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## CLOSING INSTITUTIONAL GAPS THROUGH ACADEMIC RESEARCH MANAGEMENT SYSTEM AND IMPLICATIONS IN NIGERIA

\*Ambrose A. Azeta<sup>1</sup>, Ochei Ikpefan<sup>2</sup>, Charles K. Ayo<sup>3</sup>, Daniel Gberevbie<sup>4</sup>, Nicholas A. Omoregbe<sup>5</sup>,  
Sanjay Misra<sup>6</sup> and Peter Olowonibi<sup>7</sup>

Covenant University, Ota Ogun State, Nigeria<sup>1234567</sup>

Email: [ambrose.azeta@covenantuniversity.edu.ng](mailto:ambrose.azeta@covenantuniversity.edu.ng)

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### Abstract

The world today has a number of valuable research scholars desiring connections and collaborations. The existing online collaboration platforms are not sufficient to accommodate the totality of researchers desiring dynamic platforms to network globally. Despite growing contributions in the literature on Social Network Site (SNS), regarding the capacity to connect people remotely, there is still a dearth of research on how SNS potentially integrates academics into social capital formation. The objective of this study is to provide Academic Research Management System (ARMS) for the research community. The research methods that were employed for the study include unified modeling language (UML) for the design; and Hypertext Mark-up Language (HTML), Hypertext Preprocessor (PHP) and MySQL for front end, server side programming and database respectively. The system was evaluated for usability and the implications for deploying the ARMS in Nigeria were also considered in this study. **Findings:** The findings from the usability survey showed a good usability based on total rating of 4.10 out of 5 point scale. The integration of the system into the academic institutions worldwide would foster a rapport between academics in all fields of learning and provide a means to have access to colleagues and research materials when needed.

**Keywords:** ARMS, Academics, Collaboration, Chatting, Messaging and Research platform

### 1. Introduction

The increasing number of Internet users and the need for people to socialize and connect has given rise to the proliferation of social networking sites (SNS). With the growing popularity of the social web and the development of more current network technology, several scholars mostly from academics are joining online research communities. Over the last decade, the World Wide Web and Web search engines have dramatically transformed the way people share their

information<sup>1</sup>. Academic Research Management System (ARMS) is an online platform that enables researchers to share information, upload and download resource materials, and also collaborate/communicate with other researchers through chatting and messaging. The ARMS belong to the category of social networking site, but has academic research component as part of its content. Social network and its analysis is an important field and it is widely spread among many young researchers<sup>2</sup>. The term academic social networking service refers to an online tool or platform that can assist scholars to create their professional networks with colleagues and researchers to facilitate their different activities when carrying out research<sup>3</sup>.

The growth in popularity of social networks has allowed several users to create/share content and communicate, and, at the same time, it opened new opportunities and challenging problems. This unlimited growth of content and users pushes the Internet technologies to its limits and demands for innovative solutions<sup>4</sup>. With academic research management system, users use the Internet technology to communicate with other colleagues, exchange information about their areas of interests, initiate discussions about new topics, follow updates about specific topics on different Social Networking platform. Teenagers are not left out in the use of the Internet<sup>5</sup>.

The emergence and evolution of commercial social networking sites (SNSs) such as Facebook, Friendster, LinkedIn and MySpace have been pervasive<sup>6</sup>. Social networks provide a dominant reflection of the configuration and dynamics of the civilization of the 21st century and the interaction of the Internet generation with both technology and other people. Indeed, the tremendous growth of social multimedia and user generated content is revolutionizing all stages of the content value chain including production, processing, distribution and consumption<sup>4</sup>. Teachers and students are able to follow the news, technical innovations, musicians, artists, other friends or each other's profiles, share thought, knowledge, ideas or media through Twitter. Students can find an expert in an area they are interested in and they can follow them<sup>7</sup>. Social media has been used to involve people in research<sup>8</sup>. However, only few studies integrate social media with academic curriculum. This deficiency has created a gap in the level of research and collaboration/linkages among faculties in academic institutions. The objective of this study is to provide an ARMS for the research community. More specifically, calls for academics to use social media tools and platforms have emerged in the past few years<sup>9</sup>. Up till date, the educational community has been conspicuously slow in adopting social networking technologies into the curriculum<sup>10</sup>. The main focus of this paper is to develop and evaluate an academic research management system for

