

Five-Point Likert Scale-Based User Acceptance Analytical Model For Evaluation Of A Journal Management Web Application

Ofonime Dominic Okon¹

Department Of Electrical/Electronic and Computer Engineering
University of Uyo, Akwa Ibom State Nigeria

Kufre Effiong Okon²

Department Of Electrical/Electronic and Computer Engineering
University of Uyo, Akwa Ibom State Nigeria

Eduediuyai Ekerette Dan³

Department of Computer Engineering Federal Polytechnic, Ukana
Akwa Ibom State Nigeria
uyaiabasidan@gmail.com

Abstract— In this paper, five-point Likert scale-based user acceptance analytical model for evaluation of a journal management web application is presented. The Journal Management Web Application (JMWA) being evaluated was developed for a case study Journal of Research and Innovations in Engineering (JORIE) University of Uyo. As at the time of the test, JORIE does not have a functional website and journal article submission was done via email. Consequently, the user acceptance test compares the present JORIE manual management approach with an automated Journal Management Web Application (JMWA) that was developed to address the prevailing shortcomings of the manual management approach. Detailed analytical model was developed based on 5-point Likert scale response of the tester involved in the evaluation of the web application. The results gave average percentage acceptability of 90 for 'Notification of events through SMS and email'. There is also average percentage acceptability of 100 for submission process simplicity and straightforwardness as well as average percentage acceptability of 73.89 for the efficiency and simplicity of the peer review management by editors. The Model View Controller (MVC)-based system for JORIE achieved an average percentage acceptability of 90 against 10 for unacceptability for the time saving deeplink mechanism that enable authors and reviewers easy access to submission statuses and peer-review assignment without undergoing the login procedure. Again, the MVC-based system for JORIE proved to be user friendly with the average percentage acceptability of 100 and an overall acceptability percentage of 88.11% against 10.39 percentage unacceptability. Similarly, the steps/tasks

reduction statistical results show that the MVC-based system for JORIE recorded roughly 40% reduction in workload for the authors, 42.86% for the editor-in-chief, 50% for section editor and 75% for reviewers culminating in an overall system efficiency of 51.97% as compared to the manual editorial workflow.

Keywords— User Acceptance Test, Five-Point Likert Scale, Web Application, Analytical Model, Journal Management

1. Introduction

In Nigeria today, most of the journals including Journal of Research and Innovations in Engineering (JORIE) University of Uyo are employing the manual and/or semi-automated publishing procedures which has to do with manual submission, tracking and management of the publishing process. As a result of these, authors and researchers experience varying degree of difficulties in submitting their research articles for publication [2,3,4,5]. Those that submitted journal articles for publication often complained of missing manuscript due to mix-ups during submission or after submission and inability to check the status of their submissions without having to log in to their dashboard. As a result of administrative heavy manual workload and attendant longer reviewing process, journal authors experience longer publishing circles.

Globally, aside the problems associated with the manual or semi-automated journal management processes, existing journal management systems lack simplified and much straightforward means of accessing submission status by the authors and completing review assignments by the reviewers. Also, there is no backup communication channel between the collaborators (authors, reviewers, editors, etc.) of the system especially in an event the recipient is offline,

email address is not monitored or emails are erroneously flagged as spam hence depriving the users of the existing systems the convenience of instance notification on their mobile devices. In addition, existing systems are not equipped with discussion forums which as a result deprive journal managers, authors, students and the greater research communities the avenue of solidarity, knowledge sharing and providing timely resolution of issues and concerns.

Essentially, these problems are to be solved by the development of an Model View Controller (MVC) journal management system [6,7,8,9,10] that not only automate the different aspects of journal management and publication processes, but also provide a mechanism that ensures seamless access to submissions status and review assignments by the authors and reviewers respectively, journal discussion forum as well as integrating SMS gateways for real-time notifications on mobile devices.

Importantly, computer and related technologies have been used to address several problems in diverse fields [11,12,13,14,15,16,17,18,19,20,21,22]. Specifically, the internet and related web-based solutions have been developed to address various challenges in such ways that the solution gives global visibility and access [23, 24 ,25, 26, 27, 28, 28, 30, 31,32, 33, 34, 35, 36, 37,38,39,40,41,42,43,44]. However, it is required that such technology-based solutions system should be evaluated before [45,46,47] and after the solution development [25,26]. Accordingly, after the journal management platform is developed, it is appropriate to conduct user acceptance test [48,49,50,51,52,53] to ascertain to what extent the users are satisfied with the system. Accordingly, in this paper, five-point Likert scale-based user acceptance analytical model for evaluation of a journal management web application is presented,[54,55,56,57]. The detailed procedure and mathematical expressions for the five-point Likert scale-based user acceptance analytical model are presented along with sample numerical example to demonstrate how the model is employed in the evaluation of a case study JORIE web application.

