

**COST BENEFIT ANALYSIS OF MANAGEMENT INFORMATION  
SYSTEM: A CASE STUDY OF SOME SELECTED SECONDARY SCHOOLS IN  
LAGOS STATE**

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**Abstract**

*The study set out to explore the effects of cost and benefits of Management Information System (MIS) in the educational sector. The questionnaire developed was administered to ten teachers who are computer oriented and to two hundred students of computer and was analyzed using percentages, coefficient correlation, split t – test for the separate variables and Z function correlation. The result clearly indicated that the high investment incurred in sourcing, controlling, retrieving, disseminating and storing information had a great effect on organizational performance in terms of productivity level. This correlated significantly with performance. It also showed that there is a significant relationship between cost and benefits of MIS. This study also pointed to the fact that adequate information management enhanced decision-making in educational institutions. The significance of information gadgets such as computers, internet, e-mail, telephones, fax machines of MIS reflected in the study. The study showed that the use of these gadgets is most relevant to management information system. The results of this study may find some applications in both social and educational organizations in which information is needed at all levels of management for decision making.*

**Introduction**

Management Information System introduced into the society in the twenty first century exists with its own problems. As a new field of study, it has to be examined, organized, logically and systematically to achieve the main objective. Management in any organization provides the broad policies and machinery for achieving the objectives of an organization or enterprise. It has a plan of bringing human activities

together to achieve optimal goals through designing, analysis, retrieval, storage and dissemination of information or data. Management Information System is an organized method of providing management with information needed for decisions when it is needed and in a form which aids understanding and stimulates action. Information handling requires the interrelated efforts of both men and machine to achieve the definite ends concerned with the information system. Cost-benefit analysis of management information system entails getting to know the financial involvement of managing the information system and ascertaining through relevant tests the benefits derived from investing on and gathering information and utilizing such information to enhance accomplishment of organizational and individual goals. Cost benefit analysis is a technique used in appraising investment in management information system.

The purpose of the study is to examine the various management problems that are associated with cost benefit analysis of management information in the area of data collection, processing retrieval and storage. The study will also help to ascertain the significance of investing in management information system and thus enable us to evaluate the long and short term benefits of management information. The study of the cost-benefit analysis of management information is relevant as it sets out to improve methods of retrieving, processing, analyzing, storing and managing information in a cost effective manner.

#### **Statement of Problem**

With the development trend in technology and organization activities, the need for quality, correct and adequate information becomes a delicate exercise requiring utmost cautions by executives and information managers.

The problems to be analyzed in this study are to ascertain how the cost of sourcing, storing, disseminating and managing information can improve the quality of output. Another problem is the need for information managers to use the most effective way to utilize and harness the various means of communication at their disposal like telephone, written notes, memos, dialogues, staff conference, lecture, annual reports.

## **Literature Review**

### **Costs**

According to Alani and Oguntoye (1988), information cost in Nigeria is incurred by the Federal, State, Local Governments and Private Sectors. The cost of training in information is also borne by students, parents, and individuals. Cost connotes the money paid for something, the amount expended in bringing something into being or attributable for securing a given service. Its major feature is that it always involves the outflow of a determined amount of cash. Cost is a sacrifice, a foregone benefit measured in terms of money incurred or it can be defined as an exchange price; that is, what must be foregone in order to secure a desired object or achieve desired benefits.

For the purpose of cost-benefit analysis, the cost information like education is divisible into direct, social and private costs of information. Indirect costs are the incalculable cost incurred including pocket money, food, transportation by parent and students during the period of the training of the students. That is, the earning foregone during the period of learning or acquiring information. Indirect costs refer to opportunity costs of education or of acquiring information. It is the earning foregone.

### **Private Cost and Public Cost**

Madumere (1999) explained cost as the cost of training incurred by parent for their wards during the period of training. Private cost may also include the cost for the provision of private information institution set up by private individuals to enhance the acquisition of information level. Public cost refers to the direct or indirect expenditures of philanthropists and the general public in the area of information technology. This public cost in its full capacity includes the provision of accommodation, physical machines, infrastructures, recruitment and payment of personnel.