institutional use. The implications of ARMS for our environment in Nigeria were also discussed in this study. The main requirement of social networking is to build up an association of ideas, knowledge and sharing among people in a global community<sup>11</sup>. The research by Stanciu, et al<sup>12</sup> analyzed the impact of social networks on educational process in Romanian higher education. Empirical evidence about the degree of availability of students and academics in using social networking sites for education was provided. The research by Buzzetto-More<sup>13</sup> explore the efficacy of social networking systems as instructional tools by presenting the results of a study that examined the perceptions of management students who completed courses at a U.S. university.

The study by Bittner and Muller<sup>14</sup>, examined the attributes of information systems research and networking tools. After identifying and taking into account the differences of both systems, the paper came to the conclusion that research information systems and research networking tools currently live in coexistence and will foreseeably do so in the future. The study by Rithika and Selvara<sup>15</sup>, points out the popularity of social networking sites among students community. The study carried out by Shohrowardhy and Hassan<sup>11</sup> attempts to determine the perception of students in the area of social networking on their academic purpose. In this study, a survey was conducted by the use of 480 copies of self-administered questionnaire given to a sample of students from the business faculties of different public and private universities in Chittagong.

Despite increase in literature on social media, regarding the capacity to enhance social capital formation, foster trust, and connect people in remote locations, there is still a dearth of research on how SNS potentially integrates academic curriculum into university settings<sup>16</sup>. The existing online collaboration platforms are not sufficient to accommodate the totality of researchers desiring dynamic platforms to network. This is one of the motivating factors for this paper

This study is structured as follows: section one above shows introduction. Section two comprises of system design and modelling. The system implementation and evaluation is described in section three. Section four highlights the implications for adopting and integrated social networking and academic curriculum together. Section five concludes the study.

## **2. System Design and Modeling**

The Activity diagram in Figure 1 graphically represents the flow of activities of how to access and use the system. First, the user has to login with login details if exist, otherwise login profile will have to be created through the register link.

On a successful login, the system displays a menu of home page comprising select papers published, select messages, select edit profile, search for other users and view information lists. Thereafter, the user is connected to two optional menu items such as upload of new paper and download of papers before concluding the activity work flow. A successful access to the system is required by the user for the following modules: paper submission, messages, edit profile, search for other users, view information file, fill users' profile, fill in new details, view/reply messages, upload new paper, and download paper. The class diagram in Figure 2 shows the nature of relationship amongst the classes. The classes comprise of message, admin, user, registration, profile and paper. Each class maintains a type of relationship with a neighboring class.

Figure 1: Activity diagram for the system.

