SCHOOL-BASED MANAGEMENT COMMITTEE RESOURCE MOBILIZATION, AVAILABILITY AND UTILIZATION ON PUBLIC PRIMARY SCHOOL PERFORMANCE IN EKITI STATE NIGERIA: ARTIFICIAL INTELLIGENCE NEURAL NETWORK APPROACH

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Abstract
School performance involves with the efficiency and effectiveness in the service delivery that a school as an organisation rendered to her potential client satisfactorily. This is often created an issue concerned to the stakeholders such as government, parents and the employer of labour especially the public primary schools' performance. For school performance to be improved upon, relevant resources must be made available at the disposal of the school community that is the teachers and pupil's use. In the view of this, this study examined School-Based Management Committee resource mobilization, availability and utilization on public primary schools' performance in Ekiti State: Artificial Neural Network (ANN) approach. One research question was raised and two research instruments were designed to elicit relevant information from the study participants with the titled "Observation Checklist: Resource Mobilization, Availability and Utilization" with the reliability co-efficient of 0.86 Cronbach Alpha and "School Performance Questionnaire" (SPQ) with the reliability co-efficient of *0.89 Cronbach Alpha. The study adopted multi-stage sampling technique which embraces purposive sampling methods, simple random sampling methods and stratified sampling methods. Population sampled for the study include: 90 headteachers, 90 SBMC Chairmen and 1020 teachers in 12 Local Government Education Authorities (LGEAs) in Ekiti State Universal Basic Education Board.*

Data generated from the field for the study was analyzed using the Artificial Neural Network (ANN) which is a statistical package that is

more reliable and that work like human brain at 0.05 level of significance. The results findings indicated R^2 of 0.85; 0.68; 0.91; 0.84; 0.75; and 0.72 based on the key performance indicators to the study, and arising from the result findings, it is therefore recommended among others that: government at the various levels of governance should step up the awareness campaign of SBMC by sensitizing the citizenry on the significant of the organization in the school system. The SBMC members should be trained and re-trained from time to time on their responsibilities in the school administration in order to avert conflict of interest between them and the PTA executives operating in schools as partners in progress.

Keywords: School-Based Management Committee, resource mobilization, availability, utilization and school performance.

Introduction

Performance is attributed to ability to do an event within a specific period of time. To measure performance, it demands performance test as designed by the tester (teacher) and administered to the group of testees (pupils/students) in a particular subject area. Performance is a process of assessing progress in achieving the predetermined goals, including information on the efficiency by which resources are transformed into goods and services, the quality of those outputs, outcomes and the effectiveness of organizational operations in terms of their specific contributions to organizational objectives (Amaratunga and Baldry, 2002 in Nurul, Maimunah, Ibrahim and Masitah, 2017).

School performance is described as the level of effectiveness and efficiency traceable to a school in its service delivery to the clients. Agunloye (2011) says the concept of school performance is hinged on analysis of the result of one standardized test administered on a group of students at particular times. This is a one-dimensional approach to school performance without regard to school constituencies, the processes, and context. However, school performance is always an issue of concerned to stakeholders in education sector such as the government, parents, teachers, head of schools, employers of labour and the learners.

National Institute for Educational Planning and Administration and United Nations International Children Educational Fund (NIEPA-UNICEF, 2019) attribute key performance indicator as the quantitative and qualitative evidence of the measure of progress achieved and results accomplished. To this study school performance key indicator include: school structure and organization; school resources; school curriculum and assessment; school climate; school policies and practices; and pupils' academic achievements in the major school subjects: English Language; and Mathematics.

Primary school is one of the segments of Basic Education and it is the second stage of the basic education. It is designed for the children that fall within the official school age in Nigeria that is age six to eleven years. A child is expected to spend six consecutive academic sessions before transiting into the junior secondary school. Federal Republic of Nigeria (FRN, 2014) in the National Policy on Education (NPE) the 6th edition: Section 2; Sub-Section C describes primary education as the education given to children aged 6-12 years. Paragraph 19 of the Section states the objectives of primary education to include the following:

> *a).inculcate permanent literacy, numeracy and the ability to communicate effectively; b). lay a sound basis for scientific, critical and reflective thinking; c). promote patriotism, fairness, understanding and national unity; d). instill social, moral norms and values in the child; e). develop in the child the ability to adapt to the changing environment; and f). provide opportunities for the child to develop life manipulative skills that will enable the child function effectively in the society within the limits of the child's capacity. Pp. 9-10.*

To fulfil the primary school education objectives, the place of resource mobilization, availability and utilization cannot be overlooked and over-emphasized. The availability and utilization of resource mobilization enhance the attainment of any given organizational aims and objectives. Primary school education is no exception; otherwise it would be a mirage. Resources are the total input invested toward the achievement of educational goals, aims and objectives. Resources invested toward education includes: human; physical facilities; materials; and financial amongst others. Agabi (2014) in Ugochukwu

and Ibiene (2014), state that resources are the materials that can be applied to a work process to enhance productivity. A resource is an asset to its owner or possessor because it is useful and it can be used to create wealth when it is appropriately utilized.

Resource mobilization is about an organization getting the resources that are needed to be able to do the work it has planned. Resource mobilization is more than just fundraising - it is about getting a range of resources, from a wide range of resource providers (or donors), through a number of different mechanisms. Resource mobilization is also defined as a process that involves identifying the resources essential for the development, implementation and continuation of works for achieving the organization's mission. It means expansion of relations with the resource providers, the skills, knowledge and capacity for proper use of resources. It does not only mean about the use of money or other kind of resources but it extensiveness denotes the process that achieves the mission of the organization through the mobilization of knowledge in human, use of skills, equipment, services etc. It means seeking new resources or resource mobilization and right and maximum use of available resources (Training manual on resource mobilization and grant, 2015).