### **Social Cost of Information System**

The free flow of information between the government and the public is essential in a democratic society. According to the Information Technology Management Act (1998), social costs refer to both the physical machines and manpower, which the government makes

available for training students in the areas of management information system. Alani and Oguntoye (1988) remarked that social costs include the payment of workers, provision of information equipment in all the geographical areas of the country to care for the training and job sites of the information industry.

#### **Cost Benefit Analysis and Its Importance**

According to (ITMRA) Information Technology Management Reform Act (1998), the purpose of cost-benefit analysis (CBA) is to promote efficient resources allocation through well informed decision making by agencies and executioners of information programme when initiating, renewing or expanding programmes or projects which would result in series of measurable benefits and cost extending for three or more years. Ejiogu (1983) renewing cost-benefit analysis remarked that for cost benefit analysis to serve its purpose that is to ensure rational allocation of resources, adequate and regular information on cost benefits and alternative programme must be provided.

#### **Information and Its Importance**

Information enhances organizational performance and has no departmental boundaries, as it should be accorded great value as other computer resources like manpower and finance. Information is vital to managerial efficiency, maximum achievement and proper decision processing and dissemination of new data, facts, messages, opinions and comments required in order to react knowledgeably, as well as to be in position to take appropriate decision. Akanni (1991) states that information is data that have been processed into a form which is meaningful to the recipient and which have real or perceived value current or future decision and action.

Nwankwo (1985) believed that achieving managerial effectiveness and efficiency is a matter of accessibility to more reliable and up to date information. Cole (1990) said the availability of a wide range of information services and transmission medial gives management and professional especially the ability to make informed decisions based on an up-date picture of a situation and an awareness of alternative response and their likely consequences. Barry and Tye (1972) advised that management executives should not starve their staff and students of information required for their job performance

and organizational goals to avoid alienation and neglect which could affect their morale.

**The Research Hypotheses**

For this study, the following research hypotheses were formulated:

1. Heavy investment in sourcing, storing, managing and disseminating information will correlate significantly with organizational performance.
2. There is no significant relationship between cost and benefit of management information system.
3. Good information management positively enhances decision making.
4. The use of modern information gadget like the computers, internet, e-mails, telephones is significantly adequate to management information system, information management.

**Research Methodology Design**

The survey design was adopted for the study since it involved gathering data to provide answers to research questions about the cost benefit analysis of management information system.

**Sample**

A total of ten teachers were used with about two hundred students of computer science, all from the four selected schools. The students are precisely students from the last class of the senior secondary schools (SSS 3).

The instruments used were questionnaires which were administered to students and teachers of the selected schools.

**Data Analysis**

The results obtained from the analysis of information and data were analyzed according to the hypothesis; the scores were carefully computed to ascertain the strength of the correlation (relationship) of each item in the questionnaire.

**Hypothesis 1**

Heavy investment in sourcing, storing, managing and disseminating information will not correlate significantly with organizational performance.

**Table 1a: (Students Questionnaire)**

S/N	Content	Agreed Frequency SA + A	%	Remarks
1	Adequate modern information gadgets like computers facilitate students' performance.	39	97.5	S
2	Students learn better with the use of modern information materials.	39	97.5	S
3	Students enjoy science and technological subjects when taught with modern information gadgets	38	95.0	S
4	Private individuals and organizations should assist in funding information services.	38	95.0	S
5	International organizations like UNESCO, UNICEF, etc should also bear the cost of providing information.	30	95.0	SS
6	The cost of telephone (telecommunication gadgets) should be spent on school information services.	38	95.0	S
7	Substantial amount of money should be spent on school information services.	38	95.0	S
8	The cost of obtaining information should be made affordable to the masses.	33	82.5	S
9	The major cost of finding information services should be shouldered by federal government.	33	82.5	S

S = Significant

The responses in items 1 – 3 indicated that students learn and enjoy sciences and technological subjects when taught with modern and audio-visual materials. This therefore implies that modern information

gadgets enhance teaching and learning, especially sciences and technology. Private individuals and organizations should therefore assist in funding information services to make them affordable to the masses. The hypothesis is therefore accepted.

