KnE Social Sciences

TSBEC
Transdisciplinary Symposium on Business, Economics, and Communication
Volume 2023

Knowledge E
enriching | engaging | empowering

Conference Paper

An Evaluation of the Implementation of ICT Framework in Jigawa State: A Case Study of Galaxy Backbone Dutse

Muhammad Alhaji Ibrahim[1]*, Hajara Abdullahi Namadi[2], Caturida Meiwanto Doktoralina[3], Imam Mulya[3], Ibrahim Shu'aibu[1]

[1]Sule Lamido University Kafin-Hausa, Jigawa State, Nigeria
[2]Jigawa State College of Education Gumel, Jigawa State, Nigeria
[3]Universitas Dian Nusantara, Jakarta, Indonesia

ORCID
Muhammad Alhaji Ibrahim: https://orcid.org/0000-0003-4726-118X

Abstract.
Rapid development in information and communication technology (ICT) has basically transformed the process and procedure of almost all forms of endeavour within health, education, business, governance, and civil service. Despite the devastating impact of Covid-19 pandemic on world economy, schools closure, businesses, and social activity, the information and communication technology has enhanced economic growth, generated business opportunities and employment, provided effective productivity and enhanced social and government services during the pandemic. The main objective of this study is to evaluate the implementation of ICT framework in Jigawa State. The study employed qualitative case study, where a sample of 20 staff were purposely selected to participate in the study. The findings of the study revealed that the state government has adequately provided physical infrastructural development for the take up of Galaxy Backbone. The government payroll and integrated financial management information system was fully computerized. Surprisingly, the assessment showed that no single amount of money was generated through ICT in the state, and that their target of becoming regional hub for software development and hardware assembling were not achieved. Based on the above findings, recommendations were put forward to the state government that the implementation of ICT framework in the state should be reviewed in order to meet the set target and a trained and professional ICT expert should be employed in the agency to guide the implementation and achievement of the set target.

Keywords: ICT, evaluation, ICT framework, model of evaluation, CIPP model

Corresponding Author:
Muhammad Alhaji Ibrahim; email: ma.ibrahim@slu.edu.ng

Published 18 July 2023

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the TSBEC Conference Committee.

1. Introduction

Rapid development in Information and Communication Technology (ICT) has basically transformed the process and procedure of almost all forms of endeavor within health, education, business, governance and civil service. The impact of the technology has not been as extensive as in the other fields of endeavor despite its presence in the state. The important of the technology cannot be overemphasized in the 21st century

as it transformed world into global village where everyone can communicate with one another from any part of the world. The technology was very essential in our day-to-day activities to the extent that our culture and society cannot be separated, but have to embrace the rapid change in order to meet the challenges of the knowledge age. It is undisputed fact the technology has impacted on the quality of educational researches, teaching and learning, health delivery, revenue generation, e-Government and security.

Nigerian Government has been investing large amounts of their budget to advance their technological sector and Jigawa State is now seen as a “pacesetter” of e-Government in Nigeria [1]. Jigawa state has positioned ICT as a key strategy in economic development. The state acquired and deploys the entire necessary ICT infrastructures for e-Government implementation [2]. One of the most important developments of ICT in the state was the development of comprehensive ICT framework. The framework has identified two key ICT strategic targets, primary and secondary target. The first target is to generate N2.00 billion naira annually through ICT starting from 2013, and trained an average of 500 ICT professional between the year 2010 to 2012 through local and overseas training. The second target was to attain 100% and 25% computer literacy level among the state civil service and general population by 2012, and ensure all key Government operation are computerized 100% by the end of the year 2012. ICT is one of the most widely used technology in enhancing government and non-governmental functioning and have been extensively used for generating revenue, security and enhancing agricultural productivity.

