Digital Innovations & Contemporary Research in SCIENCE, ENGINEERING & TECHNOLOGY

Vol. 7. No. 2, June, 2019

Article Citation Format
Okewole, A. I., Fadairo, O. O. & Sodiq, K. A. (2019): Students and Staff Perception towards Developing Market- Driven Research Projects for Commercialization and Patenting. Journal of Digital Innovations & Contemp Res. In Sc., Eng & Tech. Vol. 7, No. 2. Pp 27-36.

Article Progress Time Stamps
Article Type: Research Article
Manuscript Received: 7th May, 2019
Review Type: Blind
Final Acceptance:: 18th June, 2019
Article DOI: dx.doi.org/10.22624/AIMS/DIGITAL/V7N2P3

Students and Staff Perception towards Developing Market- Driven Research Projects for Commercialization and Patenting

[1]Okewole, A. I., Fadairo, O. O. & Sodiq, K. A.
Applied Research and Technology Innovation Centre, Yaba College of Technology,
P.M.B. 2011, Yaba Lagos. Nigeria.
Email Address: [1]okewolestar@yahoo.com
Phone: [1]+2348132561382

ABSTRACT

There is need to create awareness among students' and staff to embark on a research project that could lead to commercialization and patenting. This study sought to find out students' and staff perceptions towards developing market driven research project with outputs for commercialization and patenting. The study revealed that student' perceptions towards patenting and commercialization are high with weighted mean of 3.58 and staff perceptions towards patenting and commercialization is also high with weighted mean of 3.72. It is evident that if staff and final year students of this institution are encouraged and motivated to conduct market- driven project with necessary support mechanism put in place, there would be generation of high quality inventions and innovations.

Keywords: Patenting, Commercialization, Market-driven, Research, Entrepreneurship.

1. BACKGROUND TO THE STUDY

Globally, one of the achievements of a research work could be attributed to when its findings is generating income upon commercialization. It is pertinent to note that the outputs of every research should tilt towards solving the problem of industrial needs of any society so as to enhance natural and global economic growth. Although, commercialization of research project has been hampered by various factors such as the syndrome of limiting publishing to get promotion only, researchers' about entrepreneurship, lack of synergy between the industries and the academics, ignorant acquisition of intellectual property rights and institutional interest in applied research. The success of a university education in world class is not the age long and lack of several relevance of the institution alone but on its impact through teaching, research and community services (Ogundipe, 2017). The vision and mission of establishing higher institutions ranging from universities, polytechnics, and college of Education and research institutes rally round its ability to deliver quality teaching, research and community services. It has been a recurrent decimal that most research findings, innovations are neither patented nor commercialized but left on a latent state. Researchers were of the notion to publish for promotion without commercializing or patenting their research products because they are with the syndrome of intellectual property theft.

Oyewale (2005) noted that Nigerian universities and research institutes had generated some inventions, but several of the inventions had not been commercialized. Akanimo (2017) asserts that government has the power; industry has money while the tertiary institution (Academia) has knowledge but these entire components are working in isolation. Also, there is need for synergy between these components for sustainable development.

Higher citadel of learning nowadays has to find ways to generate their own income since allocation from government alone could not finance all their expenses. In this regard, tertiary institutions have given their attention to encourage researchers to engage in research commercialization. According to Miller and Zoltan (2013), tertiary institutions and research finding institutes, which are considered as the hub of innovation, are now recognizing the need to develop research projects that is market driven. They are shifting focus to commercializing their research projects since they view this effort as avenues to generate their own income. Asaolu (2018) asserts that tertiary institution like Obafemi Awolowo University (OAU) in Nigeria has organized series of inaugural lectures with 325 as at the last count. An inaugural lecture is a summary of research work but there is dearth of innovations from their research work. The university has only produced several innovations with two patented, one noble laureate and eight is under processing for patenting. Obemebe (2018) opined an increase of industry partnership for research and product development with basic purpose to foster, skill development, innovation and technological transfer with entrepreneurship. Also, there is need to foster partnership research services by consulting for firms whereby universities laboratories are used for academic entrepreneurship, human resources training and transfer, commercialization of intellectual properties such as patents.