**Table (b):** (Teacher Questionnaire)

S/N	Content	Agreed Frequency SA + A	%	Remarks
1	Subscription of adequate amount of money into information management enhances organizational performance.	9	90	S
2	CBA (Cost Benefit Analysis) of Management Information System (MIS) is a worthwhile exercise.	9	90	S
3	Investment in MIS should affect the standard of living positively.	9	90	S
4	CBA of MIS affects positively the educational system.	8	80	S
5	CBA is designed to facilitate attainment of educational aims and objective.	8	80	S
6	CBA helps to measure the degree to which a pre-determined project can be achieved.	8	88	S
7	The cost concept in information is as crucial as cost concept in other education sectors.	7	70	S
8	Information management services cost substantial amount of money.	7	70	S
9	High cost of information management does not correlate with good performance.	6	60	S
10	Full cost of management information implies expenses incurred in the information processing services.	5	50	S

Table 1(b) above shows that CBA is required to ascertain the extent to which heavy investment in sourcing, managing and disseminating information might correlate with performance in secondary schools. The responses of the teachers in table 1(b) above also suggest that subscription of adequate amount of money into information management is vitally essential as this enhances organizational performance. 80% of the respondents agreed that CBA assists to measure the degree to which a pre-determined project can be achieved while 70% agreed that CBA assesses the desirability of the project against its cost respectively. This therefore implies that the concept of cost and benefiting information management is crucial as in other educational sectors. The hypothesis from these findings and observation is therefore accepted.

### Hypothesis 2

There is no significant relationship between cost and benefits of management information system.

**Table 2:** Relationship between cost and benefit of MIS using means, standard deviations and Z ratio

CBA (Correlated)	CBA (Not Correlated)
XC = 18.1	XN = 11.6
SDC = 3.6	SDn = 3.7
NC = 30	Nn = 30

Using the formula

$$Z = \frac{xc - xn}{\sqrt{\frac{SDc^2}{Nc} + \frac{SDn^2}{Nn}}}$$

Where xc and xn are the means of independent (cost) and dependent (benefits) samples respectively, SDc and SDn are the standard deviations and Nc and Nn are the signs of the samples substituting Z = 7.30. From the Table 2 above, the calculated values of Z (7.30) are greater than the critical (Table) value of Z (1.96) for a two table test at 0.05 level of significance. This therefore implies that there is significant relationship between cost and benefits of management information system. The null hypothesis is rejected while the alternative hypothesis is therefore accepted.



**Hypothesis 3**

Adequate information management significantly enhances decision-making.

**Table 3**

S/N	Content	Agreed Frequency SA + A	%	Remarks
1	Good information management accelerates decision making.	88	80	S
2	There is need for proper information management and maintenance in order to facilitate decision making.	84	68	S
3	Decision making is vitally necessary in any organization.	84	68	S
4	Good decision making results in good organizational performance.	84	68	S
5	CBA is designed to facilitate the attainment of education objectives.	84	68	S
6	CBA offers better resources especially in MIS.	80	68	S
7	Management information should be endorsed as an essential service in decision making.	80	56	S
8	Good sourcing, storage, management, maintenance and utilization of information are basic to information management for future decision making.	80	56	S
9	Good decision making reduces educational wastage.	80	56	S

Table 3 above shows that adequate and good information management significantly enhances decision making. Items 1 – 4 indicate that good information management facilitates decision making and results in good organization performance. This therefore implies that

information management should be endorsed as an essential administration and planning. This hypothesis is therefore accepted.

#### Hypothesis 4

The use of modern information gadgets is significantly adequate to management information system.