However, Jigawa state government has set the objectives to digitalize different institutions across the state, and achieve the set target of ICT through Galaxy backbone Dutse. In this regard, the state government has provided the institution with ICT facilities, which would enable them to achieve the set target. Despite the set target of ICT and adequate ICT facilities in the state, there is a problem of utilizing ICT facilities among the ministries, institutions, and agencies in discharging their duties. This has negatively affected the achievement of the set target. A possible cause of non-achievement of the set target is inadequate implementation of ICT framework and noncompliance with the set objectives of ICT. Perhaps a study which will evaluates the implementation of ICT framework in the state could help to solve the problem. This is because [3] in [4] posited that for any organization or institution to maintain their goal and achieve the set target more time should be spent in examining the possibility that the organization/institutions are most usefully viewed as ineffective system. He noted that the concept of organizational as ineffective system can have a substantial effect on the existing perspective about organization [4]. Therefore, more time should be spent to

evaluate the framework at interval time and inform the policy and decision makers on the areas that needs urgent attention. The study therefore, set the objective to evaluate the implementation of ICT framework in the state and identify the critical areas that prevent the achievement of the set targets.

1.1. Objectives of the study

The main objective of this study is to evaluate the implementation of ICT framework in Jigawa State: The specific objectives are to determine the level of implementation of ICT framework in the State, and Explore Galaxy personnel perspectives on achieving the set target.

2. Literature Review

2.1. Evaluation of policy/program

The concept of program evaluation was developed to guide and inform policy and decision makers on the condition of the program in terms of its strengths and weaknesses. The information gathered from the evaluation will provide a hint to the policy and decision makers about the program in making decisions, whether to propose a new program (placement evaluation), or to develop a program (need assessment), how to develop the existing program (formative evaluation) and whether to modify or to continue with the existing program (summative evaluation). [5] Noted that the fundamental to the program/policy evaluation is to judge the quality of the program/policy based on the observed outcomes. Hence, Jigawa state government have been investing large amount of their annual budget in ICT infrastructure with the aims of generating revenue and repositioning the state as one of the champions of ICT in the country. Unfortunately, the information gathered shows that in the 2020 and 2021 fiscal year ICT was not capture in the projected revenue for financing the 2020 and 2021budget, and no single mount was generated in the state through ICT. This has necessitated the researcher to evaluate the implementation of ICT framework in the state to identify why the set targets are not achieve and how to implement the framework effectively in achieving the set target.

As noted from the above literature reviewed and make reference to the ICT implementation in Jigawa State, program evaluation enables the policy and decision makers to identify the strengths and weaknesses of ICT framework implementation in the state.

This would enable them to decide whether to continue with the existing policy/program, to develop a program, to propose a new program and how to develop the existing program. The model used under this study (CIPP) if appropriately apply in the state ICT framework could enable the decision makers to judge the quality and effectiveness of the implementation in achieving the set targets. Despite the power of evaluation models in guiding evaluation practitioners, one of the critical issues to program evaluation is identification of evaluation model that can support the intended objectives of the program or not. In view of this evaluation practitioners should take a time and search for the models which will support their objective and guide them throughout the evaluation period. Equally, institution of learning, government agency and department should take time and set their objectives that can support the achievement of national policies.

2.2. Context/Input/Process/Product (CIPP) Stufflebeam's CIPPModel

CIPP is an evaluation model that is concerned with decision making [6,7]. The model was developed in 1971 by Phi Delta Kappa Evaluation Committee [8,9]. [10] Described the model as a process of obtaining information to describe the situation in order to provide useful information for making decision about the program/policy.

Different researchers have described CIPP model with different names, e.g., model of providing information for decision making [11], best model for decision making [6], as system best model [12]. In addition, [13] described the model as a macro level evaluation model. That each one of the four elements or components of CIPP according to the [6,8] model has an important role to play in the evaluation of the program. The function of each element of CIPP model was described by [10] as follows:

1. Context evaluation serves planning decisions by identifying unmet needs, unused opportunities and underlying problems that prevent the meeting of needs or the use of opportunities.
2. Input evaluation serves structuring decisions by projecting and analyzing alternative procedural designs.
3. Process evaluation serves implementing decisions by monitoring project operations;

Product evaluation serves recycling decisions by determining the degree to which objectives have been achieved and by determining the cause of the obtained results (p. 268).

3. Method Challenges in Attention Research

This study employed qualitative case study. The study was generally accepted when researchers are interested to focus in a particular domain with the objective of understanding the phenomenon from the participant point of view [6,14,15]. This study has set the objective to evaluate the implementation of ICT framework in Jigawa state, determine the strengths and weaknesses of the implementation and identify the ways in which the state will achieve the set target from the point of views of the participant. The study focused on Jigawa State Galaxy backbone Dutse, this is because the agency was founded to provide access to the ICT and generated revenue to the state. The agency has experienced of non-achievement of the set target of ICT and it was considered as information rich-site.

