

Original Article

An Investigation on the Usage and Adaptation of Education Policy Strategic Simulation Model (EPSSim) by Education Planners in Nigeria

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ABSTRACT

This paper examines the usage and Adaptation of EPSSim by States Educational Planners in Nigeria. Currently with UNICEF support, the National Institute for Educational Planning and Administration, (NIEPA), Nigeria has been providing Technical support to states in the development of their States Education Sector Strategic and operational Plan in which Education Policy Strategic Simulation Model (EPSSim) was used to test the viability of all the states' education policy and strategy so as to propose alternatives to ensure the plan cope with dynamics and changing environment. Thirty (30) States Directors planning, Research and Statistics were sampled. Findings revealed low level capacity of these officials in respect of EPSSim usage and adaptation. This call for more capacity building of these officers by NIEPA, UNICEF, and UNESCO in order to fully empowered these planners on the usage of this model to inform credible planning as well as to ensure sustainability.

Key Words: Education; Strategic Plan; EPSSim; Model; Planners

INTRODUCTION

Nigeria, like all other countries globally has strong desire for educational development and the only way of achieving this is by thinking and planning strategically for effective transformation of the education sector. It is obvious that we need to identify what our challenges are as well as our key priorities for the sector and then map out strategies and actions for proper implementation. The development of credible strategic plan will go a long way in revamping the education sector. Since we have all mapped out where we are going; it behoves on us therefore, to put in position all necessary machinery to take us there (Obayan, 2011). He stressed further the need to put round peg in round hole in deploying personnel to all our planning departments at federal, state and local level.

According to Akinsolu & Ojedele (2008) an education strategic plan is the formalized roadmap that describes how the education sector executes their identified Priorities as well as chosen strategy. A plan spells out where an organization is going over the next year or more and how it's going to get there. Typically, the plan is organization-wide or focused on a major function such as a division or a department hence the strategic plan becomes a management tool that serves the purpose of helping an organization do a better job, because a plan focuses the energy, resources, and time of everyone in the organization in the same direction (Akinsolu & Fadipe, 2004).

With the benefits of having Strategic Education Plan in place, NIEPA as a planning Institute in collaboration with UNICEF see it deem fit to provide technical support to states in the development of a Sector Wide Plan (SWP) steaming from pre- primary level up till tertiary level and likewise make use of EPSSim to project the actual needed resources for a realistic and well costed credible plan.

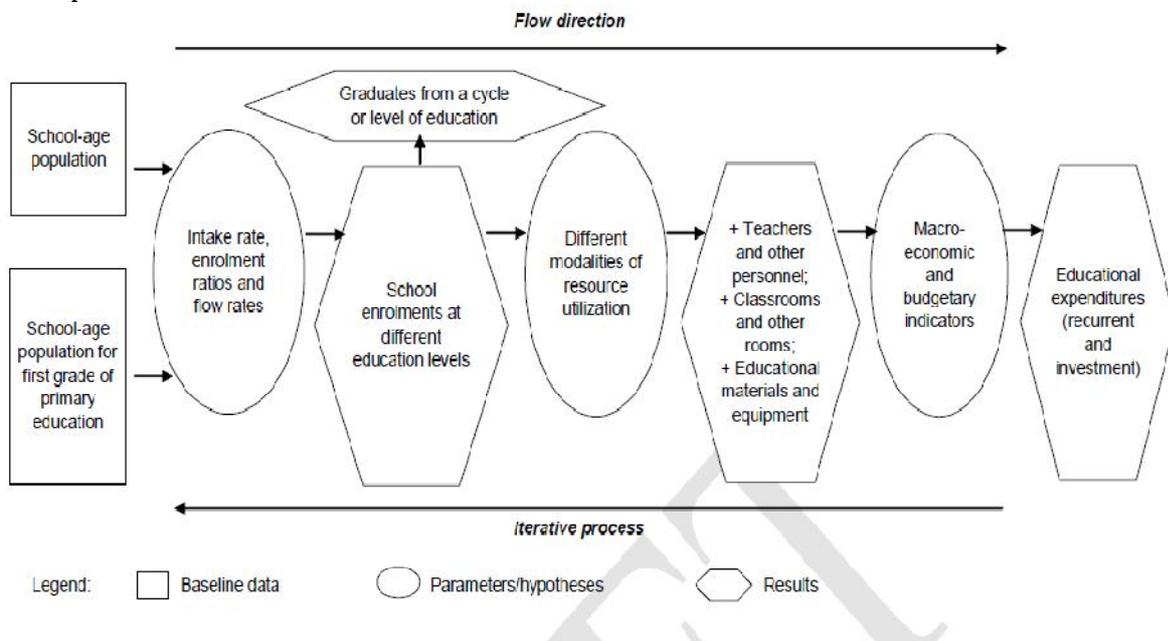
Education Policy and Strategy Simulation (EPSSim) as a Demographic Computer Simulation Model is a technical tool for strategic education development planning and resource projections. UNESCO Headquarters developed a "generic" simulation model in 2001, to support national education planning, which contains a built-in training module for carrying out the kind of exercise on simulation modelling and scenario development. UNESCO conceived this policy simulation tool with a view to providing technical and methodological support to national administrations and specialists