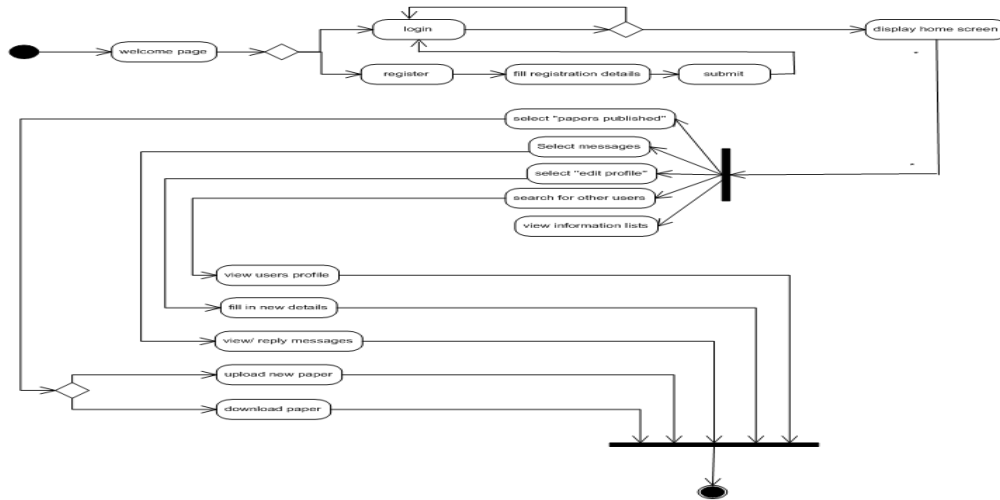
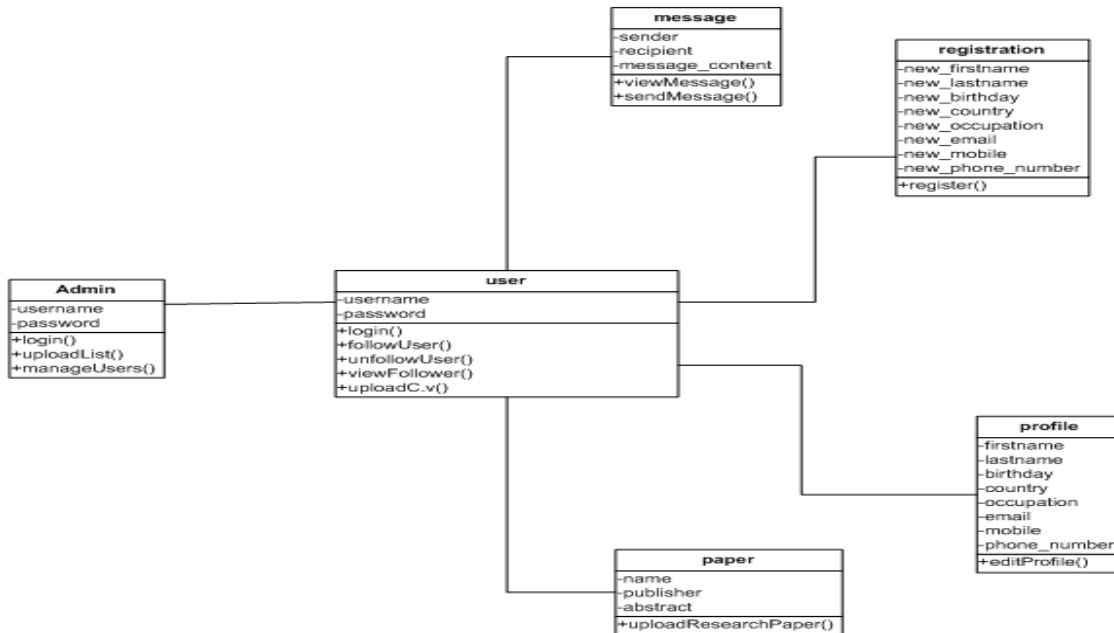


