THE POLYTECHNIC EDUCATION: A PRAGMATIC APPROACH TO ENTREPRENUERIAL DEVELOPMENT IN NIGERIA

Nsikan Lawrence Ekanem

Abstract

Vocational and technical education in which polytechnic system plays a major role is a body of knowledge, skills and procedure for doing things. It incorporates the total learning experience offered in our educational ideas and enhances ability to make matured judgment and create wealth. Entrepreneurship on the other hand, is the creation of significant new wealth through the application of creativity, ingenuity, innovation and skill to business. Therefore, it has a strong correlation for the creation of wealth. This paper tries to find the use of polytechnic education in enhancing the much needed entrepreneurial development in Nigeria. Questionnaire was the primary method of data collection used in this paper. Contingency tables were formulated and Analysis of Variance (ANOVA) one way was used in testing the hypotheses proposed. Findings revealed that polytechnic education is the major tool needed for the enhancement of entrepreneurial development in Nigeria. Recommendations were made on the creation; maintenance and development centre among others.

Introduction

No nation can be self reliant or self sufficient without developing and utilizing the indigenous talents and technologies. For instance, in 1980's, technological advancement show, American took first position with Japan closing rank rapidly. Worried Americans made trips to Japan. They discovered that their performance was largely due to better educated work force and entrepreneurial skills (Combs 1985). This confirmed the fact that no nation can establish a solid technological base for entrepreneurial development without technological education.

The importance of entrepreneurial development in Nigeria made former President Obasanjo regime to mandate all higher institutions in Nigeria regardless of the area of specialization, should study entrepreneurship (Bankole 2007). Equally, the need to institutionalize entrepreneurship into Polytechnic programme first got the attention of Common Wealth Association of Polytechnic in Africa (CAPA), which led to several seminars and conferences. The trust of the seminars was that Polytechnics should serve as a medium for exemplifying entrepreneurship activities. The UNESCO/World Bank after rigorous research concluded that curriculum of NBTE for Polytechnics should include entrepreneurship development for all programmes of study. The National Policy on Science and Technology (1986), recognised that one of the important means of having national development is to have a strong technical and vocational programme at all levels of education system. Entrepreneurship on the other hand, is the application of skills, creativity, innovation, and ingenuity to business. It therefore, means that entrepreneurial development can be successfully achieved through the application of technical education.

Attempt is therefore made in this paper to define the concept of technology education (Technical/Vocational Education), which is used synonymously with Polytechnic education. It is indispensable pragmatic roles on entrepreneurial development with empirical study of selected polytechnics in Zamfara and Kaduna States of Nigeria.

Problem Statement

This paper attempt to seek solution to the following research problems:
(a.) Of what importance is polytechnic education to entrepreneurial development?
(b.) How does polytechnic education assist in enhancing entrepreneurial development in Nigeria?

Objectives of the Study

The major objective of this study is to find out through empirical research, the pragmatic roles of Polytechnic education in enhancing entrepreneurial development in Nigeria.
Scope of Study
This paper is limited to the roles of technical/vocational education (which is used synonymously with Polytechnic education) in enhancing entrepreneurial development. It accessed the application of the acquired practical and applied skills in the development of entrepreneurship in Nigeria.

Research Questions
The study seeks to find solution to the following research questions:
(i.) Does polytechnic education provide the needed practical skill for entrepreneurship development?
(ii.) Is there any need for the establishment of Entrepreneurial Development Centres in the Polytechnics?
(iii.) Does the National Board for Technical Education (NBTE) Polytechnic Curriculum and the local contents elaborate enough to provide the skills, creativity and ingenuity needed for the actualization of entrepreneurial development in Nigeria?
(iv.) Are the facilities and materials needed to train potential entrepreneurs available in Nigerian Polytechnics?