2.0 Methodology

The goal of this paper is to present user acceptance evaluation model for a Journal Management Web Application (JMWA). However, a summary of the key requirements specifications of the journal management web application are presented first and then the analytical model for user acceptance evaluation of the web application is then presented. Specifically, the Journal Management Web Application (JMWA) being evaluated was developed for a case study Journal of Research and Innovations in Engineering (JORIE) University of Uyo. As at the time of the test, JORIE does not have a functional website and journal article submission was done via email. Consequently, the user acceptance test compares the present JORIE manual management approach with an automated Journal Management Web Application (JMWA) that was developed to address the prevailing shortcomings of the manual management approach.

2.1 Summary of the key requirements specifications and salient features of the journal management web application being evaluated

Thorough requirement engineering process was conducted to capture essential user and system requirements for the Journal Management Web Application (JMWA). A summary of some key aspects of the resultant requirement specifications for the journal management web application are presented as follows.

- A. The system should provide facility for user registration and authentication.
 - i. Create a form where users can register and create their profile.
 - ii. Create a form where users can login, change passwords and reset forgotten password.
 - iii. The system should enable users to request to join the editorial board.
- B. The system should provide facilities for accessing published articles
 - i. The system should provide interface for displaying published articles.
 - ii. The system should provide mechanism for searching and downloading published articles of interest.
- C. The system should provide feature for submitting new article for publication.
 - i. The system should provide form for article submission.
 - ii. The system should notify the author as his/her submission goes through the different editorial stages.
 - iii. The system should provide mechanism for accessing submission status seamlessly.
- D. The system should provide facility for carrying out editorial processes on the submitted articles.
 - i. The system should notify the Editor-In-Chief of the submitted articles.
 - ii. The system should provide interface for reviewing the submitted article and subsequent editorial assignment.
 - iii. The system should notify the editor of his/her editorial assignment.
 - iv. The system should provide interface for editors to carry out their editorial assignment.
 - v. The system should enable editors to assign reviewers, accept/reject articles based on reviewers' recommendation (permission required) and schedule same for publication (permission required).
 - vi. The system should provide mechanism for rating reviewers' review and recommendations by the editor.
- E. The system should provide interface for carrying out peer-review process
 - i. The system should notify reviewers of their review request.
 - ii. The system should allow the reviewers to accept/reject the review request.

- iii. The system should enable reviewers review and make recommendations on the assigned article.
- F. The system provide interface for managing volumes, issues and publication.
 - i. Editor-In-Chief or Editor (based on permission) should be able to create volumes and issues, assign accepted articles to it and subsequently publish/unpublish it.
 - ii. The system should notify all users of newly published articles.
- G. The system should provide discussion forum for collaboration and sharing of ideas among users.

Journal Management Web Application (JMWA) was developed using Model View Controller (MVC) approach with major focus to address the limitations of the existing journal management systems, which includes difficulties in accessing status of submitted articles by the authors, difficulties in accessing invitations for review by the registered reviewers, ineffective notification system and inefficient or non-availability of collaborative platform. Notably, the JMWA is MVC-based and designed with secured deep-link access facility that enables it to be very user-friendly, encourage timely collaborations, and affords more convenient and prompt access to requisite resources. A summary of the comparison of the editorial tasks at each step between a typical manual journal management system and the automated Journal Management Web Application Being evaluated in this paper is presented in Table 1.

There are several salient features of the journal management web application that is being evaluated. The a

Table 1: Editorial tasks comparison at each step between manual and automated systems

Actors	Tasks	Estimated Steps	
		Manual System	Automated System
Authors	Manuscript Submission	i. Physical mail, email or physical submission	i. System
Authors	Submission status check	i. Repeatedly query EIC for submission status ii. Receives status response from EIC through manual means*	i. Access manuscript status from system at any point in time.
Authors	Review Feedback	i. Receive manuscript review feedback from SE or EIC, send acknowledgement through manual means* ii. Re-submit revision or camera-ready version through manual means*	i. Re-submit revision or camera-ready version through system
Editor-in-Chief	Manuscript receive, assessment, decision, assign to section editor	i. Email (and download) or physical mail ii. Assess manuscript iii. Send rejection notice to author or assign manuscript to SE iv. Wait for acknowledgement from author or SE	i. Receive through system ii. Assess manuscript iii. Send rejection notice to author or assign manuscript to SE through system
Section Editors (SE)	Receive manuscript, assessment and decision	i. Send assignment confirmation to EIC through manual means* ii. Assess manuscript iii. Send rejection notice to author or forward rejection decision to EIC or assign manuscript to reviewers through manual means* iv. Wait for confirmation from author, EIC or reviewer	i. Assess manuscript ii. Send rejection to author or forward rejection decision to EIC or assign manuscript to reviewers through the system
Reviewers	Manuscript evaluation and comments	i. Send assignment confirmation to SE through manual means* ii. Evaluates manuscript iii. Compile comment and recommendations to SE through manual means* iv. Wait for SE confirmation	i. Evaluates manuscript and record comments through the system