It is obvious that the Nigeria government alone cannot make provisions for all the basic required resources needed by the schools in the country especially at the public primary schools which is the focus of this study. Therefore, it calls for other stakeholders in education system of the country to come in aid of government in making available the resources required of the schools through the mobilization of the community members within their locality from time to time to assist the school in making available needed resources. School-Based Management system in schools especially at the basic education happened to be global in-thing, acceptable in solving educational problems in the area of resources provisions. The SBM policy system makes SBMC a statutory organization in the school system compared with the Parents-Teacher-Association (PTA) that is just an association in the school system.

The SBMC introduction in schools' system of administration came into limelight at the 52nd of National Council on Education (NCE) meeting which happens to be the highest decision-making body in Nigeria education system in 2005. At the NCE meeting, it was decided

that all the government owned schools at the basic and post basic education school headteachers and principals respectively should go and put in-place SBMC in their schools. This directive was implemented in the 2007, ever since SBMC became the decision-making body in the school administration in Nigeria basic and post-basic education system.

Federal Ministry of Education (FME, 2015) in the National School-Based Management System Policy, Section 4, and Sub-section 4.2 emphasizes that School-Based Management Committees have a strong role to play in resource mobilization for schools' improvement and that resource mobilization capacity will vary from community to community and communities are not expected to provide all necessary resources for a school. SBMC can render assistance in the area of mobilization of funds using a variety of strategies including but not limited to:

> *i. organizing fund-raising activities; (ii) launching appeals for funds; (iii) partnering with philanthropic/charitable organizations and religious bodies; (iv) engaging in advocacy visit etc Pp. 16.*

Section 2, Sub-Section 3.3 of National School-Based Management Policy (FME, 2015), emphasized the inclusion of SBMC in resource mobilization for schools' improvement; collaboration with local communities to provide safety for teachers, learners and schools' properties and also play an oversight functions on funds allocation and utilization for schools' improvement.

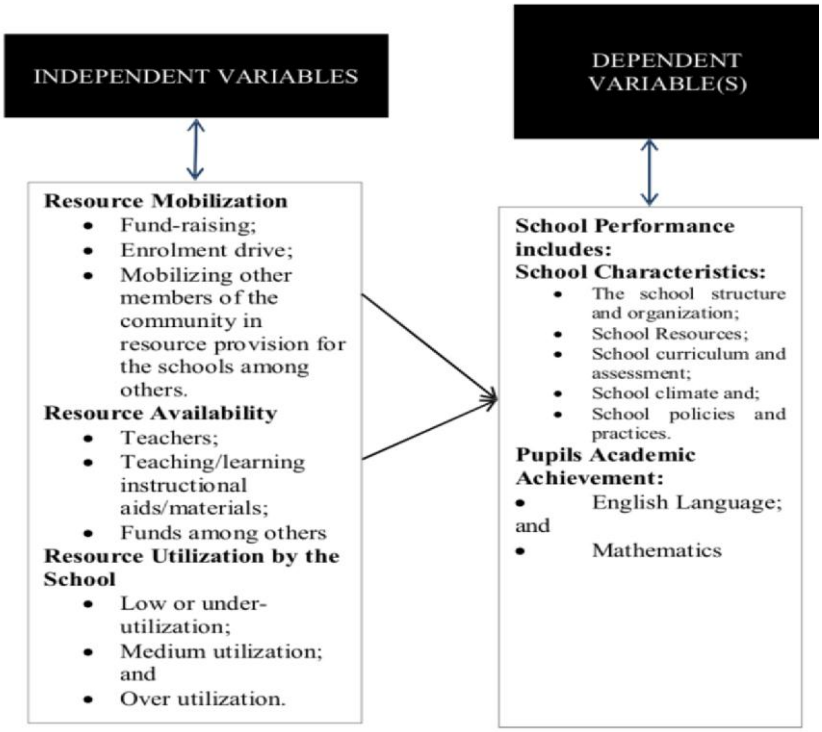
The theory in which this study hinged on was the contingent or situational theory as propounded by Fieldler (1967). The Fieldler, contingent or situational theory admonished that there are no leadership style fits in solving problem at hands but the situations on ground would determine which of the leadership style to apply. It is favourable to this study in the sense that education is dynamic not static and that SBMC is an embodiment of people assigned to join the school heads in the decision-making of the schools and to perform oversight function as stated in the policy of SBM system.

This study examined the School-Based Management Committee Resource Mobilization, Availability and Utilization on Public Primary School Performance Ekiti State Nigeria: Artificial Neural Network Approach. Ekiti State was one of the three States (Bauchi and

Enugu) that were pilot tested by the World Bank on State Education Programme Investment Project (SEPIP) and as a result the State has a viable SBMC at the Universal Basic Education and the State enjoyed the support of the World Bank. But then, the State public primary school performance still experience low performances. Therefore, this study determined to ascertain the level of SBMC resource mobilization, availability and utilization using ANN to measure their contribution on public primary school performance in Ekiti State.

Research Question

What are the contributions of SBMC resource mobilization, availability and utilization on public primary school performance in Ekiti State using Artificial Intelligent Neutral Network approach?



A Conceptual Model on SBMC Resource Mobilization, Availability, Utilization and School Performance

Source: Researcher (2020)

Methodology

The study adopted the descriptive survey research design. The study population comprised of all head teachers, teachers and SBMC Chairmen in all the primary schools in local governments in Ekiti State. The samples for the study comprised of ninety (90) head teachers representing 10% of their total population of 897; ninety (90) SBMC chairmen representing 10% of their total population of 879; and one thousand and twenty (1020) teachers representing 12% of their total population in the Ekiti State public primary schools across the sixteen (16) Local Government Education Authorities and the three (3) Senatorial Districts in the State. The respondents to the study were drawn from the Ekiti State Universal Basic Education Board. Thus, 12 Local Government Education Authorities were sampled from the 16 Local Government Education Authorities representing 88% of the total Local Government Education Authorities in the Ekiti State Nigeria. Observation checklist was designed by the researcher (2017) with the reliability co-efficient of 0.86 Cronbach Alpha and part of it was adapted from Annette (2016) with the reliability co-efficient of 0.89 Cronbach Alpha, and the school performance questionnaire was adapted from Ascertempletons (2008) with reliability co-efficient of 0.86 Cronbach Alpha. These were administered to the respondents across the sampled LGEAs in the three Senatorial Districts in Ekiti State in eliciting information from the respondents to the study.