3.1. Population and sampling

All staff of Galaxy, Commissioner of Science and Technology, Special Advisers and Directors from various Department and Agencies related to Galaxy formed the population of the study. 20 sample was purposely selected from the above mention population to participate in the study. The sample was selected because they were deeming experienced and conversant with the ICT framework and target. The sample are experienced enough to provide useful information on the implementation of ICT framework and ways in which the set target will be achieved.

3.2. Data collection

Data was collected through interview, and each participant from the sample of the study was interviewed individually. The information collected was audio-recorded and later transcribed for the data presentation and discussion.

3.3. Reliability and validity

To ensure the information collected from the outcomes of the study is valid and reliable, the researcher ensured that there were no biases throughout the process of interview, and the process was not influenced by personal opinion. According to [16] qualitative research is valid and reliable when the process of data collection is trustworthy. Therefore, the process of data collection under this study was adhered to the principle of

credible information, when coding, categorizing and analysing data. Equally, to provide reliable information some of the participants' views were given with actual quotation as evidence. This is because [13,17] suggested that primary data should be included in the results to allow the reader to see the basis upon which the conclusion of the results was drive.

3.4. Data analysis

The data was analyzed and presented through content analysis based on the themes generated from the participants' point of view on the implementation of ICT framework in Jigawa State. Interview transcription were coded and categorized based on the pattern that emerged from the themes.

3.4.1. Category 1: Level of ICT framework implementation

TABLE 1: Level of ICT Framework Implementation.

S/N	Level of Implementation	Respondents
1	Poor Implementation	R1, R4, R7, R8, R9, R11, R12, R15,R17,R19
2	Moderate Implementation	R3, R5,R10, R13,R16,R18
3	Adequate Implementation	R2, R6,R14,R20

Poor implementation, Moderate implementation, Adequate implementation are the themes emerged from this category (table 1). The information obtained from this category shows that 50% of the Respondents have indicated that the ICT framework in the state was poorly implemented, 30% of the respondents indicated that the implementation was moderate, while 20% of the respondents have indicated that the ICT framework was adequately implemented. Some brief comments on each of the themes follows.

1. Themes I: Poor implementation

   The respondents revealed that the implementation was poor because there is no policy or written document in the state that empower Galaxy Backbone Dutse to be run as independent revenue generating body. The respondent said "the state government did not authorize Galaxy Backbone to run independently to pay salary for its workers and remits revenue generated to the state government". There is

no written policy that lays out a time frame in which to replace old computers and software in the Agency.

2. Themes II: Moderate implementation

   The respondents expressed their feeling about the implementation of ICT framework in Jigawa State, in which they regard the implementation as moderate because the government has provided all the necessary ICT facilities for the take up of Gaxaly Backbone. The respondents noted that the Agency was the first of its kind in terms of revenue generating body in Nigeria. According to Respondent 13 “The implementation was moderate, the only problem with implementation is lack of policy that empower the Agency to be run as independent”.

3. Theme III: Adequate implementation

   The respondents indicated that the implementation was adequate because the government has employed the entire necessary ICT infrastructures both the hardware and software component, and ICT experts have been recruited for running the agency. The respondents pointed out that the agency has lays out a frame work for providing e-government services for most of the ministries in the state, and they have successfully achieved computerization of key government operation such as payroll, and Integrated Financial Management Information Systems managing all aspects of public expenditure and financial management. In addition, the agency has successfully established ICT training centers across all the Local Government Areas in the state. The respondent said “The implementation was adequate, because the state government is running e-government which is part of the goal of establishing Galaxy backbone to provide services for running e-government in the state”.

3.4.2. Category 2: Reflection of the ICT target

TABLE 2: Reflection of the ICT Target.

