

Knowledge Management in Academic: A Perspective of Academic Research Contribution to Economic Development of a Nation

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Abstract—Information and Communication Technology (ICT) has made information access easier and affordable. Academic research has also benefited from this, with online journals and academic resource readily available by the click of a button. However, there are limited ways of assessing and controlling the quality of the academic research mostly in public institution. Nigeria is the most populous country in Africa with a significant number of universities and young population. The quality of knowledge created by academic researchers, however, needs to be evaluated due to the high number of predatory journals published by academia. The purpose of this qualitative study is to look at the knowledge creation, acquisition, and assimilation process by academic researchers in public universities in Nigeria. Qualitative research will be carried out using in-depth interviews and observations. Academic researchers will be interviewed and absorptive capacity theory will be used as the theoretical framework to guide the research. The findings from this study should help understand the impact of ICT on the knowledge creation process in academic research and to understand how ICT can affect the quality of knowledge produced by researchers. The findings from this study should help add value to the existing body of knowledge on the quality of academic research, especially in Africa where there is limited availability of quality academic research. As this study is limited to Nigerian universities, the outcome may not be generalized to other developing countries.

Keywords—Knowledge creation, academic research, knowledge management, information and communication technology, research, university.

I. INTRODUCTION

UNIVERSITIES are perceived to contribute to national or regional development through knowledge creation, sharing and transfer [1], [2]. The university system is one that fosters knowledge production through learning, teaching and research activities. Governments around the world are developing policies that provide research grants to encourage academic research for development of new and sustainable ideas in their various countries, for example in Nigeria Tertiary Education Trust Fund (TETFund) grant is available to academic researchers in public institutions for research and other academic purposes. The nature of global economic growth has been affected by the speed of innovation, which has been made possible by speedily developing technology,

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shorter product lifecycles and a higher rate of new product development [3]. Therefore, the need for continuous investment in knowledge production [4] in both research and practice cannot be over emphasized, because knowledge can be attributed to the improvement and sustainability of competitive advantage in organizations [5]. Knowledge management in an academic environment has been used to strategically position the university in the innovation cycle. The triple helix model identified the university as one of the key components in the innovation system [6]-[8]. As the world is becoming more and more knowledge-based, where information is readily available by the click of a button, it is important to emphasize the role of academic research in the development of an economy. Also developing nation makes use of the availability ICT to reach out to the world. ICT has been identified as an enabler for knowledge management in both academic and in practice [9], [10]. Information technologies are used to acquire, share, transform and store knowledge among individuals and organizations [11]. Researchers all over the world can easily network, collaborate and share information on various platforms on the internet. Also online journals and other academic materials are easily accessed from any part of the world and this has had a major impact on academic society both in developing and developed economies. However, not every information available online is relevant and reliable for academic research. Academic knowledge acquisition and assimilation requires externally sourced information, as researchers tend to review other scholars work to avoid duplication or acquire new information.

The purpose of this paper is to evaluate ICT impact on academic research production in developing economy where other factors may affect the outcome of information absorption. Academic research is presumed to contribute to new knowledge, however new knowledge is based on prior knowledge and externally absorbed knowledge/information. The amount of predatory journal accessed and published online by academic researchers is increasing and most publications are from developing countries [12], [13]. We propose to investigate how ICT is used by academic researchers and to what extent it influences research outcome.

II. REVIEW OF RELATED STUDIES

Discuss on knowledge economy and innovative society has focused on university, industries and government

collaboration. One of the most discussed areas is the Triple Helix Model [6], [14]-[16], which identified the three components to be important for an innovation in a knowledge based economy. The future development of a society and its economy is based on science and local resources available [17]. This implies that scientific research linked with local resource can foster development. Some studies on THM have focused on knowledge transfer between university and industry [18], knowledge sharing [19]-[23], or knowledge management implementation in academic system [24]-[29]. But collaboration between universities and industries is in short supply in most of the developing economies, especially in Africa. International and regional competitive advantage can be achieved by the contribution of science to the economy development of a nation [17]. Hence, academic research can be seen as national asset. The university's contribution to society which is mainly from teaching, learning and research and development (R&D) has also been a thing of discourse [30]. However, the focus of this study is on academic research product. Knowledge is important for product development and innovative technology in organizations; this has made knowledge producing institutions important to organizations [8]. The important of knowledge created from research work or patents developed by academic institute is as important as its application to practice. This study takes a look at the impact of ICT on knowledge creation in an academic environment. The knowledge creation literature focuses on the creation of new or the recreation of existing knowledge [31]. "Knowledge creation is defined as the act of making knowledge created by individuals available, amplifying it in social contexts, and selectively connecting it to the existing knowledge in the organization" [31].

