and LTE are interval scale considering the independent variable in this research as the entrepreneurial intention. While dependent variables are perceived attitude, perceived behavioral control, subjective norm and intention toward entrepreneurship. All the variables will be measured using indicators associated to interval scale of measurement with seven-point scale.

The perceived attitude represents how an individual behavior exhibit toward the entrepreneurship skill. On this research, we measured the perceived attitude by using five questions. Upon those questions, the responses were given on a seven-point scale; one point for total agreement and seven points for total disagreement. The questions being asked such as “career on entrepreneur is totally unattractive to me”, “If I had the opportunity and resources, I would love to start a business”, “Being an entrepreneur implies more advantages than disadvantages to me”, “Being an entrepreneur would give me great satisfaction” and

"Amongst various options, I would rather be anything but an entrepreneur".

The perceived behavioral control measures the extent to which individual rate the ease or difficulty in performing a behavior. For this variable, we measured by asking students questions "Starting a firm and keeping it viable would be easy for me", "I believe that I would be completely unable to start a business", "If I tried to start a business, I would have a high chance of being successful", "I am able to control the creation process if a new business", "It would be very difficult for me to develop a business idea", "I know all about the practical details needed to start a business". The answers to those questions were ranged from 1 to 7 point (total agreement to total disagreement). Subjective norms represent individuals' response to other's influence regarding encouraging or inhibiting to perform a particular behavior. A sample question to measure subjective norms was "My friends/family/colleagues would approve my decision to start a business." Entrepreneurial intention measured the extent to which students seriously considered becoming an entrepreneur. To measure intention, we employed six questions. The responses ranged from one (absolutely agree) to seven (absolutely disagree). A sample questions such as "I will make every effort to start and run my own business", "I have serious doubts about ever starting my own business", "I am determined to create a business venture in the future", "My professional goal is to be an entrepreneur", "I will make every effort to start and run my own business", and "I have a very low intention of ever starting a business".

Those questions measuring the variables were randomized. The questions for before and after treatment were the same. However, the students were not expected that they would be given the same questions after the completion of an entrepreneurship class. Same conditions also happened in the control group. The questions handed out in the second stage of experiments were also randomized, not following the same sequence pattern as the first stage of the experiment.

Hypothesis Testing

The hypothesis testing conducted in this study using paired T-test to compare treatment group (students who received entrepreneurship lecture) before (pretest) and after (posttest). In addition, an Independent T-test was used to compare treatment groups with control groups (students who did not get an entrepreneurship lecture).

Discussions of Results

This study used SE and LTE by comparing pre-test and post-test. The pre-test was done before participants began their entrepreneurship lectures. The entrepreneurship lectures, in this case, is the treatment for participants (students). During the treatment process, students were given the subject related to entrepreneurship skills. The class provides knowledge and entrepreneurial practice to the participants. The lecture materials and practical manual that contains the basic principles of entrepreneurship, the types of entrepreneurship and its current issue, including the topic on how to establish a business from the basic level to business feasibility analysis.

The results of this training are the business proposal prepared by each student. To compare the effectiveness of entrepreneurship skill acquired denoted as control group. There were 50 participants in the treatment group and 105 participants in the control group. We also conduct the reliability test for the questions items, the following result shows the reliability for each variable:

The Table below Shows the Reliability Test

Variables Attitude	Cranach's Alpha 0,992
Perceived Behavioral Control	0,824
Subjective Norm	0,760
Entrepreneurial Intentions	0,854

Hypothesis 1: testing was done through several stages. First, the analysis of paired t-test was employed to see the mean difference of the participants who take the entrepreneurship Lecture before and after the class. We also analyzed the mean difference between pre-test and post-test of participants who did not get the entrepreneurship skill. Secondly, we also employed an independent t-test by comparing the mean of participants who got entrepreneurship education (treatment group) with those who did not. Hypothesis 1 stated that students who got an entrepreneurship lecture would have a greater perceived attitude compared to students who got no entrepreneurship lecture. The result shows that the average value of perceived attitude in post- test (after students got the entrepreneurship lecture) is 14.3124 (Mean = 14.3124, SD = 4.657) whereas the average value of perceived attitude in pre-test is 27.3254 (Mean = 27.3254, SD = 3.78342) with significance 5%. This result indicates that there is an average difference in perceived attitude value before and after the entrepreneurship education. Furthermore, the mean comparison on perceived attitude between the students who got the entrepreneurship education and those who got no entrepreneurship education shows a significant difference (2 Hypothesis testing was done through several stages. First, the analysis of paired t-test was employed to see the mean difference of the participants who take the entrepreneurship Lecture before and after the class. We also analyzed the mean difference between pre-test and post-test of participants who did not get the entrepreneurship skill. Second, we also employed an independent t-test by comparing the mean of participants who got entrepreneurship education (treatment group) with those who did not. Hypothesis 1 stated that students who got an entrepreneurship lecture would have a greater perceived attitude compared to students who got no entrepreneurship lecture. The result shows that the average value of perceived attitude in post-test (after students got the entrepreneurship lecture) is14.3124 (Mean = 14.3124, SD = 4.657) whereas the average value of perceived attitude in pre- test is 27.3254 (Mean = 27.3254, SD = 3.78342) with significance 5%. This result indicates that there is an average difference in perceived attitude value before and after the entrepreneurship education. Furthermore, the mean comparison on perceived attitude between the students who got the entrepreneurship education and those who got no entrepreneurship education shows a significant difference (2 tailed) with the t-value of -8.427. Based on this statistical analysis, we can conclude that the first hypothesis is supported.