S/N	Areas in which the implementation reflect the ICT target in the state	Respondents
1	E-Governance Service	R1,R3,R4,R5,R7,R9,R10,R13,R15,R16,R17,R18,R19
2	Training of ICT Graduate	R2,R6,R8,R9,R11,R12,R14,R20

E-Governance service, Training of ICT Graduate were themes that emerged in this category (table 2). The information gathered from this category shows that 60% of the respondents commented that the implementation has reflected the state government

objectives of digitalizing all sector in the state through e-service. The information further revealed that 40% of the responded have commented that the implementation of ICT framework in the state has reflected government target of training ICT graduate in the state. Some brief comments on each of the themes follows.

1. Themes I: E-Governance service

   Respondents commented as follows about implementation of ICT framework on reflecting the set target of ICT in Jigawa State: “Most of the ministries in the state provide e-services, especially ministry of finance, budget and planning where all their information is available on the internet.” “The state government has encouraged ministries and agencies in the state to completely transit to e-government, since most of the communication between the government and ministries is through internet.” “I think e-government is one of the key priorities of Jigawa state government in the ICT framework and the state government is in the process of complete transition to e-government, because the information of the state budget and implementation was available on the internet.”

2. Theme II: Training of ICT professional

   The respondents indicated that one of the areas in which the implementation of ICT framework reflected the set target of ICT is training of ICT professionals. The state government has sponsored over 2000 state indigenes to study Computer and Information and Communication Technology in overseas Universities. “The state government has signed MOU with foreign universities to train state indigenes on Computer Science and Information and Communication Technology, the MOU has yielded positive result, since Jigawa state government is the first state in Nigeria that established Computer Training Institution with international standard that awarded Diploma, Advanced Diploma and Bachelor Degree in Computer Science and Information and Communication Technology (Informatics Kazaure).” “The state government has established computer training center in each of the 27 Local Government Areas of the state, the establishment of the computer training centers have helped the state government in achieving the ICT target of providing computer training to majority of the state indigenes.”

Table 3: Ways in Which the State Will Achieve the Set Target of ICT.

S/N	Ways to achieve th target	Respondents
1	Lease out The Agency	R3,R6,R8,R13,R17
2	Adequate Funding	R12,R14,R15,R16,R18,R19,R20
3	Enact a law to Empower Galaxy	R1,R2,R4,R5,R7,R9,R10,R11

3.4.3. Category 3: Ways in which the state will achieve the set target of ICT

Lease out the Agency, Adequate funding, and Enact a law to empower galaxy were themes emerged in this category (table 3). From the above information 20% of the respondents suggested that the state government should lease out the agency to a strategic partner in order to achieve the set target. 35% of the respondents noted that if adequate funding will be provided to the Galaxy Backbone the set target of ICT in the state will be achieved within the set period, while 45% of the respondents argued that if the state government did not enact a new ICT law/policy in the state which will empower Galaxy Backbone to be run as independent revenue generating body the set target of ICT will not be achieve within the set period.

1. Theme I: Lease out the agency

   The respondents commented as follows about the ways in which the set target of ICT framework in the state will be achieved: “we have written a memo requesting the state government to finance our activities to be able to generate revenue or lease out the Galaxy service to strategic partner to operate the place based on mutual agreement with government. However, we are yet to receive feedback.”, Similarly, R13 noted that “the state government should look for a suitable partner to collaborate and handed over the Galaxy Backbone for revenue generation in the state”.

2. Theme II: Adequate funding

   Participants indicated that the set targets of ICT are achievable if adequate funding would be provided to the Galaxy Backbone to execute some of the project that are yet completed, which are necessary for smooth running of the Agency. According to R15, “we operated skeletally during our test running at the inception of the Galaxy service. However, we had some challenges which required some money to fix. The government on its side had made some effort to address the challenges but is constrained by economic meltdown experienced not only in Nigeria but

the world over, Furthermore, unlike the government that initiated the project, the subsequent government don't see this project as priority.", R16 posited that, "ICT is seen as the solution to key developmental challenges. However, the government that pursued the Jigawa ICT policy was over ambitious. You cannot start thinking of establishing a computer assembly plant when you don't have adequate funding" Equally, R19 expressed his displeasure over the condition of the Agency that, "I am not happy this center has not been function for over 5 years now. This is because some of the facilities are obsolete and cannot any software even window 7".