in education ministries in their efforts for the formulation of credible education development plans and programs, in particular in the context of the Education for All (EFA) movement. Before the use of computer simulation, it was difficult to test a sufficient number of simulation operations so as to measure the impact of numerous decisions on the development of an education system, and in particular their financial consequences. Computer simulation has contributed a great deal to the preparation of coherent national educational policies and strategies and to the technical quality of education development plans (UNESCO, 2009).

The EPSSim simulation is therefore, used to explore the following:

- Possible options for correcting past shortcomings by monitoring evaluating
- educational system – an aspect of Accountability;
- Policy implications of any planning decision in education –establishing a Coherence;
- Negotiation with stakeholders on policy and resources – engagement in policy dialogue to trade off some policy options;
- Credible, sector-wide, costing plans and consensus building among stakeholders – ensuring Transparency (Ji Eun Chung, 2010).

Fig.1 Simplified chart of simulation flow of EPSSim



Source: UNESCO, Draft User’s Guide.

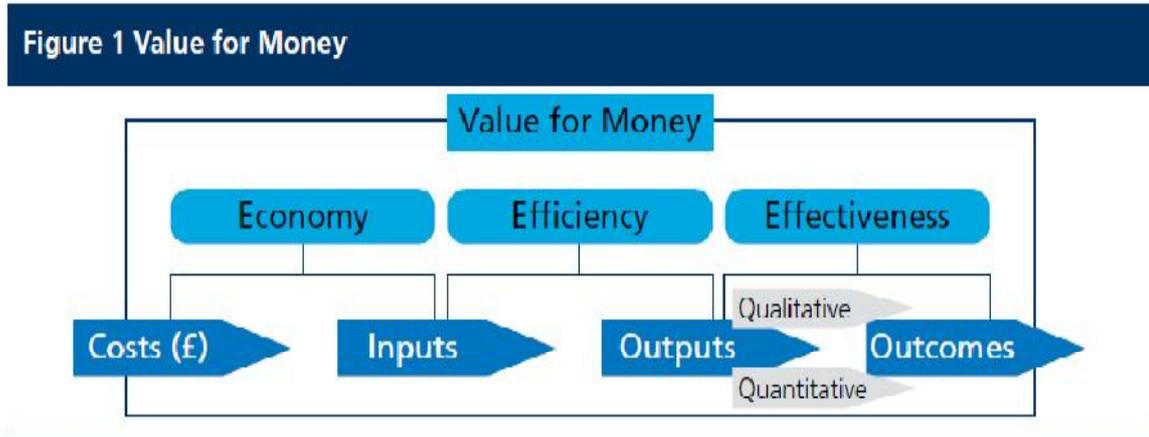
As shown in Figure 1, EPSSim proceeds with computing the projected intake, enrolment and flow rates on the basis of the population data and policy objectives. The number of enrolments by level and type of education, combined with the current and future modalities of resource utilization (teaching staff, equipment, infrastructure, etc.), enable the generation of the estimates of future requirements of teachers, non-teaching staff, instructional materials, educational facilities, etc. These projected requirements, together with cost related data and hypothesis provide information on financial requirements and the possible financing gaps for achieving education policy goals.

NIEPA through the technical support of UNICEF trained all the participating states DPRS on the usage and application of EPSSim in the process of developing their states strategic plan, this thus serve as a springboard for this study to investigate the disposition of all Directors of Planning, Research and Statistics in State Ministries of Education (SMoE) and State Universal Basic Education (SUBEB) in using EPSSim as a model to simulate all their packaged education sector strategic intents and policy options.

Theoretical Framework for the Study - Value for Money

The theoretical framework of this study hinge on value for money. Money is a vital input that goes into educational processes and it becomes expedient for any strategic manger to ascertain the extent of the allotted funds for transformation processes in the sector. This comprehensive assessment is to

determine efficiency, effectiveness and relevance so as to guide in optimal decision-making in future. Figure 1 gives an illustration of this. Inputs here are goods and services, such as textbooks and training for teachers. Outputs are concrete deliverables, such as schools with adequate staff and teaching materials. And outcomes are the difference that all this makes to people’s lives, such as effective/committed teachers and better educated children. In a nutshell what matters is the desirable result produced from funding input.