Commercialization of research project is a very broad process which encompasses risk and uncertainties. There are many instances whereby a technology fails to translate into a new venture and the expected income for the innovation is not forth coming. Ford *et al* (2007) claimed that some technology innovation could end up in the valley of death due to their short life cycle because of low market demand from the consumers. Hence, they fail to achieve sustainable business growth and the funding agency of the research faces negative Return of Investment (ROI). Succinctly, various supports need to be provided by relevant parties, such as the university, government, public organizational bodies like grant and funding agencies. The success rate of commercializing and patenting research products is still not encouraging among staff and students. Hence, considering the need to improve our economy from research through patenting and commercialization is the trend of a new product life-cycle. It is imperative to create awareness and understand factors that contribute to the success of commercializing and patenting of research products.

Papon and Barre (cited in Oyewale 2005) describe patent as a legal protection which is placed on technological activities embodied in inventions to prevent their unauthorized usage or exploitation which involves series of processes. Calderini *et al.* (2007) posits that university patenting could generate more fundamental cognitive resources for academic research from industry. Agrawal and Henderson (2002) assert that there is positive relationship between number of patents produced by academics and number of papers they published. Markiewicz and Di Minin (in Anietie 2014) revealed that the number of patents has a complementary relationship with the number of papers applied for after publication Anietie (2014) explain there is a positive relationship between publishing and patenting activities. Owen-Smith and Powell (2001) maintain that a hybrid regime emerged in the United States University System after the 1980's. He states that success in the commercial sphere interact with academic sphere. In lieu of this, Vanloy *et al* (2004) found out that writing of papers is associated with patents and creates a "cumulative advantage" altogether, so demonstration of excellence on knowledge transfer activities is linked to academics success

The fields of technology and science disciplines are likely to produce a product that can be commercialize and contributes immensely to scientific progress. The applied research which is goal oriented research focusing on areas such as life sciences and nano sciences is likely to support a positive empirical relationship between entrepreneurial activities and academic research (Anietie, 2014).

1.1 Statement of Problem

In developed and developing nations, the desire to solve societal problems has been the basic for a market-driven research project. It is imperative for research output not to end up on the latent state but rather further transformed to industrial needs relevant to both private and public sectors. The need for innovative research that generates entrepreneurial income to the researcher, institutions and the global communities' should be embarked upon. There is need to create awareness among students' and staff to embark on a research project that could lead to commercialization and patenting. This study sought to find out students' and staff perceptions towards developing market driven research project outputs for commercialization and patenting as the grass root class of researchers.

1.2 Objectives

The main objective of this study is to determine students and staff perception towards Developing Market Driven Research Projects for Commercialization and Patenting. Specifically, the study seeks to:

(i) determine the various outputs of Research and development among students
(ii) Find out perception of students' towards patenting and commercialization.
(iii) Find out perception of staff towards Patenting and Commercialization

2. CONCEPTUAL FRAMEWORK

The conceptual framework of this study is the paradigm for studying the research problem and it acts as a road map for understanding the relationship between and among the variables in the study. The study was based on the effective integration of the variables which include research, innovation, entrepreneurship, patenting and commercialization. A conceptual paradigm for interrelationship among the concept has been formulated below