Section Editors (SE)	Review reviewer's comments and recommendation or decision	<ul style="list-style-type: none"> i. Receives reviewer comments through manual means* ii. Send review comment confirmation to reviewer through manual means* iii. Send revision request or rejection or acceptance notice to author or forward recommendation to EIC through manual means* iv. Wait for author revision request confirmation v. Receives author revision or camera-ready version, send confirmation to author through manual means* vi. Initiate another review round or schedule for publication in an issue. 	<ul style="list-style-type: none"> i. Receives reviewer comments through system ii. Send revision request or rejection or acceptance notice to author or forward recommendation to EIC through the system iii. Receives revision or camera-ready version from author through the system and initiate another review round or schedule for publication in an issue.
Editor-in-Chief (EIC)	Review recommendation receive, decision	<ul style="list-style-type: none"> i. Receive review recommendation from SE through manual means* ii. Send review recommendation confirmation to SE through manual means* iii. Communication recommendation to author through manual means* 	<ul style="list-style-type: none"> i. Receive through system ii. Assess manuscript iii. Send rejection notice to author or assign manuscript to section editor (SE)

* through email, physical mail, phone or physical contact

2.2 The User Acceptance Analytical Model for the Journal Management Web Application

The goal of the user evaluating is to demonstrate that the built system meets the pre-defined criteria and will run smoothly and affectively once deployed. For calculating the percentage acceptability of each test case using just non-neutral testers, Equation 1 was used.

$$PA_{nnt} = \frac{TS}{TT - TN} \times 100\% \quad (1)$$

The percentage unacceptability of each test case considering only testers who were non-neutral is calculated using Equation 2.

$$PU_{nnt} = \frac{LS}{TT - TN} \times 100\% \quad (2)$$

The percentage acceptability of each test case considering all testers is calculated using Equation 3.

$$PA_t = \frac{TS}{TT} \times 100\% \quad (3)$$

The percentage unacceptability of each test case considering all testers is calculated using Equation 4.

$$PU_t = \frac{LS}{TT} \times 100\% \quad (4)$$

where, TS is the total number of the two highest scores, strongly satisfied (5) and satisfied (4), LS is total number of the two lowest scores that is, dissatisfied (2) and strongly dissatisfied (1), TT is the total number of Testers, TN is the total number of Neutral respondents. From the above equations, we can calculate the average acceptability percentage (Avg. PA) and average unacceptability percentage (Avg. PU) of the various test cases using Equation 5 and Equation 6.

$$PA_{av} = \frac{PA_{nnt} + PA_t}{2} \quad (5)$$

where PA_{nnt} = percentage acceptability of each test case using just non-neutral testers, PA_t = percentage acceptability of each test case considering all testers.

$$PU_{av} = \frac{PU_{nnt} + PU_t}{2} \quad (6)$$

where PU_{nnt} = percentage unacceptability of each test case using just non-neutral testers, PU_t = percentage unacceptability of each test case considering all testers. Similarly, the total average percentage acceptability can be computed using Equation 7.

$$PA = \frac{\sum_{i=1}^n PA_{av}(i)}{n} \quad (7)$$

where PA_{av} = average acceptability percentage for each test case(i), n = the total number of the test cases. Also, the total average percentage unacceptability can be computed using Equation 8.

$$PU = \frac{\sum_{i=1}^n PU_{av}(i)}{n} \quad (8)$$

where PU_{av} = average unacceptability percentage for each test case(i), n = the total number of the test cases. Siddiqui *et al.*, (2019) formulated a relationship for determining the total number of steps/tasks required for each actor of the editorial process given in Equation 9.

$$T_{stps/tns} = \sum_{i=1}^n stps_{actrs} \quad (9)$$

where n = number of manuscripts, stps = number of steps of every actor, and actrs = Authors, Editor-in-Chief (EIC), Section Editor (SE), and Reviewers. From the above

relations, the percentage reduction in steps/tasks for each of the actors can be calculated using Equation 10.

$$PR_{stps/tnks} = \sum_{i=1}^n \frac{(TM_{stps/tnks} - TA_{stps/tnks})}{TM_{stps/tnks}} * 100 \quad (10)$$

where n = number of manuscripts, $TM_{stps/tnks}$ = total number of steps/tasks for each actor of the manual system, $TA_{stps/tnks}$ = total number of steps/tasks for each actor of the automated system

Hence the average reduction in steps/tasks (efficiency) of the develop system can be computed using Equation 11.

$$Rav(\%) = \frac{\sum_{a=1}^n PR_{stps/tnks}}{n} \quad (11)$$

where n = number of manuscripts, $PR(stps/tnks)$ = the percentage reduction in steps/tasks for each of the actors.

