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Computerized accounting in Ghana: The shift from books to software: The benefits and challenges associated with the transition

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Abstract
The purpose of this study was to provide an overview of computerized accounting in Ghana and also investigate challenges and benefits associated with its usage. The stratified probability sample method was adopted for the study. The population was divided into six categories, namely; banking information technology, hospitality, service, manufacturing and multimedia. Respondents were sampled from the aforementioned categories. The findings of the study showed that despite certain challenges identified with the use of computerized accounting in Ghana, its usage is very predominant among businesses in the country. Businesses are urged to invest in computerized accounting because it simplifies and speeds up accounting operations and any investment thereof with regards to accounting software new releases and updates in the short and long terms is worth doing.

Keywords: computerized accounting, challenges, benefits, e-commerce

1. Introduction
The practice of accounting both as a profession and a field of study has undoubtedly undergone tremendous metamorphosis for the past many years. "Accounting is an exciting, dynamic field of study; its body of knowledge, theories, and practices as well as the methodologies of teaching its concepts is constantly evolving" (Kieso, Weygandt, 1995) [17].

Today, it is no longer necessary for large companies to have huge store rooms full of ledgers and records. Instead all of an organization's accounting information can be stored in computer hard disks, saved on Flash Drives for easy transferability or even burned unto compact disks.

Financial accounting has not only become better in modern times, it also has a wonderful history. Hagerman (1980) [10] reported that modern accounting is usually traced to Luca Pacioli (1445–1517), a 15th century Italian Franciscan friar who according to Alexander (2002) [2] was versed in many disciplines such as mathematics, religion, business, military science, medicine, art, music, law and language and also collaborated with Leonardo Da Vinci by helping to calculate the quantity of bronze needed for Da Vinci's statue of Duke Lidovico Sforza of Milan.

Even though Pacioli contributed significantly to what is now known as accounting (Alexander, 2002) [2], Hagerman believes that most of the fundamental ideas that define modern accounting can be traced further back to a time that preexist Pacioli. In his paper titled *Accounting In the Bible* published in *The Accounting Historians Journal*, Hagerman (1980) [10] argued that, "The Bible, which is generally viewed as covering events between 1800 B.C. and 95 A.D., contains several references both direct and indirect, to accounting and basic accounting concepts". To support his claim, Hagerman cited 2 Kings 12:15 which concern the building of a Temple. According to the Holman Christian Standard Bible (HCSB), 2 Kings 12:15 says, "No accounting was required from the men who received the money to pay those doing the work, since they worked with integrity".

Besides the above, Hagerman (1980) [10] also cited Luke 16:2 to buttress his point that the history of accounting is traceable further back to the Bible. Luke 16:2 is a story told by Jesus Christ about a money wasting steward who was suddenly asked by his master to account for all the resources which was entrusted to him. The story further asserts that accounting was in full practice even during the time of Jesus Christ.

The emergence of computers unto the consumer market during the early 1980s paved the way for the development of Computer software. This software changed the face of business and social life forever (Hunton, 2002) [12]. Fortunately, accounting was not left out. Soon computer programs capable of handling accounting transactions were developed. Notable among them was Lotus 1-2-3 which was developed by Lotus Corp which is now part of IBM (Ury, 2011).

Today, there is Microsoft Excel, Tally, Sage, QuickBooks, and other accounting software which together had transformed accounting and brought about what is now known as computerized accounting. The various programs that make this type of accounting possible have been termed Computerized Accounting Systems (CAS).

1.1 Objectives
General objectives
The primary objective is to investigate the transition from manual to computerized accounting.

The specific objectives are as follows:

- To find out the type of accounting system used in selected organization in Ghana.
- To compare and contrast manual accounting and computerized accounting.
- To study why businesses transition from manual accounting to computerized accounting and what challenges are associated with the transition.

2. Literature Review

2.1 Theoretical Framework

Accounting practices both in the manual or computerized formscan be viewed in the context of the systems theory. The systems theory was developed by Daniel Katz, Robert Kahn and James Thompson in the 1960s as seen in *Contemporary Management* (Jones, George & Hill, 2000) [16].

A system can also be seen as a group of interrelated but distinct elements which function together to achieve a common objective (Marfo-Yiadom, 2005) [20].

Daniel Katz and his colleague theorists came up with two kinds of systems: open and closed systems. An open system as its name suggests, is not self-contained but one that is able to receive information and inputs from sources outside itself. Closed systems on the other hand are systems that are self-contained and thus do not receive any information or inputs from external sources (Jones *et al*, 2000) [16].