Findings and Discussion

Research Question

What are the contributions of SBMC resource mobilization, availability and utilization to primary school performance in Ekiti State using Artificial Intelligent Neutral Network approach?

Table 1: Contributions of SBMC Resource Mobilization, Availability and Utilization on Primary School Performance in Ekiti State using ANN Approach

Dependent Variables	Architecture	Activation Function	Performance Measure	Artificial Neural Network Testing	Artificial Neural Network Training
School Structure and organization	3 - 9 – 1	Logistic	MSE	0.36	0.01
			R^2	0.71	0.85
School Resources	3 - 9 – 1	Logistic	MSE	0.49	0.1
			R^2	0.73	0.68
School Curriculum and Assessment	3 - 8 – 1	Logistic	MSE	0.65	0.04
			R^2	0.74	0.91
School Climate	3 - 8 – 1	Tangent hyperbolicus	MSE	0.09	0.02
			R^2	0.48	0.84
School Policies and practices	3 - 5 – 1	Logistic	MSE	0.29	0.02
			R^2	0.54	0.75
Pupils Academic Performance	3 - 5 – 1	Logistic	MSE	2.49	0.27
			R^2	0.14	0.72

Source: Field Work, 2020.

Table 1 showed the various models, in their performance measures and architecture for both the trained set and the test set. The preparation of Artificial Neural Networks (ANN) for data analysis consists of six

indices that constituted the school performance key indicators as the dependent variable to the study. It also showed the independent variables namely: SBMC resource mobilization; availability; and utilization. Data generated were divided into two namely: trained set; and test set. Training set was used to find out the contribution of independent variables to the dependent variable. Training set was used in fitting the artificial neural network while the test set assessed the performance of the model. 80% of the data was used as the training set and 20% as test set. Data to training set and test set were done using random sampling. Training sets are mainly used for learning what is suitable in terms of the significance of the data. Test sets are used entirely for evaluating the performance of a specific classifier technique. This corroborated the assertion of Elif (2015) saying that the training set was used to train the neural network, and the test set was used for assessing the performance of training in the implementation.

In fitting artificial neural networks, some preparations were done. First step, was addressing the data processing. This is extremely important in normalizing the data before training artificial neural networks. The study adopted the minium-maxium method and then scales the data in the interval [0, 1] because scaling in the intervals [0, 1] tends to give better results. This also corresponded with the view of Elif (2015) that training set classification table was created for implementing what would be predicted, and the percentage of classification accuracy was found for the test set. The mean absolute error and mean squared error were found. In order to obtain the classification table in accordance with ANN implementation, the training, validity, and test sets were combined. The assigned values (for inhibition maximum as -1.0 and excitation maximum as +1.0) were added.

As for the architecture model, one hidden layer was used for all the neural networks. As far as the number of neurons in the hidden layer was concerned, there was no general rule for knowing the exact number of neurons needed. The trial and error method and choosing the networks on the basis of mean square error and coefficient of determination (R^2). The architecture model constituted the number of input that is the independent variables, the hidden neural and the output layers constituting the key performance indicators that made up the study dependent variable that is the school performance. To evaluate performance of the neural network on the given data set, there was need to measure how well its contributions actually match

the observed data. This was done using two measures namely: Mean Square Error (MSE); and Coefficient of Determination (R^2).

Mean Square Error (MSE): this measured the differences between the observed and the contributed value known as error. One of the ways of accessing a model's adequacy is to take the mean of the squared error. The MSE will be small if the contributed responses are very close to the true responses, and will be large if for some of the observations, contributed and true responses differ substantially, hence, the smaller the MES, the better it is.

Coefficient of Determination (R^2): this was the square of the correlation between the observed values of the independent variables and the values of dependent variable as contributed by the neural network. Therefore, large values of R^2 represent a large correlation between the contributed and observed values of the outcome. As such, R^2 was a gauge of how well the model contributed to the observed data. Unlike the mean square error, the larger the value of R^2 the better the model becomes. R^2 is the variation in the dependent variable as explained by the independent variables.

ANN was used in this study to ascertain the contributions of SBMC resource mobilization, availability and utilization on school performance in Ekiti State public primary schools. Adewale, Bamidele and Lateef (2018) used ANN in a study titled predictive modeling and analysis of academic performance of secondary school students and the findings of the study indicated that artificial neural network (ANN) is efficient at clustering students into different categories according to their predicted level of performance. ANN is applicable in the contribution of SBMC resource mobilization, availability and utilization on the public primary schools' performance in Ekiti State. The results analysis was represented in graphics, showing the relative contributions of the independent variables on the dependent variables.