Methodology
Design: Empirical Survey design was adopted in the study.
Area of study: Two Polytechnics were purposively selected from Zamfara and Kaduna States for the study.
Population: A target population was 1 15 lecturers from the School of Business Administration of the two Polytechnics.
Sample: A sample size of 30 lecturers including Directors and Heads of Department was obtained from the population for effective management.
Sampling Technique: A systematic sampling technique was employed where lecturers were sampled at every fourth interval.
Instrument for Data Collection: A 10 - item structured multi-choice questionnaire was the instrument used to collect data for the study. The questions covered the scope of the study, especially the research questions earlier stated. The respondents had to indicate their agreement or disagreement on each of the statement given.
Validation and Reliability of the Instrument: The study and the instrument used was validated by two chief lecturers in the field and a statistician. Their criticisms, comments and suggestions guided the researcher, especially on the use of the statistical tool (Analysis of Variance-ANOVA - one way) in testing the hypotheses. The reliability of the instrument was determined by the Pre - test using 15 lecturers randomly selected from the School of Business of Administration and Management Studies, Federal Polytechnic, Kaura-Namoda. Reliability Coefficient of 0.86 was obtained using correlation coefficient of determination (r²)
Data Collection: Two research assistants and the researcher were used in the administration and collection of the questionnaires. 30 questionnaires were administered and all were filled and returned, representing a returned rate of 100%.
Data Analysis: Simple contingency tables with simple percentages was employed in analysing the data collected.
Hypotheses was proposed and Analysis of Variance (ANOVA - one way) was used in testing the hypotheses.

Literature Review
Polytechnic education is synonymous with technology education and technology education is synonymous with technical and vocational education (Awotunde 1996, Oranu, 1996). Technology is the totality of means used by people to provide material objects for human sustenance and comfort. It involves man's relationship to his physical environment and his attempt to control and that of his environment to make use of whatever resources available in that environment. This could be achieved through technical/vocational education. Technical education according to the National Policy on Education (2004), is 'that aspect of education which lead to acquisition of practical and applied skills as well as basic scientific knowledge'. Its aims are;
To provide trained man-power in applied science, technology and commerce, particularly at sub-professional levels.

i. To provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development.
ii. To provide people who can apply scientific knowledge to the improvement and solution of environmental problem for use and convenience of man.
iii. To give an introduction to professional studies in engineering and other technologies, iv. To enable our young men and women to have an intelligent understanding of the complexity of technology.

Similarly, the Longe Commission on Review of Higher Education (1992) reported that technological education offered at tertiary level by polytechnics and colleges of education should aim at;
a) The production of high level middle level man-power as appropriate in the area necessary for agricultural, industrial, commercial and economic development.
b) Identification and solution of technological problems and needs of industries.
c) Production of technicians and technologist and similar business related personnel for direct employment into the industries.

In line with the above, National Policy on Education (2004), National Policy on Science and Technology (1986), all recognise and placed emphasis on Technical/Vocational Education as a practical skill acquisition programme and an agent of National Development.

It is therefore, right to say that the objective of polytechnic education is the creation of Nigerians with technological knowledge, practical skills, attitude, good work habit, ability and capacity for higher and improved productivity.

**Entrepreneurship is:**

The process of identifying, and bringing a vision to life. The vision may be an innovative idea, an appropriate or simply a better way to do something. The end result of this process is the creation of new venture, performed under the condition of risk and considerable uncertainty (Google's definition 2003).

The above definition depict the entrepreneurial capability to create wealth, recognises business opportunity through a combination of entrepreneurial trait of skill, creativity, innovation, risk bearing, confidence among others to bring a business or project to function. From the above, it is obvious that the objectives of technology or polytechnic education synchronises with the traits and functions of entrepreneurship.

The roles of Polytechnic education in entrepreneurial development could not be ascertained without first stating the qualities and functions of entrepreneurs and compare it with the objectives of technical education. According to Ekanem (2007), Kurya (2006), the entrepreneurial qualities or traits are: creativity, innovative, self-reliance, leadership, self-confidence, risk taking, motivation, persistence, perseverance, commitment and determination among others.