Source: DFID Multilateral Aid Review, 2010

From the above analysis, this study tries to draw on the best available evidence based result of States, NIEPA and UNICEF investment in respect of all devoted resources in building the capacity of all the sixty two (62) Directors Planning Research and Statistics (DPRS) on EPSSim usage and adaptation - an output level result through evidenced based appraisal to inform some policy decisions.

Review of Related Literatures

A considerable body of research findings is available to support the contention of the usage of simulation model in planning. According to Sokolowski, J.A., Banks, C.M. (2009) Simulation is the imitation of some real thing available, state of affairs, or process. The act of simulating something generally entails representing certain key characteristics or behaviours of a selected physical or abstract system. They stressed further that the interpretation skills is very crucial in conveying the simulation results/effects to other stakeholders.

Sherman, W.R. & Craig, A.B. (2003) opined that Simulation can be used in many contexts, such as simulation of technology for performance optimization, safety engineering, testing, training, education, and video games. They stressed further that initial learning reinforce simulation because the model might requires its application. No doubt they reported that, it can be used for scientific modelling of natural systems or human systems in order to gain insight into their functioning as well as to show the eventual real effects of alternative conditions and courses of action.

Simulation can contribute significantly to identifying needed educational resources. The projected needs for educational resources are estimated on the basis of context-specific quantitative and qualitative objectives. The simulation exercise provides indicative information on school enrolments as well as the necessary human, physical and financial means to mobilize, in order to identify, design and carry out defensible development actions (UNESCO, 2009). Below are some categories of inputs in the educational system;

Personnel: EPS simulation model makes it possible to estimate the number of required teaching and non-teaching personnel (managerial and supervisory staff, administrative and service personnel, technical and maintenance workers) and to foresee recruitment needs (per year, per region, and by education level) while taking into account staff attrition. It also enables the evaluation of the training needs of these personnel, both at pre-service and in-service training level. The new requirements for teachers will indicate to the educational authorities what measures need to be taken in advance.

Instructional materials and equipment: EPSSim estimates future needs for instructional materials and equipment and indicate the requirements for the production and the distribution of these materials (i.e. textbooks and teaching guidelines). It can also aid in foreseeing necessary actions to acquire and/or renew those materials, so as to meet curricular reform goals and to evaluate resulting recurrent costs.

Educational facilities: On the basis of the number of students and the parameters of pedagogical management, the simulation has the potential to evaluate the number of buildings and rooms to build on a given time-horizon. It also indicates the expenditures necessary for the purchase of required equipment and maintenance expenses. The required number of classrooms and other spaces, as well as the needs for new buildings, is provided by the model per year.

A Generic model and country-specific model, EPSSim is generic as well as country – specific in formats, which are sometimes called “ready-to-use” models. The so-called generic approach is used in designing a simulation model which contains most components that are common to a majority of education systems. It does not correspond to any specific system or country but represents a virtual education system. Once the baseline data and policy options are entered, this model makes it possible to approximately indicate the pedagogical, physical, and financial consequences of main policy orientations. It can be useful at the stage of pre-designing an education policy in exploring possible policy options and in facilitating consensus building on the main educational development goals. However, with some necessary adaptations, it can constitute a powerful operational tool for designing an elaborated education development plan.

Table 1 Parallelism of strategic planning and policy simulation

Stage	Strategic planning	Policy simulation
1	Sector analysis (Diagnosis)	Data (Baseline)
2	Policy formulation (Policies)	Hypotheses (Policy assumptions)
3	Action planning (Plan of actions)	Results (Projections)

Source: UNESCO, EPSSim User’s guide

In developing a simulation model, the three stages of the above table can be conveniently presented on a worksheet of the spreadsheet application (e.g. MS Excel) in order to enter data and policy assumptions (stages 1 and 2) and to consult the subsequent results (stage 3) through scenario development. This facilitates the verification and the monitoring of related data and information at each stage of the simulation. In other words, the education system will be displayed as it functions on a spreadsheet application.

Planners can generate several scenarios through EPSSim as planning model. In the process of constructing a development scenario, the simulation model is first used as a tool of projection in the literal sense of the word, and then as a tool of exploration, and finally as a tool of forecasting.

The following three principal stages are vital in Scenarios development namely:

Establishment of a status quo scenario (projection): The first scenario, also called a “baseline” scenario, consists of a pure and simple projection based on past trends. It is about determining the consequences of the current education policy if this will remain unchanged during the planned period.