The systems theory, especially the open system, is applicable to accounting because both manual accounting and computerized accounting denotes a kind of system. Accounting as a system has transaction data and source documents as its inputs. The accountant, accounts officers or accounting software packages represents the system's processing components which leads to the production of outputs such as financial statements, reports, and other information needed for decision making. The system and its processes can be illustrated in a model as shown below:

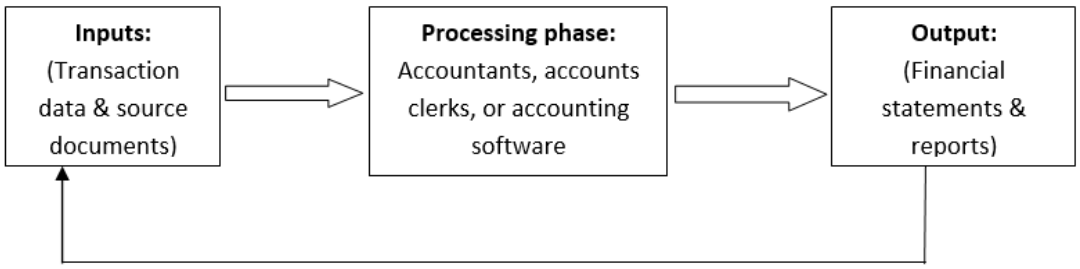


Fig 1: The Accounting System Model

2.2 Accounting Standards

With the practice of accounting comes the need for accounting practices and procedures to be standardized. This is necessary due to the fact that accounting is now intertwined with business and thus calls for standardized practices to ensure equity and reliability of accounting information. When we speak of accounting standards, two abbreviations usually comes to mind; the IASB and IFRS. The International Accounting Standards Board (IASB) is the standard setting body for the International Financial Reporting Standards (IFRS) foundation (IFRS, 2013) [14].

The IFRS foundation has a three-tier structure which function hand-in-hand to achieve the foundation's objective. Figure 2 below depicts the three-tier structure of the IFRS.

The three-tier structure of the IFRS foundation

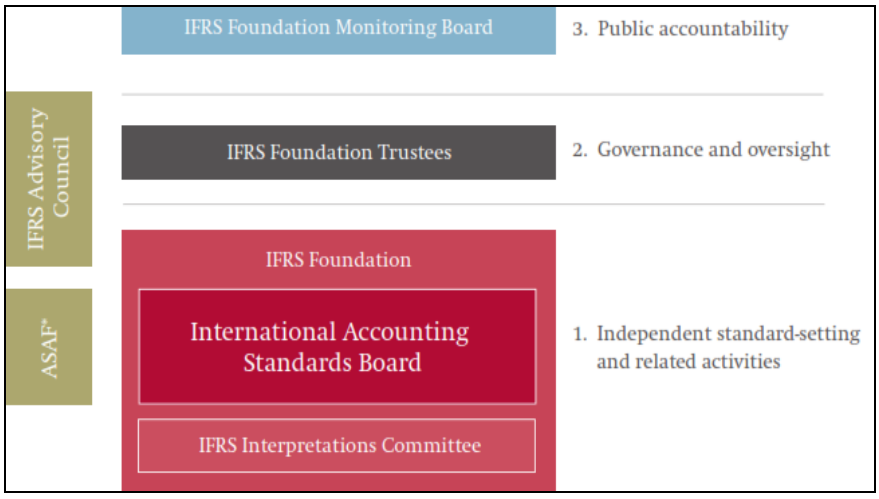


Fig 2: The Three-tier Structure of the IFRS Foundation. Source: IFRS, 2013. www.ifrs.org

The studies by Dunne, Helliar, and Power (2003) [7], Wagenhofer (2009) [30] and Nguyen (2010) [22] offer important perspectives on accounting standards and their implication on accounting practices and procedures. Computerized accounting and accounting software are designed to work not in isolation but to conform with laid down accounting procedures.

2.3 Accounting System

The nature of accounting makes it fit into the description of a system. It receives inputs in the form of transaction data recorded manually or with the aid of an accounting software which is usually a component of an Enterprise Resource Planning (ERP) package. The data is then processed manually or with accounting software in the case of computerized accounting. That is, accounting as a system exists in two main forms: manual accounting system and computerized accounting system.

2.4 The Manual Accounting System

Since the invention and popularization of the double entry system of accounting in 14th century Italy, the accounting that has been in practice is the manual accounting system (Alexander, 2002) [2]. The manual accounting system is the kind that makes use of handwritten records in large notebooks called ledgers. The use of books for manual accounting led to the development of terms like "doing the books" and "bookkeeping" (Ury, 2011) [29].