3. Results and Discussion

Table 2: User acceptance test respondents response

No	Acceptance requirements	Strongly Satisfied	Satisfied	Neutral	Dissatisfied	Strongly Dissatisfied
1	The system is user friendly and not confusing	8	2	0	0	0
2	User receives event notifications through SMS and email	3	6	0	1	0
3	Navigations, login and other functionalities are easy to use	5	5	0	0	0
4	Submission process simple, straightforward and intuitive	3	7	0	0	0
5	Deeplink mechanism provides authors quick access to submission status without the authentication procedure	5	4	0	1	0
6	Submission evaluation process by reviewers efficient and easy to follow	2	4	1	2	1
7	Deeplink mechanism provides reviewers quick access to assigned reviews without the authentication procedure	8	1	0	1	0
8	Peer review management by editors efficient, simple and straightforward	4	3	1	2	0
9	Supports searching, downloading and viewing of published article.	7	3	0	0	0
10	Discussion forum facilitate the sharing of information and tips	3	4	1	1	1
	Total	48	39	3	8	2

The percentage unacceptability of each test case considering only testers who were non-neutral (PANnt), percentage unacceptability of each test case considering

3.1 Results of the user acceptance test

User acceptance testing, also known as usability testing, was performed to see if the system can be utilized successfully and efficiently by users as well as meeting the objectives of this work. The detailed responses from the respondents of the user acceptance testing are presented in Table 2 for events notification through SMS and email, navigations, login and other functionalities easy to use, submission process simple and straightforward, deeplink mechanism provides authors and reviewers simple access to submission status and assigned reviews without the authentication procedure, submission evaluation process by reviewers efficient and easy to follow, peer review management by editors not complex, searching, downloading and viewing of published article easy, and discussion forum facilitate the sharing of information and tips.

only testers who were non-neutral (PUnt), the percentage acceptability of each test case considering all testers (Pat), the percentage unacceptability of each test case considering all testers (Put), the average acceptability percentage (Avg. PA) and average unacceptability percentage (Avg. PU) of

the various test cases where calculated using Equation 1, Equation 2, Equation 3, Equation 4, Equation 5 and Equation 6 respectively and tabulated as shown in Table .

Table 3: Table showing average acceptability percentage (Avg. PA) and average unacceptability percentage (Avg. PU) of the various test cases

No	Acceptance test cases	PA _{mnt} (%)	PU _{mnt} (%)	PA _t (%)	PU _t (%)	PA _{av} (%)	PU _{av} (%)
1	The system is user friendly not confusing	100	0	100	0	100	0
2	User receives event notifications through SMS and email	90	10	90	10	90	10
3	Navigations, login and other functionalities easy to use	100	0	100	0	100	0
4	Submission process simple, straightforward and intuitive	100	0	100	0	100	0
5	Deeplink mechanism provides authors quick access to submission status without the authentication procedure	90	10	90	10	90	10
6	Submission evaluation process by reviewers efficient and easy to follow	66.67	33.33	60	30	63.34	31.67
7	Deeplink mechanism provides reviewers quick access to assigned reviews without the authentication procedure	90	10	90	10	90	10
8	Peer review management by editors efficient, simple and straightforward	77.78	22.22	70	20	73.89	21.11
9	Supports searching, downloading and viewing of published article.	100	0	100	0	100	0
10	Discussion forum facilitates the sharing of information and tips	77.78	22.22	70	20	73.89	21.11

From Table , the total average percentage acceptability is computed using Equation 7.

$$PA = \frac{(100 + 90 + 100 + 100 + 90 + 63.34 + 90 + 73.89 + 100 + 73.89)}{10}$$

$$= \frac{881.12}{10}$$

88.11%

Similarly, the total average percentage unacceptability is computed using Equation 8.

$$PU = \frac{(0 + 10 + 0 + 0 + 10 + 31.67 + 10 + 21.11 + 0 + 21.11)}{10}$$

$$= \frac{103.89}{10}$$

10.39%

Strikingly, PA + PU < 100, due to the average percentage neutrality being ignored because it provides no information on the acceptability of the system.

The automated system saves time and decreases the number of step requires to complete tasks dramatically. We compared some task (especially the editorial workflow) lists between the manual and the automated system at each step. The details provided in Table 1 show the estimated number of steps in both the manual and automated systems thus, we can then compute the total number of steps/tasks required for each actor of the process using Siddiqui *et al*, (2019) method given in Equation 9.

Applying equations (Equations 9 and Equation 10) to the steps/tasks in Table 1 and at n = 5, we arrive at the statistical results shown in Table

Table 4: Reduction statistics of automated system's steps/tasks

Actors	Approximate Steps/Tasks (for 5 manuscripts)		
	Manual System ($TM_{stps/tns}$)	Automated system ($TA_{stps/tns}$)	Steps/Tasks Reduction (%)
Authors	25	15	40
Editor-in-Chief (EIC)	35	20	42.86
Section Editor (SE)	50	25	50
Reviewers	20	5	75

Hence the average reduction in steps/tasks (efficiency) is computed using Equation 11.

$$\begin{aligned}
 Rav(\%) &= \frac{(40 + 42.86 + 50 + 75)}{4} \\
 &= \frac{(207.86)}{4} \\
 &= 51.97\%
 \end{aligned}$$

Evaluation can be considered as a procedure for determining how good, helpful, or successful a system is. It can be observed through the testing that the system design was useful and successful, which is what every system should aspire for.