School Performance: School Structure and Organization

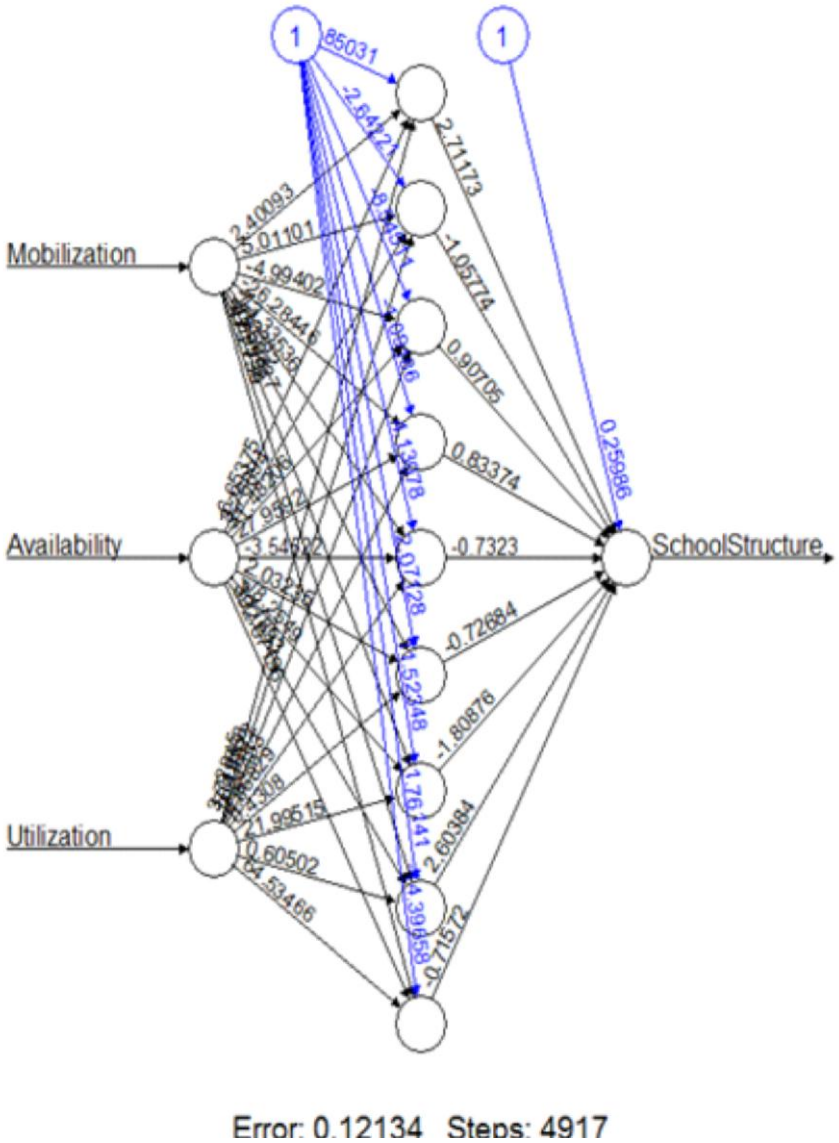


Figure 1: Relative contribution of SBMC Resource Mobilization, Availability and Utilization to school performance (school structure and organization)

Figure 1 showed the input of independent variables toward the dependent variable: School structure and organizations. Figure 1 also showed the Error and steps which were 0.12134 and 4917 respectively. Figure 1 was presented further in figure 1a with graphic representation showing the bar chart of the important statistics of relative contributions of the SBMC resource mobilization, availability and utilization to school performance: school structure and organization.

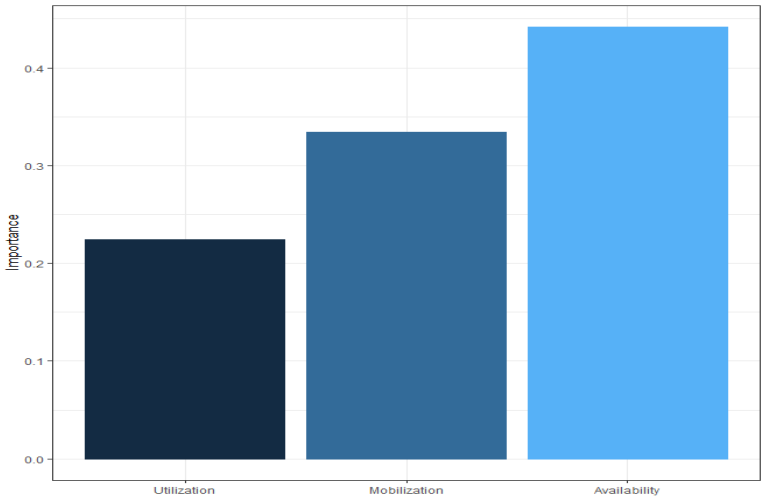


Figure 1a: Indicated the statistics of importance of each SBMC Resource Mobilization, Availability and Utilization to the School Performance (School Structure and Organization)

Figure 1a indicated that resource availability contributed more, follow by mobilization and the least was the utilization to school performance (school structure and organization) in Ekiti State public primary schools. It means that SMBC in the state need to intensify efforts in ensuring that the resources available to the schools through mobilization are used judiciously.