Table 4: T-Test Results

Variable	condition	mean	SD	t-statistic	significant
Perceived	Previously	23.54	3.54	9.76	0.00
attitude	Later	17.46	2.12		
Perceived	Previously	34.23	3.89	7.56	0.00
behavioral	Later	24.76	2.67		
Control subjective	Previously	27.89	1.89	8.42	0.00
Norma	Later	20.31	0.65		
Entrepreneurial	Previously	35.87	2.98	6.98	0.00
intention	Later	28.67	1.54		

Hypothesis 2: stated that students who acquire an entrepreneurship skill would have greater perceived behavioral control on entrepreneurship than students who did not acquire entrepreneurship skill. The result shows that the average value of perceived behavioral control on entrepreneurship in post-test is (Mean = 23.54, SD = 3.54) while the mean value of perceived behavioral control in pre-test is (Mean = 34.23, SD = 3.89), with a significance of 0.000. This result suggests that there is an average difference in perceived behavioral control before and after entrepreneurship class. Furthermore, the mean comparison (t-value) on perceived behavioral control between the students who got entrepreneurship education and those who got no entrepreneurship education (2 tailed) is -10.465. Therefore, the second hypothesis is supported.

Hypothesis 3: stated that students who acquire an entrepreneurship skill would have a greater entrepreneurial intention towards entrepreneurship than students who didn't acquire entrepreneurship skill. The result shows that the average value of entrepreneurial intention to entrepreneurship in post-test is (Mean = 14.7241, SD = 2.98) whereas the mean value of entrepreneurial intention in pre-test is (Mean = 35.89, SD = 2.89) with significance of 0.000. From this result, we can infer that there is an average difference in entrepreneurial intention before and after the entrepreneurship education. Furthermore, the comparison of the average value of entrepreneurial intention between students who got entrepreneurship class and who did not lectures showed significant differences (2 tailed) with t-value of -11.882. Based on this analysis, we could infer that the third hypothesis is supported.

Hypothesis 4: stated that students who got an entrepreneurship education would have greater subjective norm than students who did not get entrepreneurship education. The experiment result shows that the average value of subjective norm of the participants in post-test is (Mean = 6.2414, SD = 2.29371) while the average value of subjective norm in pre-test is 11.3793 (Mean = 27.89, SD = 1.89) with a significance value of 0.000. This statistic indicates that there is an average difference between the subjective norms before and after the entrepreneurship education. Furthermore, the comparison of subjective norm values between students who got entrepreneurship class and those who did not significant differences (2 tailed) with t-value of 3.915. This means that the fourth hypothesis is supported.

The results of our study show confirmation of the effectiveness of entrepreneurship skill to improve students' entrepreneurial intention. Entrepreneurship education can be seen as a way to inform students about the benefits of being an entrepreneur as well as to educate them about step by step to become entrepreneurs. The role of the institution in this context could be escalated, not only providing an entrepreneurship class but also open access to co-operate with enterprises founded by entrepreneurs. These entrepreneurs can give training, especially to those students interested to become entrepreneurs. Therefore, not only improving entrepreneurial intention but entrepreneurial capability as well as to show that entrepreneurship is a promising and valuable career option that may lead to favorable outcomes.

Conclusion

Entrepreneurship education has been promoted throughout the world in many countries. In Nigeria, entrepreneurship education becomes one of the compulsory subjects, however little is known about its effects. This study aimed to test the effectiveness of entrepreneurship education using the Statistical methods. The result of this study shows that entrepreneurship education is effective to improve student's entrepreneurship intention in the context of its relationship to perceived attitude, perceived behavioral control and subjective norms. Perceived attitude is an assessment of both positive and negative behavior. In the context of this study, students who got entrepreneurship class had greater perceived attitude compared to those who did not get entrepreneurship class. Students who joined the entrepreneurship class give a positive assessment of entrepreneurship.

Recommendation

All institutions in Nigeria should respond to this by advancing the entrepreneurship education, starting by providing excellent lecturers, various educational activities, as well as a space for entrepreneurial activities by the students. The nature of the university with its scientific research activities could be one of the sources for generating business ideas that will help the creative process of students in entrepreneurial activity.

To effectively promote students' entrepreneurship, the supporting policies by the state and the Federal government should also be in place. Policies play an essential role in, in particular, to nourish students' entrepreneurial capabilities. Recommendation one, the government should set up special agencies, one example is the students' innovation center both in the national and local

level. The functions of those innovation centers are for researching and solving students' problem in starting a business, providing training and coaching to students' entrepreneurs, giving entrepreneurial base projects, offering legal aid and policy advice, up to bridging students' entrepreneurs and investors. If all of these components, university and government work together, we can anticipate that not only the number of entrepreneurs that will rise but also the quality of them.

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