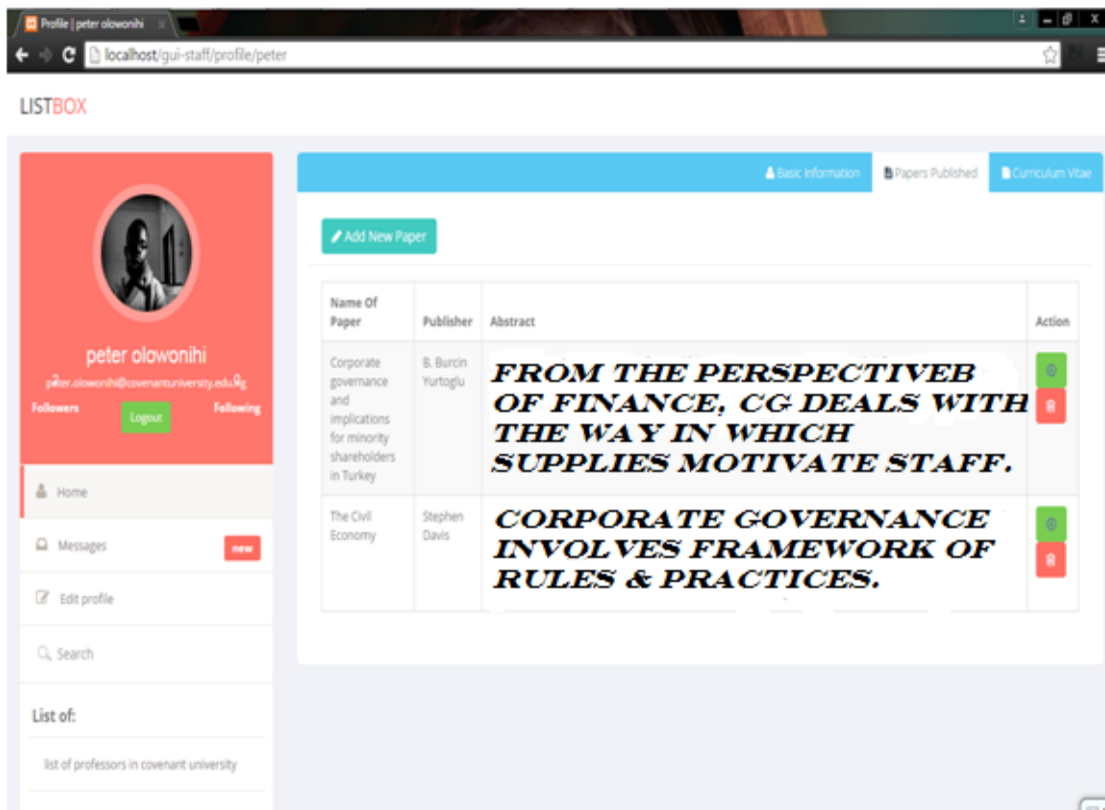
Figure 2: Class diagram of the system.



### 3. System Implementation and Evaluation

The system was developed using Hypertext Mark-up Language (HTML) as front end, Hypertext Preprocessor (PHP) as server side programming tool, and Apache as middle ware and MySQL as database. Figure 3 shows a sample screen shot of paper view page. The functionalities of the system include user login page, upload and download of researcher publications, Curriculum Vitae (CV) upload, admin category management, and the search page. In the CV upload module, for instance, the users can view CV of researchers. The researcher uploads his/her curriculum vitae and other users of the system can download to view the document.

**Figure 3: The paper view page**



**Source: Compiled by the researchers.**

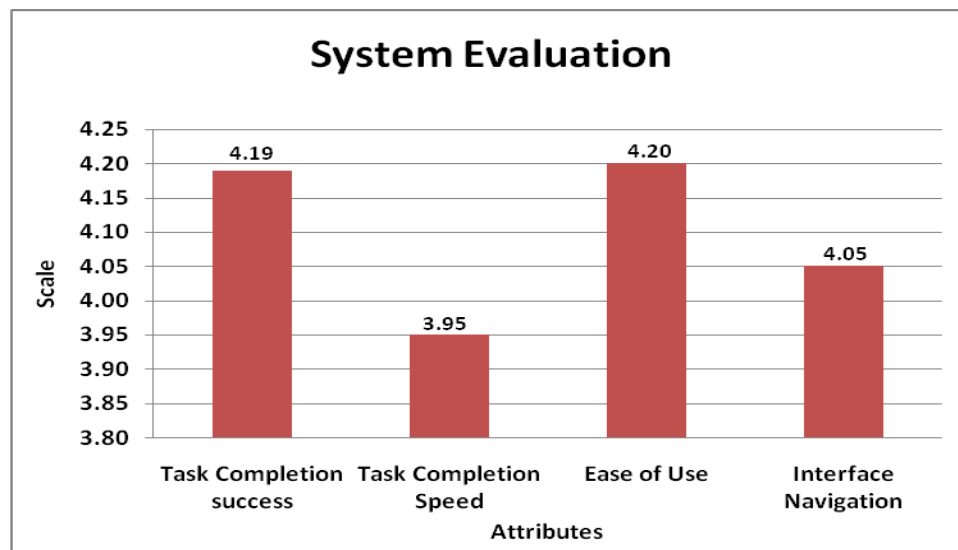
#### 3.1 System Evaluation

In order to determine the usability of the system, a usability evaluation was carried out. The evaluation technique known as Cognitive walkthrough strategy<sup>17</sup> was engaged in this study as a result of its simplicity. The survey instrument used was questionnaire. The questionnaire had five sections including background information, task completion speed, ease of use and interface navigation with the system. A total of 89 copies of the questionnaire were administered to 35 lecturers and 54 students distributed across five departments in the university comprising Computer and Information Sciences,

Random sampling technique was used in the selection process. The questions were designed using five point likert-scale where 1= strongly disagree, 2=disagree, 3=undecided, 4=agree and 5=strongly agree.