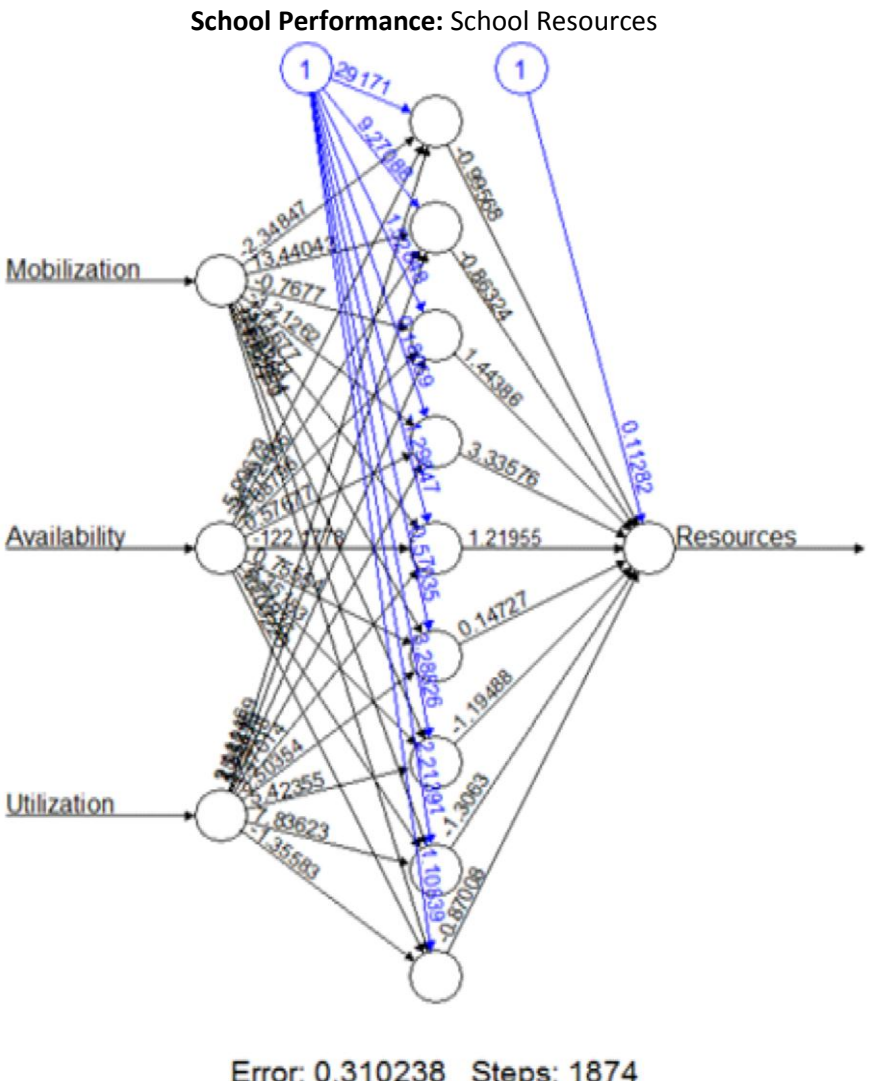


Figure 2: Relative Contribution of SBMC Resource Mobilization, Availability and Utilization to School Performance (School Resources)

Figure 2 showed input of the independent variables toward the dependent variable. Figure 2 also showed the Error and steps which were 0.310238 and 1874 respectively. Figure 2 was presented in Figure

2a with a graphical representation showing the bar chart of the important statistics of relative contributions of the SBMC resource mobilization, availability and utilization to school performance.

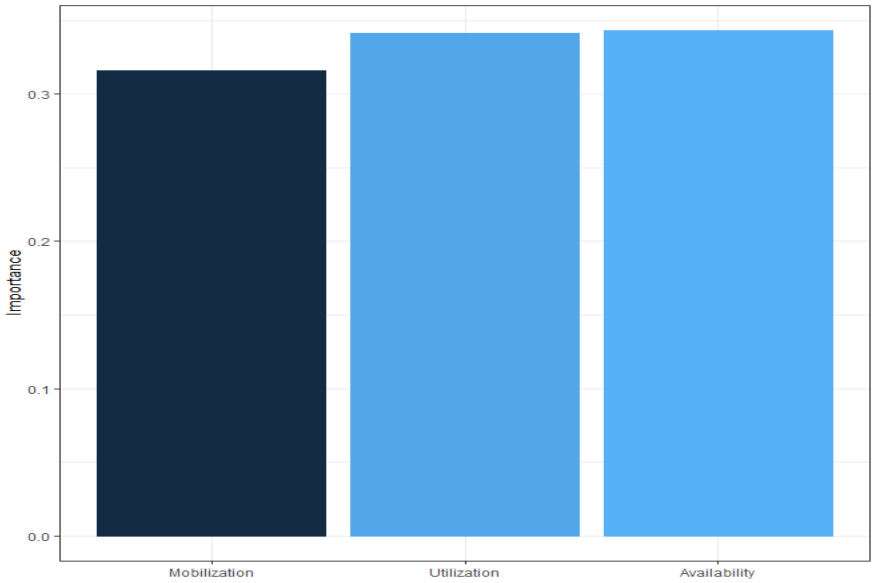


Figure 2a: Indicated the statistics of importance of the SBMC Resource Mobilization, Availability and Utilization to the School Performance (School Resources)

Figure 2a showed that the resource utilization and availability were of equal whereas mobilization was a little bit low compared with the other variables. It shows that resource availability and utilization contributed relatively to school performance than the resource mobilization, but basically the three variables contributed relatively to the school performance (school resources) in Ekiti State public primary schools.

School Performance: School Curriculum and Assessment

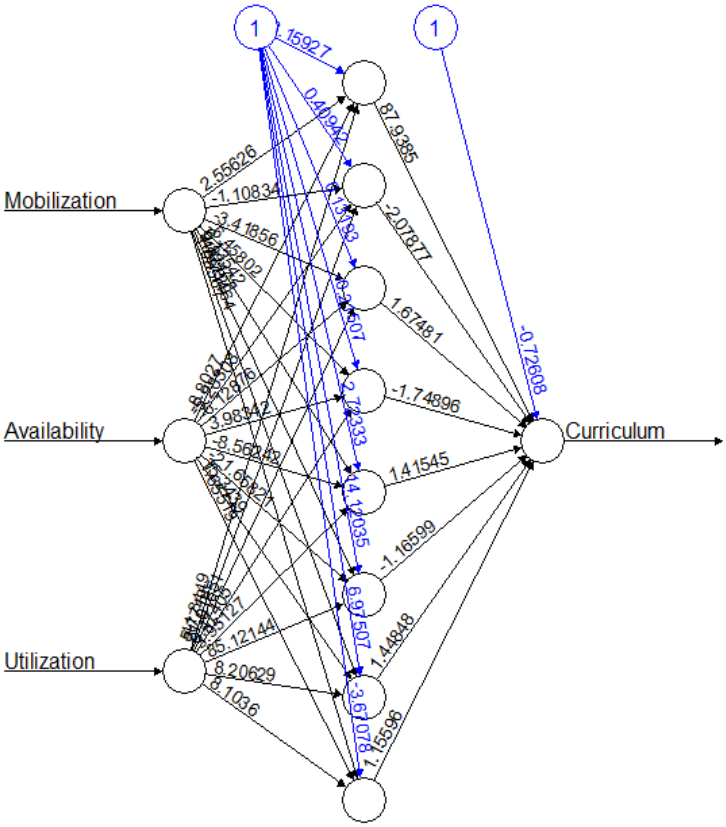


Figure 3: Indicated the Relative Contributions of each SBMC Resource Mobilization, Availability and Utilization to the School Performance (School Curriculum and Assessment).