3.2 Discussion of Results

The automated journal management system overcame the communication challenges inherent in the manual systems by providing real-time notification of events. These notifications are a great relieve especially to the editorial workflow participants as it shortens the delays in the editorial process such that participants do not have to wait for manual acknowledgements of a particular task or process from other participants. This is evident in the average percentage acceptability of 90 for 'Notification of events through SMS and email'. This is also the case in Open Journal System [58].

However, Open Journal System lacked the medium for collaboration and knowledge sharing within the research community. The developed system for JORIE incorporates journal discussion forum which enables collaboration, knowledge and ideas sharing among the research community and the general public.

Authors tend to like journal management systems that offers streamlined submission process flow. This is what the submission process evaluation achieves. The breakdown of the submission process into distinct steps provides authors smoother user experience and makes the process less inconveniencing since authors can anticipate what is required before moving to the next step and they can save and continue the submission at a later date. This is evident in the average percentage acceptability of 100 for submission process simplicity and straightforwardness with 0 unacceptability.

Jacksi [59] proposed an open-source web-based article submission management system for academic research papers that provides support to all participants in the journal management process including authors, editors, reviewers, and other editorial staff. The proposed system adopted the double-blind peer review and comprises of modules such as guests, authors, reviewers, editors, search and security. The main limitations of the proposed system were review datelines reminder not automated and no means of selecting reviewer from a list during submission assignment. The developed system for JORIE utilizes Quartz.Net scheduler to implement automated background job that runs continuously to check for review invitation due dates, review due dates, etc. and notify the parties concern. Also, when assigning submission to reviewers, JORIE system provides an interface that list reviewers whose reviewing interests match the submission category. Also, there is an option to populate all reviewers on the systems thus makes the entire assignment process simply and user-friendly as evident in the user acceptance result for 'Peer review management by editors efficient and simply' which achieve average percentage acceptability of 73.89.

Siddiqui et al [60] presented a time saving MVC-based automated journal management system for academia and industry that enables a very systematic, secure, and smooth manuscript regulation from submission to publication. From the result, the researcher recorded an overall 43.33 percent efficiency as compared to the manual journal processing approach. However, the system lacked mechanism for accessing submission status without explicit login. The MVC-based system for JORIE addresses this limitation by implementing a secured deeplink mechanism that enable authors and reviewers easy access to submission statuses and peer-review assignment without undergoing the login procedure. This achieved an average percentage acceptability of 90 against 10 for unacceptability.

From the user acceptance evaluation (Table 4), the MVC-based system for JORIE has proven to be user friendly with the average percentage acceptability of 100 as opposed to 0.0 for the average percentage unacceptability and an overall acceptability percentage of 88.11% against 10.39 percentage unacceptability.

Similarly, the steps/tasks reduction statistical results (Table 4) show that the MVC-based system for JORIE recorded roughly 40% reduction in workload for the authors, 42.86% for the editor-in-chief, 50% for section editor and 75% for reviewers culminating in an overall

system efficiency of 51.97% as compared to the manual editorial workflow.

4. Conclusion

An approach for quantifying and estimating user acceptance test for a Journal Management Web Application (JMWA) is presented. The Journal Management Web Application (JMWA) being evaluated was developed for a case study Journal of Research and Innovations in Engineering (JORIE) University of Uyo. As at the time of the test, JORIE does not have a functional website and journal article submission was done via email. Consequently, the user acceptance test compares the present JORIE manual management approach with an automated Journal Management Web Application (JMWA) that was developed to address the prevailing shortcomings of the manual management approach.

A summary of some key aspects of the user and system requirement specifications for the journal management web application are presented along with some other salient features of the web application. Also, user acceptance analytical model for the Journal Management Web Application was presented. The model is based on 5-point Likert scale response of the tester involved in the evaluation of the web application.

Notably, detailed responses from the respondents of the user acceptance testing are presented some key features and requirement specifications of the web application, and they include events notification through SMS and email, navigations, login and other functionalities easy to use, submission process simple and straightforward, deeplink mechanism provides authors and reviewers simple access to submission status and assigned reviews without the authentication procedure, submission evaluation process by reviewers efficient and easy to follow, peer review management by editors not complex, searching, downloading and viewing of published article easy, and discussion forum facilitate the sharing of information and tips. The 5-point Linkert scale responses from the participants on each of the listed items were to evaluate the user acceptance score for the web application. In all, the results showed that the users are very satisfied with the Journal Management Web Application (JMWA) which in this case was developed for the case study Journal of Research and Innovations in Engineering (JORIE) University of Uyo.