RESEARCH INNOVATION ENTREPENURSHIP PATENTING

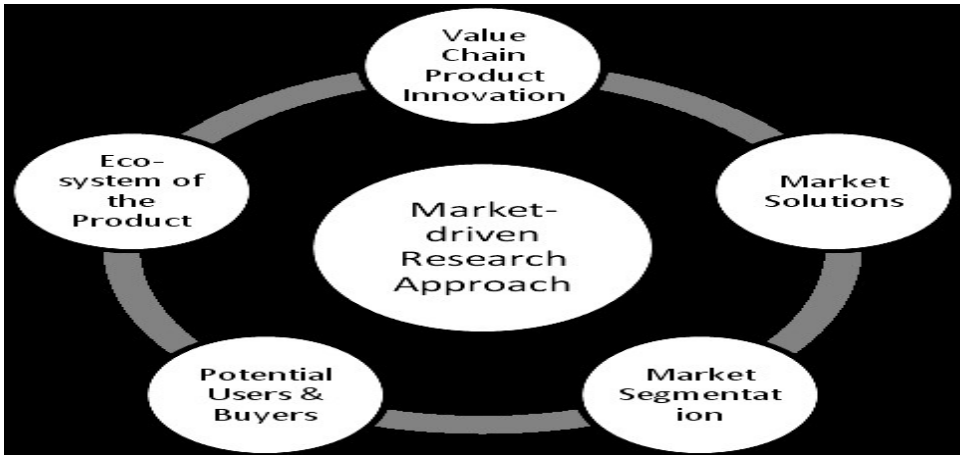

Fig 1: source: (Noran *et al*, 2014)

3. METHODOLOGY

3.1 Research Design

This study adopted survey method and expo-facto research design because the variables were not manipulated but studied as they occurred. This design was utilized to examine the variables and enable the researcher to collect data which is not subjected to manipulations. The target population comprises of both academics staff and students' of Yaba College of Technology (YABATECH), Yaba, Lagos State under study in Nigeria. Multi stage sampling technique was employed in this study. The first stage involves purposive sampling of all the final year Higher National Diploma (HND II) students. The second stage involves Cluster sampling of four schools namely School of Science, School of Engineering, School of Management and Business studies and School of Technology.

The third stage involves random sampling of 32 students, eight students each from the selected schools at a sensitization seminar. The first stage of sampling of staff involved purposive sampling from the four schools and the second stage involve random sampling of nineteen academic staff. Two self-constructed questionnaire were employed in this study which includes Questionnaire on Exposing students to the need to develop market driven project (**QESDMP**) and Questionnaire on Exposing Staff to the need to develop market driven project **(QESDMP**). The response format of the questionnaire is four point likert scale strongly agree, agree, strongly disagree and disagree.

5. DATA PRESENTATION

Questionnaires were administered to staff and students. The completed questionnaire were tagged serial numbers for adequate coding and to prevent missing questionnaire from respondents. Data were entered into statistical package for social sciences (SPSS) version 18 and were saved into a computer to prevent loss of data. Analysis was carried out using descriptive statistics like frequency, percentage and mean

Table 1: Ranking of Research output

	Level of Research	Frequency (%)	Rank	Remark
1	Patenting	10 (52.6)	2.0	2nd
2	Commercialization	16 (82.4)	1.0	1st

*Figures in parentheses is percentages

From the table 1 above, it shows the ranking of research output from staff at their respective departments. It was observed that most of the participants 82.4% said their research output can be patented while 52.6% said their research output can be commercialized. It can be deduced that majority of the staff research output can either be commercialized or patented.

Table 2: Perception of Students' towards Patenting and Commercialization

S/N	Statement	SA(4)	A(3)	D(2)	SD(1)	$\bar{X}$	Remark
1	There is need to undertake project that could solve societal and industrial problems	23 (71.9)	9 (28.1)	-	-	3.72	High
2	I am enlightened on the need for market driven project	19 (59.4)	12 (37.5)	1 (3.1)	-	3.56	High
3	I need to develop products from my project to win award and gain intellectual property right (IPR)	18 (56.3)	11 (34.4)	1 (3.1)	2 (6.2)	3.63	High
4	My project should be developed to link the academics of Yabatech with industries	11 (34.4)	17 (53.3)	4 (12.5)	-	3.23	High
5	I need to drive my project towards producing market driven project	19 (59.4)	12 (37.5)	1 (3.1)	-	3.56	High
6	There is need to package a product from my project for the market	16 (50.0)	13 (40.6)	3 (9.4)	-	3.41	High
7	My department should focus more on market driven project that can be commercialized	17 (53.1)	11 (34.4)	3 (9.4)	1 (3.1)	3.38	High
8	I now realize the benefit of entrepreneurship from project	10 (31.3)	18 (56.3)	1 (3.1)	3 (9.4)	4.16	High
Weighted Mean = 3.58							

*Figures in parentheses is percentages

From Table 2.0 above, 71.9% of the participants strongly agree with the statement that there is need to undertake project that could solve societal and industrial problems while 28.1% agree with the statement. Also, 59.4% of the participants strongly agree with the statement that they are enlightened on the need for market driven project while 37.5% agree. Also, 56.3% strongly agree with the statement that they need to develop products from their project to win award and gain intellectual property right while 34.4% agree. 53.3% agree with the statement that project should be developed to link the academics with industries while 34.4% strongly agree.