Figure 3 showed input of the independent variables toward the dependent variable. Figure 3 also showed the Error and steps which were 0.084434 and 5656 respectively. Figure 3 was presented further in Figure 3a with the graphic representation showing the bar chart of the important statistics of relative contributions of the SBMC resource mobilization, availability and utilization to school performance.

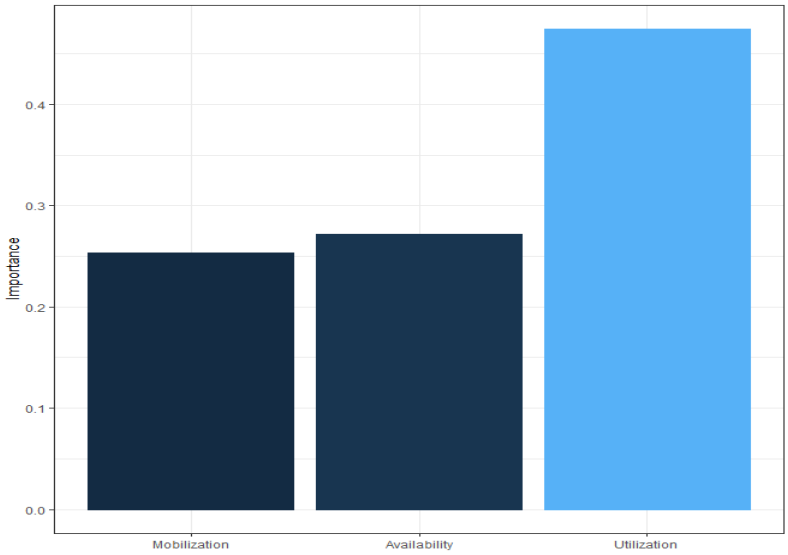
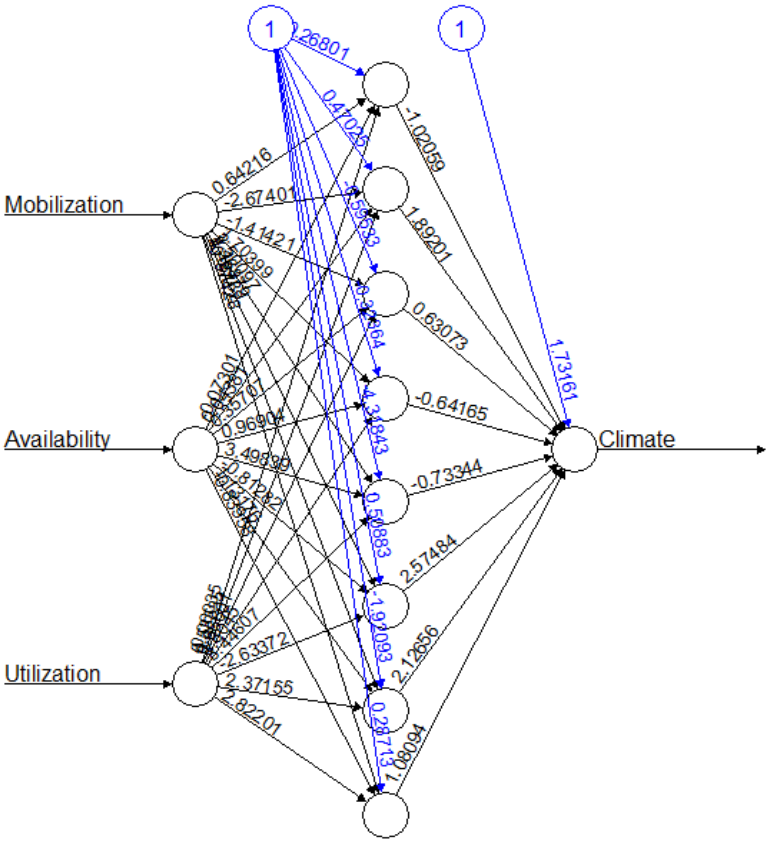


Figure 3a: indicated the statistics of importance of each SBMC Resource Mobilization, Availability and Utilization to the School Performance (School Curriculum and Assessment)

Figure 3a indicated the relative contributions of SBMC resource mobilization, availability and utilization to school performance. It could be observed that much contribution was indicated in the aspect of utilization while availability and mobilization were lower than the utilization respectively. This showed that the SBMCs in Ekiti State public primary schools were not having much control over the school's curriculum and assessment.

School Performance: School Climate



Error: 0.137972 Steps: 2670

Figure 4: Indicated the Relative Contributions of each Independent Variable to the School Performance (School Climate).

Figure 4 showed input of the independent variables toward the dependent variable. Figure 4 also showed the Error and steps which were 0.137972 and 2670 respectively. Figure 4 was presented further in Figure 4a with the graphical representation showing the bar chart of the important statistics of relative contributions of the SBMC resource mobilization, availability and utilization to school performance (school climate).

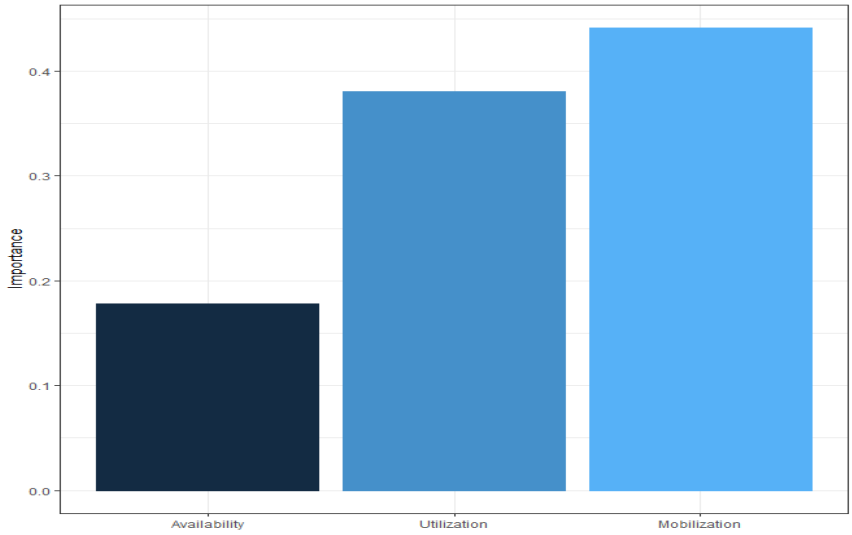


Figure 4a: Indicated the statistics of importance of each variable to the school performance (school climate)