References

1. Kuhna, M., Kivelä, I. M., & Oittinen, P. (2012, October). Semi-automated magazine layout using content-based image features. In *Proceedings of the 20th ACM international conference on Multimedia* (pp. 379-388).
2. Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. *American Psychologist*, 73(1), 26.
3. Levitt, H. M., Motulsky, S. L., Wertz, F. J., Morrow, S. L., & Ponterotto, J. G. (2017). Recommendations for designing and reviewing qualitative research in psychology: Promoting methodological integrity. *Qualitative psychology*, 4(1), 2.
4. Pickering, C., & Byrne, J. (2014). The benefits of publishing systematic quantitative literature reviews for PhD candidates and other early-career researchers. *Higher Education Research & Development*, 33(3), 534-548.
5. Vizcaíno, J. A., Deutsch, E. W., Wang, R., Csordas, A., Reisinger, F., Ríos, D., ... & Hermjakob, H. (2014). ProteomeXchange provides globally coordinated proteomics data submission and dissemination. *Nature biotechnology*, 32(3), 223-226.
6. Jailia, M., Kumar, A., Agarwal, M., & Sinha, I. (2016, November). Behavior of MVC (Model View Controller) based Web Application developed in PHP and .NET framework. In *2016 International Conference on ICT in Business Industry & Government (ICTBIG)* (pp. 1-5). IEEE.
7. Qureshi, M., & Sabir, F. (2014). A comparison of model view controller and model view presenter. *arXiv preprint arXiv:1408.5786*.
8. Singh, S., & Iyer, J. (2016). Comparative study of MVC (model view controller) architecture with respect to struts framework and PHP. *International Journal of Computer Science Engineering (IJCSE)*, 5(3), 142-150.
9. Sarker, I. H., & Apu, K. (2014). Mvc architecture driven design and implementation of java framework for developing desktop application. *International Journal of Hybrid Information Technology*, 7(5), 317-322.
10. Kalelkar, M., Churi, P., & Kalelkar, D. (2014). Implementation of model-view-controller architecture pattern for business intelligence architecture. *International Journal of Computer Applications*, 102(12).
11. Akpan, Nsikak-Abasi Peter, Kufre Udofia, and Simeon Ozuomba (2018). Development and Comparative Study of Least Mean Square-Based Adaptive Filter Algorithms. *Development*, 3(12). *International Multilingual Journal of Science and Technology (IMJST) Vol. 3 Issue 12, December - 2018*
12. Ozuomba, Simeon, and Etinamabasiyaka Edet Ekott. (2020). "Design And Implementation Of Microcontroller And Internet Of Things-Based Device Circuit And Programs For Revenue Collection From Commercial Tricycle Operators." *Science and Technology Publishing (SCI & TECH) Vol. 4 Issue 8, August - 2020*
13. Zion, Idongesit, Simeon Ozuomba, and Philip Asuquo. (2020) "An Overview of Neural Network