Schumpeter, in Google's definition of entrepreneurship (2003), outlines the following functions of an entrepreneur;

- Exploration and exploitation of business opportunities
- Sourcing directly and combining production inputs as factors of production. Makes decision, bear risks and uncertainty.
- Identify and pursue business opportunities and project with creativity and innovation among others.
- From the above, therefore, it could be said that traits, functions of entrepreneurs and the objectives of technical education earlier mentioned are in perfect synchronisation,
- Based on the above facts, the study summarised the basic roles of polytechnic education in enhancing entrepreneurship development as follows;
  (i.) It enables trainees to apply the acquired technical/vocational knowledge in various areas of specialization in industries, commerce, and government through well articulated curriculum and supervise industrial training.
  (ii.) It enables the graduates to operate their own business through the use of acquired skills as craftsman, technologists, technicians, food scientists, investors and other vocations, which made them self-reliant.
  (iii.) It enables the polytechnic graduates to apply the scientific knowledge acquired to understand the increasing environmental changes in sciences, technology and economy. Enhanced the ability of polytechnic graduates to turn their talent and acquired classroom instructions and skills into productive ventures. Reduce the dependence of its graduates on white collar jobs.
  (v.)

From the above, it could be clearly seen that over 90% of academic activities in the Polytechnics are aimed at developing a trainee entrepreneurially.

In spite of the above, polytechnics and other technical/vocational institutions are not given the needed attention. There are no adequate facilities, materials and experienced industrial based facilitators. There are no entrepreneurship development centers. No direct and identified link between Polytechnics and industries in their immediate environment. Although more vocational — technical institutions have been established across the nation, the initial bias against, and the disdain for vocational — technical education is still evident. Therefore, if Polytechnic education is considered crucial for entrepreneurial developmental needs, then a re-appraisal of national priorities is required so as to give polytechnics the place it deserves.

**Data Analysis and Result Presentation**

**Table 1: Selected Responses from Questionnaire Administered**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Statement</th>
<th>Agreed</th>
<th>Disagreed</th>
<th>Undecided</th>
<th>% A</th>
<th>% DA</th>
<th>% UNO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Polytechnic system provides a practical education for entrepreneurial development in Nigeria</td>
<td>20</td>
<td>8</td>
<td>2</td>
<td>66.7</td>
<td>26.7</td>
<td>6.6</td>
</tr>
<tr>
<td>2.</td>
<td>The skills creativity and ingenuity needed in entrepreneurial development could be acquired through polytechnic and other technical</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>50</td>
<td>^33J~</td>
<td>16.7</td>
</tr>
</tbody>
</table>
3. The facilities and materials needed to train potential entrepreneur are available in polytechnic and other technical institutions.

4. The Polytechnic curriculum are well elaborate to suit the technical and vocational needs of the nation for the actualization of entrepreneurial development.

5. There is need for establishment of entrepreneurial development, centers in Polytechnics.

Source: Sample Survey.

From the table 1 above, 66.7% agreed that polytechnic system provides a practical education for entrepreneurial development in Nigeria. 50% of the respondents equally believe that the needed skills, creativity, innovation and ingenuity needed in entrepreneurial development could be acquired through polytechnic education at higher level. About 56.7% of the respondents believe that the present polytechnic curricular is adequate to provide the training needs for the actualization of entrepreneurial development in Nigeria; despite the fact that the present facilities are inadequate as testified by 66.7% of the respondents. In all about 83.3% strongly believed that there is a need for the establishment of entrepreneurial development centers in Polytechnics.

Note: A = Agreed DA = Disagreed UND = Undecided

Test of Hypotheses

H₀: There are no significant differences in the trait and function of an entrepreneur and the practical applied skills inculcated through the polytechnic education.

H₁: There are significant differences on the trait and functions of an entrepreneur and practical applied skills inculcated through polytechnic education.