A. Knowledge Creation in Academic

KM in academia has been defined as "systematic activity related to support and enhancement of the creation of scientific knowledge and achievement of research goals, including both social process and relevant computer technology tools" [32]. Academic knowledge creation takes place physically, mentally and/or virtually in interaction, in a place [33]. The environment where knowledge is created has a significant importance to knowledge being created due to the diversities of individual orientations such as cultural background. These individual differences can be a challenge to understanding of the different discourses in research [33]. Culture places an important role how we perceive information or data most especially in group research. Major of academic research now involves collaboration; research papers in science and engineering with single authorship comprise less than 20% in USA [34].

With the introduction of ICT in academic environment, the rate of collaboration can only increase among academic staff internally or externally. The social media is a tool that has been greatly used in academics with the intention to support the collaborative creation and dissemination of knowledge. Social media tools like wiki, blogs, social bookmarking sites

have been used by the academic community over the last few year in an attempt to share knowledge and idea with colleagues from different part of the world [35]. These platforms have allowed for easy access and sharing of academic content to some extent, however there is still concern that academics are not fully willing to share their content online.

Academic research can also be viewed in a number of academic journals available online. There has been a significant increase in the number of academic journals and other materials being published online over the past two decades. However, the number of predatory journals is also on the rise, mostly coming from developing countries like India, Nigeria and Iran [13].

Information processes represent a change both quantitatively and qualitatively in the cognitive structure that transforms the knowledge of people [36], it is possible to admit that information is the input that makes, creates, and innovates the conceptual foundations of individuals and organizations in a social process of assigning meanings, which promotes and encourages individual and organizational knowledge. Therefore, the type of information a researcher accesses or uses during the process of creating a new knowledge can affect the outcome of such knowledge.

B. Knowledge Acquisition Process

Knowledge acquisition is based on recognizing and searching new knowledge and with existing knowledge. Individual knowledge acquisition refers to employees' ability to seek new knowledge from internal and external domain experts, or to develop new knowledge on the basis of their existing knowledge base [37]. At an organizational level, knowledge acquisition can be defined as accepting knowledge from the external environment and transforming it so that it can be used by an organization [38]. However, this study focused on individual knowledge acquisition, as most academic research is based on individuals' perspective rather than institutional needs. Studies on knowledge acquisition show that individual's belief and managerial support can sharp the process of acquiring new knowledge [37], [39]. Other factors like attitude towards knowledge sharing, contextual factors and perceived value of knowledge can also be seen as what drives a person to source for knowledge [9], [38]. In an academic situation knowledge acquisition is mostly driven by individual interest in a particular domain. Knowledge content and knowledge source are key drivers for acquisition, however having access to the right content or source is also important [38]. Although research materials are readily available online, having access to the right material is usually hard in developing countries due to the cost. For example most public universities in Nigeria hardly subscribe to reputable academic databases. Researchers rely on open source database for most materials used in academic work.

C. Knowledge Assimilation

Assimilation of knowledge can be viewed from the

researcher point or the recipient of academic work. Researchers assimilate information or knowledge they receive to carry out their academic work, while research product needs to be assimilated by practitioners. Assimilation capability helps in comprehension and internalization of newly acquired knowledge [40]. There is a structural gap in the way knowledge is created in academia and utilized in industry that needs to be bridged [41]. Tacit knowledge that exists within individual academicians is communicated as information or explicit knowledge when transmitted to students or practitioners. In order for it to become useable, it has to be incorporated by the recipients into their existing knowledge structures.

III. THEORETICAL FRAMEWORK

Absorptive capacity (ACAP) was adopted for this study, it is defined as the ability to identify, assimilate, transform, and apply external knowledge [42]. The study of ACAP had taken various dimensions over the years, from ability to value, assimilate and use knowledge [43], to human capital and prior knowledge base [44]. However, for the purpose of this study, a reconceptualization approach of ACAP was used [45]. ACAP is viewed as organizational dynamic capabilities which are made up of knowledge acquisition, assimilation, transformation and exploitation [45]. The reconceptualization suggests two subsets of Potential and Realized ACAP. PACAP comprises of knowledge acquisition and assimilation, while RACAP is focused on knowledge transformation and exploitation. But less attention has been given to the PACAP [46]. For the purpose of this study we focused on PACAP. Acquisition refers to capability to identify and acquire valuable external knowledge, while assimilation refers to routines or processes used to analyze, process, interpret and understand information obtained from external sources [45].

IV. RESEARCH APPROACH

An interpretive research approach is adopted and an induction mode of reasoning will be used for investigation. A qualitative research method is used by carrying out in-depth interviews with academic staff of Modibbo Adama University of Technology. A total number of ten academic staff from three different departments was interviewed using structured interview questions. Qualitative method was used rather than quantitative in order to have subjective view of the participants, which provides a more personal view to the subject under discussion. The choice of research method was based on the fact that academic research process is more of an individual interest, perspective or understanding of a particular phenomenon. Individual interviews were carried out among ten academic researchers. The interview questions were drawn from ACAP theory which is the theoretical framework that guides the research. The findings from this study should help understand the impact of ICT on knowledge creation process in academic research and to understand how ICT can affect the quality of knowledge produced by researchers.