- Architectures for Healthcare." *2020 International Conference in Mathematics, Computer Engineering and Computer Science (ICMCECS)*. IEEE, 2020
14. Ozuomba Simeon , S.T Wara, C. Kalu and S.O Obama (2006) ; *Computer Aided design of the magnetic circuit of a three phase power transformer, Ife Journal of Technology Vol.15, No. 2 , November 2006 , PP 99 – 108*
 15. Thompson, E., Simeon, Ozuomba., & Olusakin, A. (2020). A survey of electronic heartbeat electronics body temperature and blood pressure monitoring system. *Journal of Multidisciplinary Engineering Science Studies (JMESS) Vol. 6 Issue 8, August – 2020*
 16. Simeon, Ozuomba. (2018) "Sliding Mode Control Synthesis For Autonomous Underwater Vehicles" *Science and Technology Publishing (SCI & TECH*
 17. Chikezie, Aneke, Ezenkwu Chinedu Pascal, and Ozuomba Simeon. (2014). "Design and Implementation Of A Microcontroller-Based Keycard." *International Journal of Computational Engineering Research (IJCER) Vol, 04 Issue, 5 May – 2014*
 18. Sylvester Michael Ekpo, Kingsley M. Udofia, Ozuomba Simeon (2019) Modelling and Simulation of Robust Biometric Fingerprint Recognition Algorithm. *Universal Journal of Applied Science 6(2): 29-38, 2019*
 19. Kalu, C., Ezenugu, I. A. & Ozuomba, Simeon. (2015). Development of matlab-based software for peak load estimation and forecasting: a case study of faculty of engineering, Imo State University Owerri, Imo state, Nigeria. *European Journal of Engineering and Technology, 3 (8), 20-29.*
 20. Otumdi, Ogbonna Chima, Kalu Constance, and Ozuomba Simeon (2018). "Design of the Microcontroller Based Fish Dryer." *Journal of Multidisciplinary Engineering Science Studies (JMESS) Vol. 4 Issue 11, November - 201*
 21. Ozuomba, Simeon, Ekaette Ifiok Archibong, and Etinamabasiyaka Edet Ekott (2020). Development Of Microcontroller-Based Tricycle Tracking Using Gps And Gsm Modules. *Journal of Multidisciplinary Engineering Science and Technology (JMEST) Vol. 7 Issue 1, January - 2020*
 22. Maduka, N. C., Simeon Ozuomba, and E. E. Ekott. . (2020) "Internet of Things-Based Revenue Collection System for Tricycle Vehicle Operators." *2020 International Conference in Mathematics, Computer Engineering and Computer Science (ICMCECS)*. IEEE, 2020.
 23. Gordon, O., Ozuomba, Simeon. & Ogbajie, I. (2015). Development of educate: a social network web application for e-learning in the tertiary institution. *European Journal of Basic and Applied Sciences, 2 (4), 33-54.*
 24. Chinedu Pascal Ezenkwu , Simeon Ozuomba , Constance Kalu (2015) , *Application of k-Means Algorithm for efficient Customer Segmentation: A strategy for targeted customer services. (IJARAI) International Journal of Advanced Research in Artificial Intelligence, Vol. 4, No.10, 2015*
 25. Ezenkwu C. P , Ozuomba Simeon, Kalu C. (2013) Community informatics social network for facilitated community policing: A case study of Nigeria . *Software Engineering 2013; Vol.1(No.3): PP 22-30 . Published online November 20, 2013*
 26. Ezenkwu C. P , Ozuomba Simeon, Amaefule O. C. (2013) The Pure-Emic User Interface Design Methodology for an Online Community Policing Hub. *Computer Engineering and Intelligent Systems Vol.4, No.11, 2013. ISSN 2222-1719 (Paper) ISSN 2222-2863 (Online)*
 27. Ozuomba, Simeon. (2013). Triple-win user innovation network and facilitated all-inclusive collective enterprise (TWUINFAICE): A postdoctoral research agenda for turning the youth bulge in Africa into blessing. *Science Innovation1(3), 18-33.*
 28. Nicholas Aigbobhiose Esene, Simeon Ozuomba, obinwa Christian Amaefule (2013) Strategies for Improving Software Development and Acquisition Practices in Developing Countries. *International Journal of Computer (ISSN 2307-4531) Vol. 8 No 1 (2013)*
 29. Simeon, Ozuomba. (2015) "Development Of Seeded Bisection Iteration Method Using Perturbation-Based Mechanism." *Development 2.7 (2015). Journal of Multidisciplinary Engineering Science and Technology (JMEST) Vol. 2 Issue 7, July – 2015*
 30. Eyibo, I. E., Ozuomba, Simeon, & Stephen, B. U. A. (2018). DEVELOPMENT OF TRUST MODEL FOR PROXY MARKETERS ENGAGED IN E-COMMERCE PLATFORMS. *European Journal of Engineering and Technology Vol, 6(4).*
 31. Ezeonwumelu, P., Ozuomba, Simeon. & Kalu, C. (2015). Development of swim lane workflow process map for enterprise workflow management information system (WFMS): a case study of comsystem computer and telecommunication ltd (CCTL) EKET. *European Journal of Engineering and Technology, 3 (9), 1-13.*
 32. Stephen, B. U., Ozuomba, Simeon, & Eyibo, I. E. (2018). Development of Reward Mechanism for Proxy Marketers Engaged in E-Commerce