Test Statistic: Analysis of Variance (ANOVA) - one way @ - level of significance α = 0.01 ANOVA = real = MSB/MSW

Table 2: Anova Table

<table>
<thead>
<tr>
<th>A</th>
<th>A2</th>
<th>X2</th>
<th>A3</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>400</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>25</td>
<td>17</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>100</td>
<td>9</td>
<td>1564</td>
<td>15</td>
</tr>
<tr>
<td>625</td>
<td>17</td>
<td>1564</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 3 Summary of One - Way ANOVA

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fcal</td>
<td>422.8</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>211.4</td>
<td>6.65</td>
<td>0.01</td>
<td>381.2</td>
</tr>
<tr>
<td>12</td>
<td>31.77</td>
<td>14</td>
<td>804</td>
</tr>
</tbody>
</table>

Exploration and exploitation of business opportunities:

ii. Sourcing directly and combining production inputs as factors of production,

iii. Makes decision, bear risks and uncertainty.

iv. Identify and pursue business opportunities and project with creativity and innovation among others.
From the above, therefore, it could be said that traits, functions of entrepreneurs and the objectives of technical education earlier mentioned are in perfect synchronisation.

Based on the above facts, the study summarised the basic roles of polytechnic education in enhancing entrepreneurship development as follows:

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<td>66.7</td>
<td>26.7</td>
<td>6.6</td>
</tr>
<tr>
<td>2.</td>
<td>The skills creativity and ingenuity needed in entrepreneurial development could be acquired through polytechnic and other technical institutions.</td>
<td>15</td>
<td>10</td>
<td>5</td>
<td>50</td>
<td>33.3</td>
<td>16.7</td>
</tr>
<tr>
<td>3.</td>
<td>The facilities and materials needed to train potential entrepreneur are available in polytechnic and other technical</td>
<td>5</td>
<td>20</td>
<td>5</td>
<td>16.7</td>
<td>66.7</td>
<td>16.6</td>
</tr>
<tr>
<td>4.</td>
<td>The Polytechnic curriculum are well elaborate to suit the technical and vocational needs of the nation for the actualization of entrepreneurial development.</td>
<td>17</td>
<td>10</td>
<td>3</td>
<td>56.7</td>
<td>33.3</td>
<td>10</td>
</tr>
<tr>
<td>5.</td>
<td>There is need for establishment of entrepreneurial development centers in Polytechnics.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>3</td>
<td>2</td>
<td>83.3</td>
<td>10</td>
<td>6.7</td>
<td></td>
</tr>
</tbody>
</table>

Source: Sample Survey.

From the table 1 above, 66.7% agreed that polytechnic system provides a practical education for entrepreneurial development in Nigeria. 50% of the respondents equally believe that the needed skills, creativity, innovation and ingenuity needed in entrepreneurial development could be acquired through polytechnic education at higher level. About 56.7% of the respondents believe that the present polytechnic curricular is adequate to provide the training needs for the actualization of entrepreneurial development in Nigeria; despite the fact that the present facilities are inadequate as testified by 66.7% of the respondents. In all about 83.3% strongly believed that there is a need for the establishment of entrepreneurial development centers in Polytechnics.

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Test of Hypotheses

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H1: There are significant differences on the trait and functions of an entrepreneur and practical applied skills inculcated through polytechnic education,

Test Statistic: Analysis of Variance (ANOVA) - one way

$$\begin{align*}
\text{ANOVA} &= \text{real} = \text{MSb/MSw} \\
&= \frac{SS_b}{df_b} = \frac{SS_b}{K-1} - \frac{SS_w}{N-K} \cdot \frac{SS_w + \sum (X^2)}{n} - \frac{(X \cdot N)SS_w + SS_b - SS_w}{n} \\
&= 2X^2 - \frac{(X)VN}{N-K} \\
&= \text{N-K} \cdot \frac{df}{N-K} = \text{MSb} = \text{MSw} = \text{mean square within} \\
\end{align*}$$

Mean square between

$$\begin{align*}
\text{SSb} &= \text{sum of square between} \\
\text{SSw} &= \text{sum of square within} \\
\text{SS} &= \text{sum of square total} \\
\end{align*}$$
- level of significance $a = 0.01$