3. Theme III: Enact a law to empower galaxy

   Respondent commented as follows about the ways in which the set target of ICT can be achieve in the state, "The government of Saminu Turaki wasted a lot tax payers money on wild elephant project with little to show for it. Before you embark on such capital intensive project, you have to create a conducive environment, for a particular electricity, human resource capacity, and a good policy/law to empower the agency for sustainability." Equally, another respondent posited that, "It is true that money can be generated through ICT. However, we are not yet there, because you cannot even think of executing such a big project without enacting a law/policy that can support the process of achieving the set target of the project."

4. Discussion of the Findings

The respondents' comments in category 1 have shown that enacting a new law/policy that can empower Galaxy backbone Dutse to be run as independent agency is one area that needs special attention regarding achievement of ICT framework in the state. [18] asserts that the implementation of ICT framework in Jigawa state is still at threshold level, even though the state government has heavily invested in the infrastructure, but the set targets are not achievable within the time frame, considering that all the strategic action plan is not properly implemented. It is also important the implementation of the ICT framework in the state should reflect the needs of the agency in achieving the set target. In the case of enacting new law/policy that will empower the agency to be run as independent agency, this means that all the required facilities and logistics that are necessary for smooth take of the agency will be made available without seeking any permission from the government, since the agency is independent, it can be run independently without government intervention and generate revenue to the state government, pay workers salary, and regularly update and upgrade facilities that are not functioning in the agency. This is because ICT has been described as the foundation

for national survival and development in a rapidly changing global environment [19]. Jigawa state is among the states in the country that have always been described as parasite due to the over dependent of federal government allocation in executing all their projects, pay workers salary, and pension. However, with rapid development of ICT in the country, and decline in the federal allocation they are receiving, this is the right time the state government will review the policies/law that paved way for the establishment of Galaxy Backbone and enact a law/policy which will enable them to generate adequate revenue through ICT and become self-reliant.

Respondents' comments on areas in which the implementation reflects the set targets of ICT in the state (category 2) focused on the way the implementation was able to provide e-governance services and trained adequate number of ICT professional in the state. The respondents appear to be satisfied with the way in which the implementation was able to achieve some of the ICT targets in the state. This was confirmed by the statement made by the respondent who said, "The state government computerization of the activities of the ministry particularly the payroll has greatly improved sanity in the system by cleaning the civil service from ghost workers and also improved the operational environment which leads to reduced overhead cost". According to [20] effective application and usage of ICT at different Government Ministries, Department, and Agency will significantly improve service offering, operation, at a reasonable budget. Participants indicated that in some instance, they are not happy the way public fund was misappropriated through ghost workers and overhead cost. There is close connection between the respondent's stance and Former US president Bill Gates 2005 position on the use of Information in providing effective management, in which he said, "how you gather, manage and use information will determine whether you win or lose" Equally, [21] opined that better public service requires first a thorough rethinking and reexamination of the structure of public services and then to exploit possibilities of creating value by working across boundaries and jurisdiction to foster potential gains of redesigned services in terms of speed cost. This implies that efficient services can be achieve through ICT and the state government can empower their civil servant to improve their service delivery. Furthermore, [22] asserted that besides gaining efficiency in public service delivery through ICT, there is also evidence that demonstrate the potential of IVT in empowering the poor. The use of the technology in managing government ministries and department will not only improve service delivery in the state but also help the state in commanding the attention of the country because of the progress they are making to develop their economies, from parasite to self-reliant and technologically advanced state.

Ways in which the set target of ICT framework could be achieve range from leasing out the agency for a strategic partner, adequate funding, to enacting new law/policy that will empower the agency to be run as independent revenue generating body. Research has found that service delivery improves when working condition of the job are adequately provided and individual staff needs are satisfied. In other words, the working condition and needs of the staff for resuscitating Galaxy Backbone Dutse should be satisfied and adequately provided for the set target to be achieve and deliver efficient service. If the state government will provide adequate fund to the agency to update and upgrade their facilities, and enact new ICT policy which will give the agency autonomy, it might increase their productivity, meet the set target of generating ₦2 billion annually, and create more job opportunities for the state indigenes. Participant indicated that they find it difficult to provide service in the state because most of their computers are obsolete and cannot support new software and devices. It is known fact in ICT, when there is new discovery the old version of the computer and software's has to be changed or upgraded if you still want to stay in the competitive world of technology. According to universal psychological needs employees output and productivity improves if are allowed to work where, when and how they would like [23]. Equally, [24] posits that employee's performance will be improve when their identified problems are tackled or satisfied. [25] explained that employee's performance has largely depend on internal factors such necessary skills, intellectual capacity, and resources to do the job. Hence, the staff of the agency are professional ICT who have received adequate training in the field, but the working environment which will enable them to actualize the state target of generating ₦2 billion annually through ICT were not influencing them to improve their performance. This require government attention to critically look at their demand and implement them, so that their performance will be improve and achieve the set target.