- Platforms. *European Journal of Engineering and Technology Research*, 3(10), 45-52.
33. Ozuomba, Simeon, Constant Kalu, and Akpasam Joseph. (2018). Development of Facilitated Participatory Spatial Information System for Selected Urban Management Services. *Review of Computer Engineering Research*, 5(2), 31-48.
34. Simeon Ozuomba, Gloria A. Chukwudebe, Felix K. Opara and Michael Ndinechi (2014) Chapter 8: Social Networking Technology: A Frontier Of Communication For Development In The Developing Countries Of Africa. In *Green Technology Applications for Enterprise and Academic Innovation (Chapter 8)*. IGI Global, Hershey, PA 17033-1240, USA
35. Kalu, Constance, Simeon Ozuomba, and Sylvester Isreal Umana. (2018). Development of Mechanism for Handling Conflicts and Constraints in University Timetable Management System. *Communications on Applied Electronics (CAE)* 7(24).
36. Ozuomba, Simeon, Kalu, C., & Anthony, U. M. (2015). Map Mashup Application And Facilitated Volunteered Web-Based Information System For Business Directory In Akwa Ibom State. *European Journal of Engineering and Technology* Vol, 3(9).
37. Ekanem, Mark Sunday, and Simeon Ozuomba. (2018). ONTOLOGY DEVELOPMENT FOR PEDAGOGIC CONTENT INFORMATICS. *European Journal of Engineering and Technology* Vol, 6(4).
38. Akpasam Joseph Ekanem, Simeon Ozuomba, Afolayan J. Jimoh (2017) Development of Students Result Management System: A case study of University of Uyo. *Mathematical and Software Engineering*, Vol. 3, No. 1 (2017), 26-42.
39. Ezenkwu, Chinedu Pascal, Simeon Ozuomba, and Constance Kalu. (2013). "Strategies for improving community policing in Nigeria through Community Informatics Social Network." *2013 IEEE International Conference on Emerging & Sustainable Technologies for Power & ICT in a Developing Society (NIGERCON)*. IEEE, 2013.
40. Nicholas A. E., Simeon Ozuomba, Constance K. (2013) Community informatics social e-learning network: a case study of Nigeria *Software Engineering 2013*; 1(3): 13-21
41. Bassey, M. U., Ozuomba, Simeon, & Stephen, B. U. A. (2019). DEVELOPMENT OF A FACILITATED CROWD-DRIVEN ONLINE PROFIT-MAKING SYSTEM. *European Journal of Engineering and Technology* Vol, 7(5).
42. Ibanga, Jude, and Ozuomba Simeon, Obot, Akaniyene. B. (2020) "Development of Web-Based Learning Object Management System." *Development* 7, no. 3 (2020). *Journal of Multidisciplinary Engineering Science and Technology (JMEST)* Vol. 7 Issue 3, March - 2020
43. Ozuomba Simeon and Chukwudebe G. A. (2011); *Strategies For Improving Software Development And Acquisition Practices in Developing Countries*. The paper was presented in the 1ST International Conference of IEEE NIGERCON 2010, 17th – 19th 2010. It was then published in the Proceeding of the 1ST INTERNATIONAL Conference of IEEE NIGERCON, Vol 1 No. 1, Page 38 -47
44. Inyang, Imeobong Frank, Simeon Ozuomba, and Chinedu Pascal Ezenkwu. (2017) "Comparative analysis of Mechanisms for Categorization and Moderation of User Generated Text Contents on a Social E-Governance Forum." *Mathematical and Software Engineering* 3.1 (2017): 78-86.
45. Ozuomba Simeon, Chukwudebe G. A., Opara F. K., Ndinechi M. (2013) Preliminary Context Analysis Of Community Informatics Social Network Web Application. *Nigerian Journal of Technology (NIJOTECH)* Vol. 32. No. 2. July 2013, pp. 266-272
46. Mathew-Emmanuel, Eze Chinenye, Simeon Ozuomba, and Constance Kalu. (2017) "Preliminary Context Analysis of Social Network Web Application for Combating HIV/AIDS Stigmatization." *Mathematical and Software Engineering* 3.1 (2017): 99-107
47. Noh, H., Song, Y., Park, A. S., Yoon, B., & Lee, S. (2016). Development of new technology-based services. *The Service Industries Journal*, 36(5-6), 200-222.
48. Pouezevara, S., Mekhael, S., & Darcy, N. (2014). Planning and evaluating ICT in education programs using the four dimensions of sustainability: A program evaluation from Egypt. *International Journal of Education and development using ICT*, 10(2), 120-141.
49. Tripathy, P., & Naik, K. (2011). *Software testing and quality assurance: theory and practice*. John Wiley & Sons.
50. Cheung, R., & Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & education*, 63, 160-175.
51. Suki, N. M., & Ramayah, T. (2010). User acceptance of the e-government services in Malaysia: structural equation modelling approach. *Interdisciplinary Journal of Information, Knowledge, and Management*, 5, 395.
52. Hung, S. Y., Chang, C. M., & Kuo, S. R. (2013). User acceptance of mobile e-government services: An empirical study. *Government Information Quarterly*, 30(1), 33-44.

53. Davis, F. D., & Venkatesh, V. (2004). Toward preprototype user acceptance testing of new information systems: implications for software project management. *IEEE Transactions on Engineering management*, 51(1), 31-46.
54. De Winter, J. C., & Dodou, D. (2010). Five-point Likert items: t test versus Mann-Whitney-Wilcoxon. *Practical Assessment, Research & Evaluation*, 15(11), 1-12.
55. Boone, H. N., & Boone, D. A. (2012). Analyzing likert data. *Journal of extension*, 50(2), 1-5.
56. de Winter, J. F., & Dodou, D. (2010). Five-point likert items: t test versus Mann-Whitney-Wilcoxon (Addendum added October 2012). *Practical Assessment, Research, and Evaluation*, 15(1), 11.
57. Munshi, J. (2014). A method for constructing Likert scales. Available at SSRN 2419366.
58. Haider, S. and Kashif, M. (2019). Open Journal System. https://www.researchgate.net/publication/344414451_Open_Journal_System (Retrieved on 25th September 2021)
59. Jacksi, K. (2019). Design and Implementation of Online Submission and Peer Review System A Case Study of E-Journal of University of Zakho. *International Journal of Scientific & Technology Research*. 4. 83.
60. Siddiqui, F. H., Rahman, M. and Rahman, M. (2019). A Time Saving MVC-based Automated Journal Management System for Academia and Industry. https://www.researchgate.net/publication/348677580_A_Time_Saving_MVC-based_Automated_Journal_Management_System_for_Academia_and_Industry (Retrieved on 13th July 2021).