Establishment of alternative scenarios (exploration): This stage entails the development of two or three alternative scenarios based on the objectives and parameters resulting from the application of new policies in relation to past trends.

These scenarios allow policy-makers and specialists to weigh the consequences of adopting the new options for education sector development.

The reference scenario (forecasting): The third phase is the adoption of one of the previously considered scenarios, or even a scenario resulting from the combination of several objectives and

parameters. Once verified on the policy and technical level, this scenario is refined with the degree of information which is required in the programming of actions. It becomes the reference scenario for the future education plan, making it possible to foresee development actions and the financial resources required

Computer self efficacy no doubt will contribute immensely to effective understanding and application of EPSSim by all. No wonder Collis (1981), Kirschner & Davis, (2003) opined that all education practitioners need to become proficient in basic computer operations, basic applications of software like word processing, database, Spreadsheet, graphic software and so forth. Likewise Torkzadeh & Konflews, (1994) emphasises the importance of computer versatility to national development, its applications into almost every facet of life such as media establishment, medicine, Banking, agriculture, Law including education thus makes ICT a necessary tool for global development.

Significance of the study

It is customary to analyze Educational Planners capabilities and capacity in terms of usage and application of EPSSim based on the training received from NIEPA. This will further enhance the degree of sustainability of the development of credible Education sector plan in Nigeria as well as reference point for necessary adjustment in conducting future training by the Institute for other states' planners.

METHODOLOGY

Design

The design adapted for this study is a descriptive-survey research. It was primarily concerned with collection of data for purposes of describing and interpreting existing conditions of the population under study in respect of usage and adapting the EPSSim generic model for education planning purposes.

Instrumentation

The instrument for this study was a researcher designed questionnaire tagged: "Opinion survey on usage and adaptation of Education Policy Strategic Simulation Model (EPSSim) by Education Planners in Nigeria". This questionnaire was divided into three sections. The first section centre mainly on the bio-data of the DPRS, the second section covered items on Key areas of the dispositions of State Ministry of Education Planners towards the usage of EPSSim while the third section covered items the dispositions of State Ministry of Education Planners towards adapting EPSSim to suit State peculiarities.

Validity and Reliability of the Instrument

The validity of the instrument was done in terms of contents and face validity. Expert in test construction and two of the UNESCO experts on EPPSim assisted in validating the instrument. For the reliability, test- retest method was used on some group of teachers in five ministries of education that were not part of the sampled State Ministries of Education- Non participative states within an interval of one month. The reliability coefficient obtained was 0.71. This was found highly reliable.

Population, Sample and Sampling technique

All the 36 State Ministries of Education including the Federal Capital Territory Directors, Planning, Research and Statistics (PRS) served as the study population. All Directors Planning, Research and Statistics of all the participated 30 States Ministry of Education and State Universal Basic Education Board were purposively sampled for this study based on their participation in the development of their state education strategic plan and operational plan with NIEPA under the technical support of UNICEF. This gives a sample percentage of 81%.

Research Questions

The following research questions were generated to guide this study:

- ❖ What are the dispositions of State Ministry of Education Planners towards the usage of EPSSim?
- ❖ What are the dispositions of State Ministry of Education Planners towards adapting EPSSim to suit State peculiarities?

Research Hypothesis

There will be no significant difference between male and female planners of on EPSSim as a Planning Simulation model.

FINDINGS AND DISCUSSION

Data collected were analyzed using both descriptive and inferential statistics such as frequency, percentages, and T- test to find out whether or not there was a significant difference between male and female planners in respect of their disposition to EPSSim model.

Research Question 1

- ❖ What are the dispositions of State Ministry of Education Planners towards the usage of EPSSim model?

Table 2: Analysis of key areas of State Ministry of Education Planners towards the usage of EPSSim Model

	Items	Agree		Disagree	
		Frequency	%	Frequency	%
1	All commands of excel applications as demands in the operation of EPSSim as a simulation model is very explicit.	16	33	52	84
2	The Generic structure of EPSSim structure and functionalities can easily be understood based on Computer fluency level.	50	81	12	19
3	Knowledge of educational indicators paves way for effective usage of EPSSim as a simulation model.	48	77	14	23
4	Data entry in EPSSim worksheet requires systematic process	53	85	9	15
5	I can easily analyse and Interpret educational projection results and simulations for policy dialogue.	7	11	55	89