Table 2: Anova Table

<table>
<thead>
<tr>
<th>$x$</th>
<th>$E_5$</th>
<th>$X_2$</th>
<th>$X'_3$</th>
<th>$X_3$</th>
<th>$X'_3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>400</td>
<td>8</td>
<td>64</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>225</td>
<td>10</td>
<td>100</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
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<td>20</td>
<td>400</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>17</td>
<td>289</td>
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<td>25</td>
<td>625</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>82</td>
<td>584</td>
<td>51</td>
<td>673</td>
<td>17</td>
<td>67</td>
</tr>
</tbody>
</table>

\[ = 82 + 51 + 17 = 150 \]

\[ \begin{align*}
\text{SS} &= (2 - x_2^2 + x_3^2 + x_3^3) = 1,564 + 673 \times 4 = 2,304 \\
\text{X} &= \frac{m_i+n_j}{n_j} = 5 + 5 + 5 - 15 \\
\text{N} &= 2,304 \times 0.150 = 2,304 - 1,500 = 804 \\
\text{SS}_{x} &= (82)^2/5 + (51)^2/5 + (673)^2/15 = 1,344.8 + 520.2 + 57.8 - 1,500 = 422.8 \\
\text{MS}_b &= 422.8/2 = 211.4 \\
\text{MS}_w &= 381.2/12 = 31.77 \\
\text{F}_{cal} &= 211.4/31.77 = 6.65
\end{align*} \]

Where $a = 0.01$, $F_{tab}(df_2, 12)$

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<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>$F_{cal}$</th>
<th>$a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>422.8</td>
<td>2</td>
<td>211.4</td>
<td>6.65</td>
<td>0.01</td>
</tr>
<tr>
<td>Within Groups</td>
<td>381.2</td>
<td>12</td>
<td>31.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>804</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Decision: Since $F_{cal} = 6.65 < F_{tab} = 6.93$ and it falls under the region of acceptance, $H_0: \mu_I = \mu_2 = \mu_3$ is accepted @ 0.01 level of significance. Therefore, there are no significant difference on the traits and functions of an entrepreneur and the practical and applied skills inculcated through Polytechnic education. As such, Polytechnic education enhances the entrepreneurial development in Nigeria.

Findings

The major findings from survey are:

(i.) Creativity, ingenuity, skills, and innovation needed for a successful entrepreneurship could be effectively acquired through polytechnic education,
(ii.) Polytechnic curriculum is elaborate and suits the educational needs of the country for the actualization of entrepreneurial development.
(iii.) There are no entrepreneurial development centers to serve as business incubation centers,
(iv.) Hypotheses drawn and tested attested to the fact that polytechnic education enhances entrepreneurial development in Nigeria.

Recommendations

i. The Entrepreneurial Development Centers should be established in each Polytechnic to serves as incubation centre and as a link between institution and public and private sector.
ii. The government and relevant agencies should create, develop, and maintain adequate facilities and materials as well as better condition of service to enhance staff performance and commitment.
iii. In addition to existing programme, direct apprenticeship scheme in conjunction with private organization should be introduced and micro-finance institutions, specialized banks and other relevant agencies should be made to empower them on completion of training scheme. Emphasis should be place on acquisition of practical skills and expertise rather than degrees and other certificate on technological and entrepreneurial oriented jobs, industry based facilitators should be employed on part time basis to share practical industrial experience with staff and students.
Conclusion

From the foregoing, it is undisputed fact that polytechnic education is an indispensable element in the development of entrepreneurship in Nigeria. It is therefore an irony if Nigeria as giant of Africa whose generosity and magnanimity filled the African continent could not cater for its Polytechnic education. For a much desired miracle on the entrepreneurial development to be speedily realized in Nigeria, then a re-appraisal of national priorities is required so as to give polytechnics and other technical/vocational institutions the place it deserves in our national development.

Reference