V. EXPECTED OUTCOME

The global economy is increasingly becoming more knowledge-centric both in developed and developing economies. The findings from this study should add value to the existing body on knowledge on the quality of academic research, especially in Africa where there is limited availability of quality academic research. We also hope to contribute to existing literature in knowledge management, ACAP and academic research practice. However, this study is limited to Nigerian universities; the outcome may not be generalized to other developing countries. The study is aimed at understanding knowledge creation process by academic researchers using ICT tools.

VI. FINDINGS AND DISCUSSION

The preliminary findings on interviews are shown in Table I. However, findings are subject to the forwarder investigation, as this will help to discussion.

TABLE I
 PRELIMINARY FINDINGS

PACAP Dimensions	Research Questions	Findings	Description
Prior Knowledge	How does prior related knowledge influence new knowledge acquisition?	Previous Experience - Research done - Courses taken - Environmental influence	It is clear that prior knowledge in whatever form has an influence on knowledge creation process.
Knowledge Acquisition	what drives researchers to acquiring new knowledge using ICT tools?	- Availability of ICT tools - Ease of use - Access to global information - Cost effective	ICT is a necessity in knowledge acquisition process for academic researchers mostly in developing countries.
Knowledge Assimilation	is externally acquired information easy to interpret and understand?	-Availability of related work -Different search mechanisms -Ease of Communication	Due to the large pool of information available on the internet it is easy to understand information that are complex by reviewing related works.

From the interviewee perspective prior knowledge is one dimension that was not included in organizational dynamic capability; however, it is an important part of knowledge creation process of an academic researcher. The respondents mentioned past experience either through courses taken during studies, previous research works, work or social experience as some of the reasons they would want to carry out a research. We therefore, propose to include prior know to the reconceptualized ACAP. The research also looked at the how ICT tool is being used in knowledge creation process by academic researchers.

ICT has enhanced the way research is being conducted due to the fact that information can easily be accessed and it is cost effective. Most academic researches make use of several ICT tools for their research work [47] which include the internet, computing devices and communication platforms. Knowledge acquisition has been made easy due to ICT; however, the

respondents highlighted the issue of taking personal responsibility in getting what they need for their research work. Also open source academic data bases are more easy to access than the highly rated academic data base which requires subscription and is not affordable for individuals in most developing countries. Sometimes ICT personal skill in searching for relevant material differs between individuals as some researchers only rely on Google search engine to source for materials for research purpose. It was also stated that a high number of predatory journals and articles are being accessed and used by academic researcher. This has drawn concerns, that such journals may have an effect on the output of an academic study as it has not gone through thorough reviews of academic research. The assimilation of knowledge however, has little requirement for ICT, as it is mainly based on an individual's understanding rather than the technology itself. Researchers review various material during the course of their own research, this requires more of personal skills and understanding. However, some respondents pointed out that, ICT can be used in communication between researchers which helps in assimilation. Also the availability of alternative information on the internet can also help in articulation complex research materials. Some of the issues highlighted by the interviewee are listed in Table II. These issues are subject to their personal opinion in relation to their domain. However, the issues may not be generalized to the public universities in Nigeria.

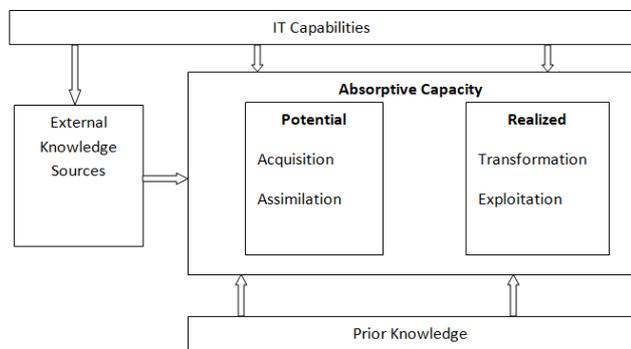


Fig. 1 Proposed ACAP framework for academic researcher

TABLE II
 ISSUES WHILE CARRYING OUT A RESEARCH

Issues
1 Lack of proper ICT skills in searching for the right material for a particular research
2 Overload of information on the internet
3 Cost of subscribing to relevant data base or purchase of journal in high for individuals to afford
4 Everyone want to publish
5 Other factor like unconducive working environment and time constrains for research work

VII. CONCLUSION

The academic contribution to national development should not and cannot be over looked most importantly in developing

nations. Research conducted by academic staff can be used for policy development, development of new products and patterns and other forms of economic improvement mechanisms. However, when information accessed by researcher and used for such purposes are not carefully filtered this may affect the outcome and validity of such research. It is therefore, necessary to understand the impact of external knowledge on knowledge productions process and measure how academic research is contributing to the development of a nation.

The preliminary result shows that ICT has an important role in knowledge creation process. Also prior knowledge is an important part of knowledge absorption. Therefore in the proposed framework we included prior knowledge to the demission of ACAP to use for this study.

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