The mean scores for the survey question attributes are as follows: Task Completion Success (4.19), Task Completion Speed (3.95), Ease of Use (4.20) and Interface Navigation (4.05). The resultant total average score for all attribute elements gave 4.10. Several usability studies suggest that system with “Very Bad Usability” would have 1 as mean rating, “2 as Bad Usability”, 3 as Average Usability, “4 as Good Usability” and “5 as Excellent Usability”. It was proposed in Sauro & Kindlund<sup>18</sup> and applied in Azeta et al. (2010)<sup>19</sup> that “Good Usability” should have a mean rating of 4 on a 1-5 scale and 5.6 on a 1-7 scale. Arising from the above, the prototype system presented in this study has “Good Usability” based on the average total rating of 4.10.

**Figure 4: Analysis of Usability Attributes.**



From the survey results, the application has a high completion success rate and is easy to use. However, the speed of task completion has a low rate. The feedback from the respondents assert that the slow speed was mainly experienced when downloading large size research papers and documents from the system.

#### 4. Implications of Research Management System in Nigeria

It could be said that one of the ways to pursue knowledge is through research. However, adequate sources or outlet for extensive research is lacking; hence, the need for academic research management system (ARMS). ARMS provide a platform to archive research materials, and search for the materials when needed. It also facilitates identification of mentors, collaborators and scholars working in similar areas. Developing countries, including Nigeria, have challenges

accessing research materials from developed countries because of subscription among other things. Ng'etich<sup>20</sup> posited that the "socio-economic and technological changes ushered in by globalization demand that researchers devise new ways of addressing emerging research issues. One of such challenges is insufficient repository of research output in Nigeria and other developing countries. Concerning the impact of Social Networking System (SNS), questions have been asked about the social impact and widespread use of social networking sites (SNS) like LinkedIn, MySpace, Facebook and Twitter in Nigeria. Do these technologies isolate people and truncate their relationships? Or are there benefits associated with being connected to others in this way. Another challenge concerns suitability and appropriate integration of social media technologies into curriculum of higher education in Nigeria.

Reasons to censure the integration of social media for academic practice includes first, that social media can be a distraction. A common complaint among instructors is that tools such as Facebook and Twitter divert students' attention from classroom participation and ultimately are disruptive to the learning process. Despite the increasing growth of social media for personal use, utilization of social media technologies for academic practice by educators has been slow<sup>20</sup>. Another issue concerns suitability and appropriate integration of social media technologies into curriculum. For successful integration, social media technologies should become a seamless part of the curriculum and not just an additional means of communication<sup>21</sup>.

Furthermore, the inclusion of SNSs into educational institution may have a direct effect on the higher educational community. Based on students' responses, it is clear that they are calling for the incorporation of SNS technologies into distance education. As both distance education and SNSs continue to advance, it is becoming increasingly relevant to examine how distance education and SNSs can be integrated effectively to improve student online learning.

## **5. Conclusion**

In this study, an Academic Research Management System was developed and evaluated. The system has the potentials of enlarging the scope of research databases in developing countries including Nigeria. The platform provided by the system allows students and collaborators to identify researchers working in similar area. Such relationship can be harnessed which may translate to academic mentorship and followership. The integration of the system into the academic world will foster the rapport between academics in all fields in the university as it will provide a means to have direct access to materials when needed as well as to the creators of such materials. Thus a research management system

provides the following benefits: (i) It will foster the improvement of research work by providing immediate access to required information, and (ii) It will improve collaboration among students and lecturers as students will be able to follow and participate in research work done not just by researchers in their field of study alone but also other fields of interests.

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