Figure 4a indicated the relative contributions of SBMC resource mobilization, availability and utilization to school performance (school climate). It was observed that the resource mobilization was the highest, follow by utilization and the least was availability. It is very possible to have high mobilization than the other variables in the sense that it involves a process of canvasing for support of the other stakeholders to come to the aid of the school. School climate emphasizes the psycho-social relationship that is in terms of interpersonal relationship that exists between school community members and the immediate community where the school is being situated, between teachers to teachers, the school head and the teachers, teachers and the pupils etc.

School Performance: School Policies and Practices

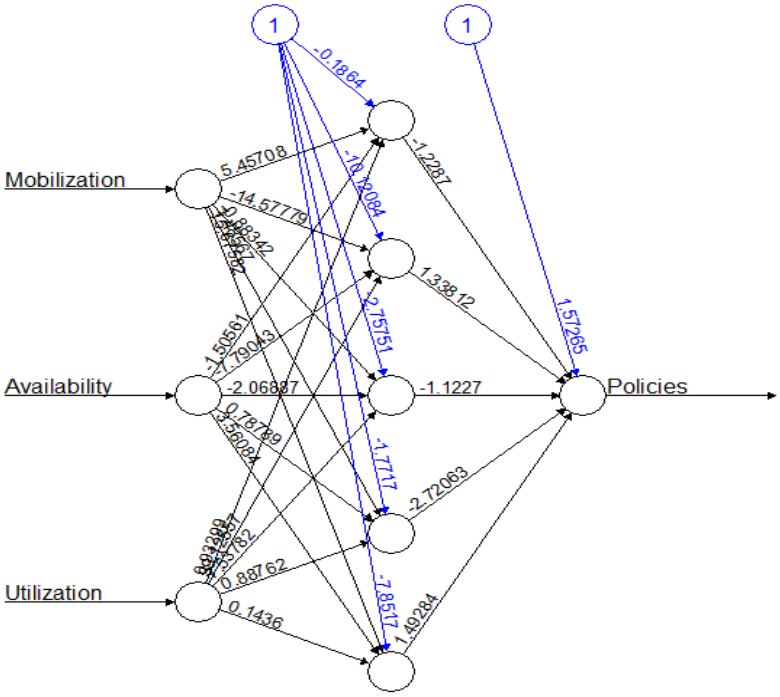


Figure 5: Indicated the Relative Contributions of the SBMC Resource Mobilization, Availability and Utilization to the School Performance (School Policies and Practices).

Figure 5 showed the input of the independent variables toward the dependent variable (School performance: School policies and practices). Figure 5 also showed the Error and steps which were 0.196468 and 2621 respectively. Figure 5 was presented further in Figure 5a with the graphical representation showing the bar chart of the important statistics of relative contributions of the SBMC resource mobilization, availability and utilization to school performance (school policies and practices).

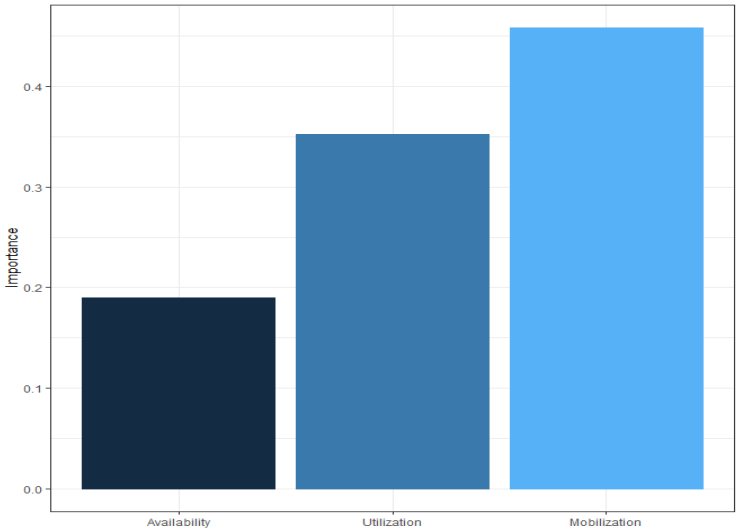


Figure 5a: Indicated the statistics of importance of the SBMC Resource Mobilization, Availability and Utilization to the school performance (school policies and practices).

Figure 5a indicated the relative contributions of SBMC resource mobilization, availability and utilization to school performance (school policies and practices). It was observed that mobilization take the highest followed by utilization and availability take the least. This shows that SBMC relative contributions were mostly felt in mobilization and utilization but in the availability relative contribution was not much. The involvement of SBMC in the school policies and practices can be attributed to ensuring the implementation of the policies in order to maintain peaceful co-existence in the school premises.