Furthermore, 59.4% of the participants strongly agree with the statement on need to drive their project towards producing market driven project while 37.5% agree. Almost, half of the participants 50.0% strongly agree with the statement that there is need to package a product from their project for the market while 40.6% agree. In addition, 53.1% of the participants strongly agree on need for their department to focus more on market driven project that can be commercialized while 34.4% agree. Also, 56.3 % of the participants' agree while 31.5% strongly agree with the statement that they now realize the benefit of Entrepreneurship from their project. The average weighted mean is 3.58 which imply those student perceptions towards patenting and commercialization is high. This means 90.5% of the students' opined on the need for market driven project outputs that can be commercialized and 90.5% of the students opined on the need for market driven project outputs that can be commercialized.

Table 3: Perception of staff towards Patenting and Commercialization

S/N	Statement	SA(4)	A(3)	D(2)	SD(1)	$\bar{X}$	Remark
1	Am convinced we need market driven project for our students	15 (78.9)	4 (21.1)	-	-	3.79	High
2	I will support my department to ensure market driven project	13 (68.4)	7 (36.8)	-	-	3.84	High
3	My conviction towards producing a market driven project has further broaden	9 (47.4)	10 (52.6)	-	-	3.47	High
4	I will like to link my research to industries	14 (73.7)	4 (21.1)	1 (5.3)	-	3.68	High
5	I will encourage my students to embark on market driven project	16 (84.2)	3 (15.8)	-	-	3.84	High
Weighted Mean = 3.72							

***Figures in parentheses is percentages**

From Table 3.0 above, 78.9% of the participants strongly agree with the statement that they are convinced on the need for market driven project for their students while 21.1% agree. Also, 68.4% of the participants' strongly agree with the statement that they will support their department to ensure market driven project while 36.8% strongly agree. Above half, 52.6 % of the participants agree with the statement on their conviction towards producing a market driven project has further broadened while 47.4% strongly agree. Furthermore, 73.7% of the participants' would like to link their research to industries while 21.1 % agree. Also, 84.2 % of the participants' would encourage their students to embark on market driven project while 15.8% agree. The average weighted mean is 3.72 which imply that staff perceptions towards patenting and commercialization is high. This means all the staff were convinced that their students can produce market driven research projects while 94.8% agree to link their research findings to the industry for commercialization and further their student's project towards patenting.

5. CONCLUSIONS

In conclusion, it is evident that if staff and final year students of this institution are encouraged and motivated to conduct market- driven project with necessary support mechanism put in place, there would be generation of high quality inventions and innovations.

6. CONTRIBUTIONS TO KNOWLEDGE

In light of the literature review and study evidence, in order to understand the perception of students and staff towards market driven project, the following recommendations are suggested. Student's project should not be left on the latent state but taken to the level when it can generate revenue to the college and the society at large. Staff should also be encouraged not to embark on research for promotion alone but to make money for themselves and the college with appropriate sharing formular stated in their school policy on research