**Table 4(a)**

Variable	N	Mp	Mq	SD	Rphi	Remarks
Modern Information System	30	18.1	--	3.6	0.51	Significant
Traditional Information System	30	--	16.6	3.7		

Table 4 above shows that the standard deviation for the data of modern information gadgets is 36 and a correlation coefficient is 0.57. This shows that there is significant correlation between the use of modern information gadgets such as e-mail, telephones, computers, internet, fax machines and management information system. The hypothesis is therefore accepted.

**Table 4(b)**

Variable	N	Mp	Mq	SD	Rphi	Remarks
Modern Information Gadgets	30	18.1	--	3.6	0.21	Non Significant
Traditional Information Gadgets	30	--	15.6	3.7		

Table 4(b) above shows that the coefficient correlation for traditional information gadgets is 0.21. This therefore implies that the correlation between the use of traditional information gadgets and management information system was not positively significant. The use of modern information gadget is therefore upheld.

### **Discussion of Findings**

There is no gainsaying in the fact that decision-making whether in the present or future state encourages future development and growth in an organization. Therefore adequacy of information and its reliability when duly sourced and properly stored and necessary to make the decision makers predict the viability of their projects and get excellent results at all times.

The information obtained from the right sources are relied upon by organizations for their plans and control. This bears directly on the systems and moulds the policy. For the survival of any organization, the most essential need is the collation of information, a process which involves personnel, finance production and related units. This implies that there must be a relationship between costs and benefits of the Management Information System. The expenses incurred in the process could determine the extent of its benefits.

Electronic data processes contribute a lot to decision making in an organization. The quality of information is often determined by the sophistication of those gadgets. Hence, the cost has a direct implication on the available information. Eighty per cent (80%) of the respondents agreed to this assertion while twenty per cent (20%) disagreed.

These processes contributed to organizational goals so much that it cannot be quantified in monetary terms. For example, the speed is unimaginable. The convenience of storage, accuracy of information, volume of data that could be processed and a host of others are the benefits. Also, it has been discovered that education practices and procedures depend upon the computational and information processing skills of computer like all other human endeavour, is also pertinent to consider some of the effects of these.

Through the Management Information System, the use of computer does not become bored or tired when performing. It has a storage ability because unlimited amount of information can be held in a system due to auxiliary storage devices. Once recorded, a piece of information can never be forgotten. Moreover, such information can be retrieved at any time unlike in the case of manual system when information in the files/document might have been misplaced. It also helps in presenting accurate records. It is very reliable. This is the most expected in a vital issue as academic where excellence is a watchword.

It should however be noted that faulty programme through misinformation can lead to inaccurate results.

### **Conclusion**

This paper shows that through the Management Information System, there may be problem of maintenance skilled manpower, lack of privacy and cost inadequacy. For example, collecting information through the introduction of computerized departmental, academic record and in other organization is a very expensive scheme realizing the fact that education is a social service in which no monetary value reward is expected coupled with the poor financial standard of the nation and the high cost of computer gadgets. There is also a technical gap.

However, adequate and reliable information system is required for the enhancement of national building. The implication of this study for future development is that there would be improvement on the level of acceptance of management information system in schools. Moreover it would be used in monitoring students' conducts and teachers' performance. Furthermore, schools would also be on the internet thereby making information retrieval much more efficient as it is with global banking in the country.

### **Recommendations**

Based on the result of the findings, the following recommendations are suggested to help bring about efficiency and the effectiveness of harnessing cost in other to derive the desired benefits of the management information system. Proper awareness should be created in all educational institutions in Nigeria (the private and the public, at the rural and urban settings) on the benefits of information system.

- Since, according to the findings, investing in Management Information System is worthwhile and is quite substantial, the government, private individuals and international organizations like UNESCO, UNICEF should assist in funding the information system.
- Positive efforts should be made by the government of the day to make modern information gadgets affordable for the average Nigeria family and for every school so that at least they would afford the cheapest television, personal computer or

even telephone to enable them have quick access to information.

- Some of these gadgets should be provided in all schools at least one of them according to the level and standard of the school and the use of those should be integrated into the school curriculum.

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