5. Conclusion and Recommendation

5.1. Conclusion

It can be concluded that the way in which the ICT framework is implemented in the state might not necessarily achieve the set target. This conclusion is substantiated by the percentage of participants' views concerning 50% poor, 30% moderate, and 20% adequately implemented. It is important that state government should take the poor implementation of ICT framework into consideration when reviewing or re-implementing new ICT framework in the state. It was noted that the ICT framework in the state could

be adequately implemented if the state government will enact a new ICT policy which will give the agency an autonomy.

With regard to areas in which the implementation of ICT framework in the state has reflected the set targets, it was indicated that the state government payroll and the integrated financial management information system is fully computerize, and integrated biometric base is in place. The implementation was able to achieved the target of training ICT professionals, as total number of 8,597 students were enrolled in 5 years making average of 1719 ICT professional per year against the target of training 500 ICT professionals. This research has revealed that almost all the services provided in the state ministries and agencies were fully computerized which has earned the state government good reputation among all the state in Nigeria, as many states in the country are coming to emulate them in terms of e-governance. It is hoped that the reputation earned by the state will be maintained and some steps will be taken to improve the quality of the services they were provided.

The research has also identified some key areas concerning the implementation, if the state government put them into consideration the set target of ICT framework in the state might be achieve. It is evident that the agency is not independent revenue generating body, they cannot execute any plan without government approval, and most of their facilities such devices and software's are obsolete, cannot support the latest breakthrough in ICT. It is hoped that the state government will implement the concerned raised by the participants to be able to meet the set targets.

5.2. Recommendation

The information gathered from the findings of the study as well as literature reviewed, has set a basis for the following recommendations: Regular evaluation of the implementation of CIT framework should be conducted to assess the level of the implementation to find its strength and areas where it has weaknesses. The agency should design and develop a good program in place for generating revenue, as this can be a great factor to actualize the set target of generating ₦2 billion annually. The state government should implement all the concerned raised by the employees of the agency, as such will influence their performance, help them to provide efficient service delivery and achieve the set target of ICT framework in the state. Lastly, the state government should review their ICT framework as some of their targets are achieved and they are not in conformity with current trend of ICT. The new policy should focus on creating enabling environment, cyber security and artificial intelligent. The agency should employ trained

and professional ICT experts who have the experience of generating revenue through ICT to guide the implementation and achievement of the set target. This will enable the state government to meet their target and compete in the moving train of ICT.

Acknowledgments

We would like to thank the Vice Chancellor Sule Lamido University Kafin-Hausa, Chancellor of Universitas Dian Nusantara Prof. Dr. Suharyadi, and Allahyarhamah Dr. Hj. Dewi Anggraini as Director of Research and Community Service as the initiator of this International Conference.

References

[1] Emilyschitt. E-Government and ICT Advancements in Jigawa, Nigeria [Internet]. New Orleans: Tulane University; 2013 January 24. 2013 [Accessed on: Aug. 29, 2022]. Available from: https://tulaneict4d.wordpress.com/2013/01/24/egovernment-and-ict-advancements-in-jigawa-nigeria/

[2] Jigawa State Comprehensive Development Framework [Internet]. SEEDS II Technical Committee. A report from the Directorate of Budget and Economic Planning. 2009;30(4) [Accessed on: Aug. 29, 2022]. Available from: http://jigawabudget.com/downloads/Microsoft_Word__FINAL_CDF_DRAFT_FOR_VALIDATION.pdf

[3] Weick KE. Educational organizations as loosely coupled systems. Administrative science quarterl. 1976;21(1):1-19. https://doi.org/10.2307/2391875

[4] de Lima JA. Teachers' professional development in departmentalised, loosely coupled organisations: Lessons for school improvement from a case study of two curriculum departments. School Effectiveness and School Improvement. 2007;18(3):273-301.