REFERENCES

1. Anietie, E. (2014). Synergy between Academic Research and Industrialization. The Research forDevelopment in Nigeria. *Journal of Human resources Management Research.* Doi:10.5923/j.hrmr.20140403.03
2. Agrawal,. A. & Henderson. R. (2002). Putting Patents in Context: Exploring knowledgeTransfer from MIT, *Management Sci,* 48: 4-57
3. Akanimo, O. (2017). Education and Research, The Role of Academia, Industry and Government.A paper presented at Symposium On Internationalization And Innovations In Education And Research Held At J.F Ade- Ajayi Auditorium , University of Lagos on 19th October,2017
4. Asaolu, T.O (2018). Bridging the Gap between the Laboratory and the Market. The Pivotal Roleof Management and Social Science Experts. Lecture Delivered at the First Academic Staff Union of polytechnics (ASUP), Yaba College of Technology, Lagos. On 7th of August, 2018
5. Calderini, M., Franzoni, C. & Vezzulli, A. (2007). If star scientist does not patent: an eventhistory analysis of scientific eminence and the decision to patent in the academic world, research Policy 36(303-319)
6. Ford,G.S, Koutsky, T.M & Spiwak, L.J. (2007) A discussion paper A valley of death in theinnovation sequence: An economic investigation, Prepared for the Commerce Department, Technology Administration, Phoenix Centre for Advanced Legal and Economic Public Policy Studies.
7. Miller, D.J & Zoltan, J (2013). Technology Commercialization on Campus: Twentieth centuryframeworks and twenty-first century blind spots, *Ann Reg Sci*, 50, pp 407-423.
8. Noran, I., Safiah, S. & Jailani, M. (2014). Market Driven Research Approach For Successfulresearch product. International Symposium on Research in Innovation and Sustainability 15-16 October 2014, Malacca, Malaysia
9. Obemebe, C. (2018). Covenant Researchers receive Patent Right for 8 Inventions.Retrieved From http:covenant university.edu.ng/ news
10. Ogundipe, O. (2017). Internalization as part of UNILAG 25 years Strategic Plan. A paperpresented at Symposium On Internationalization And Innovations In Education And Research Held At J.F Ade- Ajayi Auditorium , University of Lagos on 19th October,2017
11. Owen- Smith, J., & Powell, W. (2001). To patent or Not faculty Decisions and institutionalSuccess at Technology Transfer. *The journal of Technology Transfer*, 26 (1-2), 99-114
12. Oyewale, A.A (2005). Addressing the Research –Industry linkage impasse in Nigeria. TheCritical issues and Implementation Strategies. Paper presented at the third international Globlics conference- Africa 2005, Organized by the Global network for Economics of Learning, Innovation and competence (Globelics) held at the Tshwane University of Technology Tshwane, South Africa between October 31 and November 4 2005.
13. Van looy, B., Debackere, K., & Callaert, J. (2006). Publication and Patent Behavior of Academic Researchers Conflicting, reinforcing or merely coexisting. Research Policy, 35, 596- 608

APPENDIX A

Questionnaire on Exposing Students on the need to Develop Market-Driven Projects (**QESDMP**). This questionnaire is designed to elicit information on the need to develop market driven project. There are 8 items and you can complete the survey in less than 10 minutes. Kindly supply your candid opinion in the spaces provided or you can tick the box that represents your view for each of the statement or question. Thank you.

SA=Strongly Agree, A= Agree, D= Disagree, SD= Strongly Disagree

S/N	Statement	SA	A	D	SD
1	There is need to undertake project that could solve societal and industrial problems				
2	I am enlightened on the need for market driven project				
3	I need to develop products from my project to win award and gain intellectual property right (IPR)				
4	My project should be developed to link the academics of Yabatech with industries				
5	I need to drive my project towards producing market driven project				
6	There is need to package a product from my project for the market				
7	My department should focus more on market driven project that can be commercialized				
8	I now realize the benefit of entrepreneurship from project				

APPENDIX B

Questionnaire on Exposing Staff on the need to Develop Market- Driven Projects **(QESDMP)**.
This questionnaire is designed to elicit information on the need to develop market driven project. There are 7 items and you can complete the survey in less than 10 minutes. Kindly supply your candid opinion in the spaces provided or you can tick the box that represents your view for each of the statement or question. Thank you.

SA=Strongly Agree, A= Agree, D= Disagree, SD= Strongly Disagree

S/N	Statement	SA	A	D	SD
1	Am convinced we need market driven project for our students				
2	I will support my department to ensure market driven project				
3	My conviction towards producing a market driven project has further broaden				
4	I will like to link my research to industries				
5	I will encourage my students to embark on market driven project				

Research outputs from students' project could be

	Level of Research	Available	Not Available
6	Patenting		
7	Commercialization		