School Performance: Pupil Academic Performance in English and Mathematics

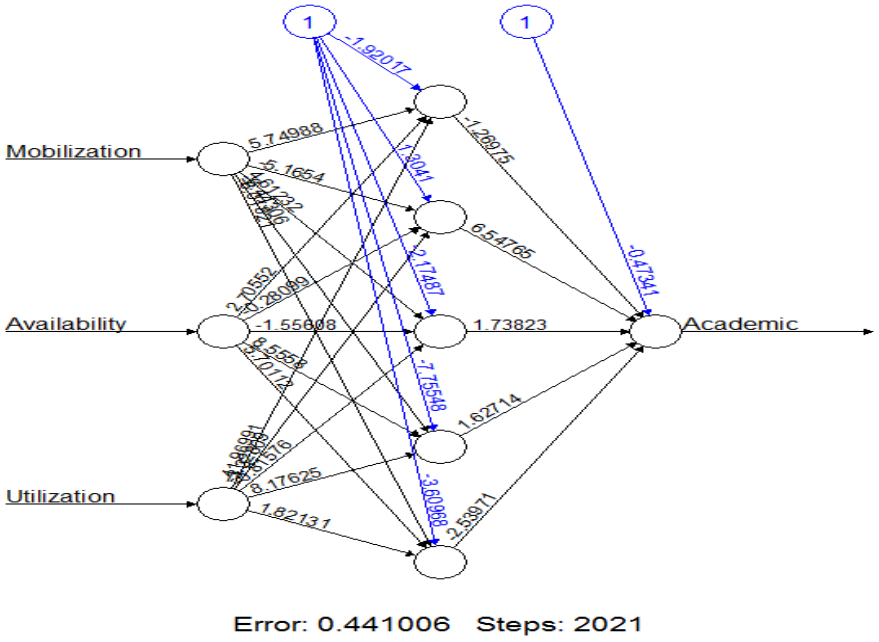


Figure 6: Indicated the Relative Contributions of the SBMC Resource Mobilization, Availability and Utilization to the School Performance (Pupil Academic Achievement in English and Mathematics).

Figure 6 showed the input of the independent variables (SMBC resource mobilization, availability and utilization) toward the dependent variable (School performance: School policies and practices). Figure 6 also showed the Error and steps which were 0.441006 and 2021 respectively. Figure 6 was presented further in figure 6a with the graphical representation showing the bar chart of the important statistics of relative contributions of the SBMC resource mobilization, availability and utilization to school performance (pupils' academic performance in English and Mathematics).

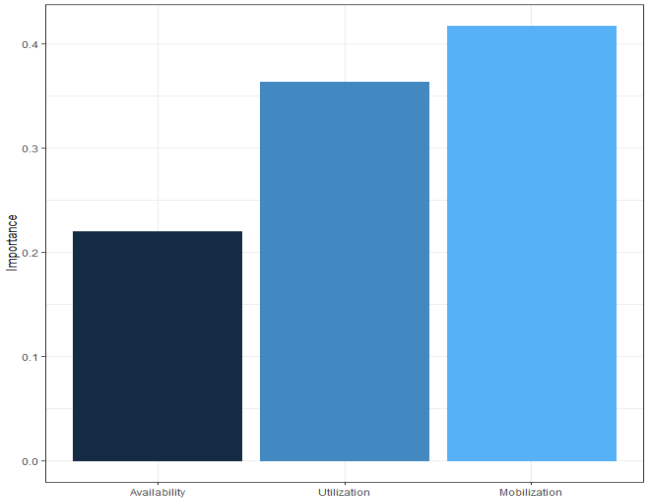


Figure 6a: Indicated the statistics of importance of each variable to the school performance (pupils' academic achievement in English and Mathematics).

Figure 6a displayed graphical representation of relative contributions of SBMC resource mobilization, availability and utilization to school performance (pupils' academic achievement). It was observed that the contribution of SBMC in resource mobilization was much higher, utilization followed whereas the resource availability took the least. Several previous studies using ANN have addressed the classification of outcomes into different levels of performance, for different academic purposes: a) diagnostic purposes in order to identify those students most in need of support at the beginning of their primary school, regarding their readiness for learning to read and b) identifying students with low expected writing performance at the vocational secondary school level in order to provide support prior to their first year, and thus avoiding possible failure (Boekaerts and Cascallar, 2011; Musso and Cascallar, 2009a in Mariel, Eva, Eduardo & Filip, 2013). Mariel, Eva, Eduardo and Filip (2013) asserted that a better understanding of the interrelationships between the variables leading to different levels of performance, would allow the fine-tuning of instructional approaches to the individual school and/or group needs using the information provided by an ANN approach.

Conclusion

The study revealed that SBMC in school administration is a policy related issue, since government at the various levels of governance cannot make provisions for all the needed resources of the schools. It demands other stakeholders' involvement in resource mobilization, availability and utilization in schools, and thus, SBM/SBMC in school system is a globally accepted statutory organization.

Recommendations

The following are recommended in order to strengthen SBMCs in performing their duties and responsibilities of resource mobilisation, availability and utilisation in Ekiti State public primary schools and Nigeria as a whole.

Government at the various levels of governance should increase the awareness campaign of SBMC by sensitizing the citizenry on the significance of the organization in the school system.

The SBMC members should be trained and re-trained from time to time on their responsibilities in the school administration in order to avert conflict of interest between them and the PTA executives in schools as partners in progress.

Government should motivate and encourage the SBMC members in the schools in one way or the other at the government's disposal that would prompt them to be proactive in discharging their duties and responsibilities whole-heartedly to the schools.

Politicking should be prevented from the appointments of the SBMC members either on the government side or the headteachers side, but the appointment should be on a merit basis.

The SBMC members to the schools should see their responsibilities as the service to humanity and call to service to their immediate communities as well.

Government should engage in serious monitoring and evaluation of every role play by the SBMC in the schools especially at the primary school level. This would assist in ensuring that SBMC members work in accordance with the policy document on SBM system and also be in line with the global practices.

Ekiti State government through Ekiti State Universal Education Board (EKSUBEB) should endeavour to re-build the capacity of SBMC members by organizing training and re-training workshop for them

from time to time especially on resource mobilization, availability and utilization. Doing this will enhance the capacity of the SBMC members and the end result is a better quality service delivery that will bring about desirable better school performance in return.

The Ekiti State government through SUBEB should design a quality tracking device that will monitor the activities of the SBMC members in the schools especially in the area of resource mobilization, availability and utilization. Doing this will be of great assistance in justifying the financial commitment of the World Bank under the SEPIP into the schools in the State.

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