[5] Hurteau M, Houle S, Mongiat S. How legitimate and justified are judgments in program evaluation?. Evaluation. 2009;15(3):307-319.

[6] Boulmetis J, Dutwin P. The ABCs of evaluation: Timeless techniques for program and project managers. New York: John Wiley & Sons; 2014.

[7] Alhajia IM, Yewb WT, Abd Razakc N. Models of Program Evaluation for Teacher Education Training. International Journal of Innovation, Creativity and Change. 2020;12(8):540-554.

[8] Ochu A. Evaluation of Undergraduate Chemistry Education Programme in the Universities in North Central Education Zone in Nigerian. Doctoral dissertation,

Nigeria: University Of Nigeria Nsukka; 2016.

[9] Saylor A, Alexander WM. Curriculum Planning for Better Teaching and Learning. New York: Holt, Rinehart and Winston; 1981.

[10] Stufflebeam DL. The use of experimental design in educational evaluation. Journal of Educational Measurement. 1971;8(4):267-274.

[11] Stufflebeam DL. Interview: An EEPA Interview with Daniel L. Stufflebeam. Educational evaluation and policy analysis. 1980;2(4):85-90.

[12] Alhaji IM, Yew WT. Evaluation of Validation Process of an Instrument for Measuring Pre-Service Mathematics Teachers' Level of Knowledge of Secondary School Mathematics Subject Matter. Int. J. Acad. Res. Bus. Soc. Sci. 2020;10(7):497–506. http://dx.doi.org/10.6007/IJARBSS/v10-i7/7452

[13] Hew KF, Liu S, Martinez R, Bonk C, Lee JY. Online Education Evaluation: What Should We Evaluate?. Association for Educational Communications and Technology; 2004.

[14] Stufflebeam DL. CIPP evaluation model checklist: A tool for applying the CIPP model to assess projects and programs. Evaluation Checklist Project [Internet]. Michigan (US): Western Michigan University; 2015 [Accessed on: 2019 Nov 6]. Available from: https://wmich.edu/sites/default/files/attachments/u

[15] Smith KMM. An analysis of the practice of educational program evaluation in terms of the CIPP Evaluation Model. Chicago: Loyola University Chicago; 1981.

[16] Maree JG. Research on life design in (South) Africa: A qualitative analysis. South African Journal of Psychology. 2015;45(3):332-348.

[17] Sikhwari TD, Maphosa C, Masehela L, Ndebele C. Exploring students' views on factors affecting academic performance in a South African University. International Journal of Educational Sciences. 2015;10(3):442-450.

[18] Rislana K, Good A, Adams C, Scott P. The role of ICT education and trainings in poverty reduction and economic empowerment: A case study of Jigawa state government ICT4D intervention. In ECEG2016-Proceedings of 16th European Conference on e-Government ECEG 2016. Academic Conferences and publishing limited; 2016. 177 p.

[19] Ministerial committee of ICT policy Harmonization. National ICT policy. 2019.

[20] Chen JS, Tsou HT. Information technology adoption for service innovation practices and competitive advantage: The case of financial firms. Information research: an international electronic journal. 2007;12(3):n3.

[21] Fountain JE. Better public services for growth and jobs [Internet]. Amherst: ScholarWorks@UMass Amherst; 2007. Available from: https://scholarworks.umass.edu/ncdg/31

[22] Zambrano R. E-governance and development: Service delivery to empower the poor. International Journal of Electronic Government Research (IJEGR). 2008;4(2):1-11.

[23] Pollack JM, Ho VT, O'Boyle EH, Kirkman BL. Passion at work: A meta□analysis of individual work outcomes. Journal of Organizational Behavior. 2020;41(4):311-331

[24] Bushiri CP. The impact of working environment on employees' performance, the case of Institute of Finance Management in Dar es Salaam. Doctoral dissertation, The Open University of Tanzania; 2014.

[25] Franco LM, Bennett S, Kanfer R, Stubblebine P. Health worker motivation in Jordan and Georgia: a synthesis of the results. Major Appl. Res., 2000;5(1):123–131.