Table 2 shows the disposition of State Ministries of Education Directors of Planning, Research and Statistics (DPRS) towards the usage of EPSSim model in the course of developing their state’s education sector strategic Plan. From the table, responses to the first question shows that 52 or 84 % of the respondents sampled disagree that all commands of excel applications as demands in the operation of EPSSim as a simulation model is very explicit. Their response to item 2 from the table shows that 81% of them agreed that EPSSim structure and functionalities can easily be understood. In addition on the statement on Knowledge of educational indicators paves way for effective usage of EPSSim as a simulation model, 77% of the respondents sampled agreed with this statement while 85% of them likewise agreed that data entry in the model worksheet requires systematic procedures. On item 5, 89% of these planners disagreed with the statement that they can interpret educational projection results and simulations for policy dialogue as demanded by EPSSim. Finding on item 1, 2 and 4 support Kirschner & Davis, (2003) on the need for all education practitioners to become proficient in basic computer operations, basic applications of software like word processing, database, Spreadsheet, graphic software etc. Other findings corroborates with Sokolowski, J.A., Banks, C.M. (2009), and Sherman, W.R. & Craig, A.B. (2003) that interpretation skills is very crucial in conveying the simulation results/effects to other stakeholders while initial learning reinforcing effective simulation processes.

Research Question 2

- ❖ What are the dispositions of State Ministry of Education Planners towards adapting EPSSim to suit State peculiarities?

Table 3: Analysis of key areas of State Ministry of Education Planners towards adapting EPSSim to suit State peculiarities?

	Items	Agree		Disagree	
		frequency	%	Frequency	%
1	I can remove or add major components within all the worksheets	48	77	14	23
2	The Generic structure of EPSSim can easily be adaptable to suit my state peculiarities	55	89	7	11

3	I was able to handle/trace all errors encountered in the worksheet during the process of adaptation	10	16	52	84
4	I can control linkages in respect of all the worksheets within the model including cost, view screen, Snaps, Recap etc.	6	13	58	94
5	I still need more support in resolving some adaptation issues	59	95	3	5

Table 3 reveals analysis of State Ministries of Education Directors of Planning, Research and Statistics (DPRS) towards the adaptation of EPSSim model in developing their state’s education sector strategic Plan. From the table, responses to the first question shows that 48 or 77 % of the respondents sampled agreed that they can remove or add major components within all the worksheets in the model. On item 2, which states that the Generic structure of EPSSim can easily be adaptable to suit state peculiarities, 89% of them agreed with the item while 84% disagreed that they can easily handle/trace all errors encountered in the worksheet during the process of adaptation. On item 4, 94% of these planners disagreed with the statement that they can control linkages in respect of all the worksheets within the model including cost, view screen, Snaps, Recap etc.

In addition finding from item 5 shows that 95% of the sampled respondents still need more support in resolving some adaptation issues. Findings still in support of Kirschner & Davis, (2003), Sokolowski, J.A., Banks, C.M. (2009), Sherman, W.R. & Craig, A.B. (2003) and UNESCO,(2010) on ICT fluency and technicalities involved in computer simulation model especially EPSSim as an educational planning model in which the present low level skills of most of our planners impair its effective adaptation processes. The model being a generic model can be adapted to suit different states peculiarities in respect of educational provisions.

Testing Hypothesis

There will be no significant difference between male and female planners of on EPSSim as a Planning Simulation model.

Table 4: T. Test Analysis of male and Female Planners Responses

Sex	N	Mean	Standard Deviation	Df	t	Sig
Male	18	89.22	17.74	60	-1.152	.249
Female	44	93.20	9.42			

Result from Table 4 showed that there was no significant difference between male and female planner’s disposition on EPSSim as an educational planning model. The finding revealed t = -1.152 at P < .05. This finding may be explained considering the fact that both male and female planners were exposed to this training and practicum

CONCLUSION

The recent paradigm shift in doing government business calls for evidence- based planning in order to maximise the utilisation of the limited resources allotted to the education sector. There is need for all planners at all governmental levels to maximise the opportunity of EPSSim as a technical tool for strategic education development planning and resource projections.

RECOMMENDATION

Based on the findings from the study the following recommendations are hereby made:
 For a developing nations like Nigeria to have a meaningful achievement economically, socially, politically and educationally, there is need to enhanced the ICT fluency and proficiency of its citizenry. The low capacity of states’ planners in respect of ICT fluency impairs their learning on usage and adaptation of EPSSim as computer educational planning model.
 NIEPA as a planning institute needs to put in place a monitoring and evaluation framework to monitor outcomes of all their training programmes.
 The provided EPSSim user’s guide should be provided to all planners in both soft and hard copies for proper internalisation of the model by states’ planners.

All participated planners need more refresher courses to strengthen their present level of learning on usage and adaptation of EPSSim as a simulation model for educational planning purposes.

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