The work of Waterfield and Ramsing (1998) [31] emphasized that the accounting system in an entity can be a simple manual system where transactions are recorded in a chronological or date-wise manner as debits and credits. In their study, they described manual accounting system as starting with journalizing of transactions in the general journal and other supporting journals like purchases and sales. Recordings in the journals mainly have to do with determining which accounts will be debited and which will be credited. From the journals, the general journal transactions are posted to the general ledger and those in other supporting journals are posted to their respective ledgers. Their study also highlighted that, the actual activity of accounting is done in the ledgers.

The advantages of manual accounting system includes: reliability, skilled labour which is readily available, manual accounting resources are relatively cheaper, and independence from computers and its associated problems such as computer failure, harking and so on. Nonetheless, manual accounting is not without demerits. Dacosta *et al* (2012) [6] stated that manual accounting system is slow, raises workload of accountants, and hinders internal control reporting. In addition, manual accounting is repetitive and routine in nature and thus creates boredom. Then there is also the issue of backups. The use of books makes backing up information very burdensome. This had led to loss of important financial records in developing countries like Ghana in the event of fire outbreaks.

2.5 The Computerized Accounting System

"A computer is a device that works under the control of stored programs, automatically accepting, storing and processing data to produce information that is the result of that processing" (French, 1996) [8]. French further stated that, the computer is a device which accepts data in one form, processes that data, and produces it in another form.

The raw data that the computer accepts is called input and the processed data is the output. Between the input and output lies two functions of the computer—processing and storage (French, 1996) [8].

Accounting on the other hand, is the chronological and systematic recording, processing, summarizing and reporting of information relating to the economic activities of business units. The aim of accounting is to provide information relating to the financial position, financial performance and cash flows of individuals, companies and public institutions (Teiuşan, 2009) [28].

From the definition of computer and brief explanation of what accounting does, it is evident that the concept of computer and the concept of accounting are significantly divergent. However, Teiuşan (2009) [29] believes that we can marry the two, and such a marriage leads to the creation of what Teiuşan called computer-assisting accounting which is a reference to computerized accounting. Of computer-assisted accounting Teiușansaid the following:

"Computer-assisted accounting is a term with a general character; it refers to the accounting kept with the help of the computer or to the use of the computer to automate the operations in the activity of the person in charge of accounting, the accountant; it is a concept used to define the computer applications in the accounting activity".

2.6 Computerized Accounting in Ghana

The work of Adjei (2013) [1] like that of Dacosta *et al* (2012) [6] reviewed earlier was directed at investigating the effects of computerized accounting on Ghanaian banks. The study was focused on Amanano Rural Bank, and revealed that the bank's adoption of computerized accounting software actually expedites the operations of the bank with respect to both their customers and staff. For example, customers' information could now be instantly fetched and supplied to the cashier just after keying-in few particulars of the customer. The introduction of computerized accounting system therefore ensured that transactions were effected with ease and at a faster pace.

In a contrast study, Simpson (2012) [26] shifted from the private sector to the public sector and sought to study the developments in public sector accounting in a post-independence Ghana. Simpson noted that the fewness of researches in public sector accounting in emerging economies like Ghana influenced his choice of the public sector accounting for his research. The study found that entire public sector accounting practices and reporting procedures are being computerized.

To conclude, the diagram below depicts how Gelinas and colleagues in (Adjei 2013; Dacosta, 2012) [1, 6] demonstrated the workings within a computerized accounting system.

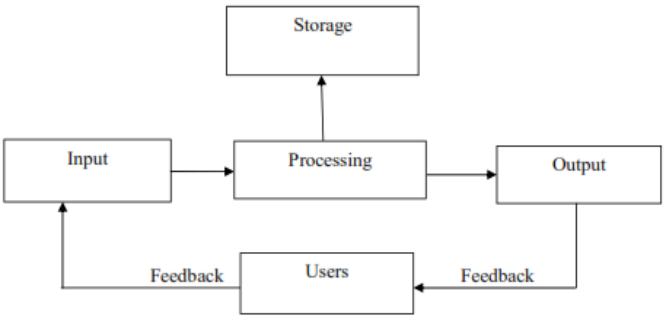


Fig 3: The Computerized Accounting System Model. Source: Dacosta *et al* (2012)

In summary, computerized accounting has become an important factor both globally and in Ghana as has been seen in the works that has been reviewed.

3. Methodology

The descriptive research approach was selected for the study as it systematically explain the phenomena or characteristics connected with a subject and allows the researcher to obtain direct information from participants of the study.

The population consist of accountants, account officers and other accounting staff of both businesses that use manual accounting systems and those using computerized accounting systems. The population is one hundred (100).A sample size of forty-three (43) made up accountants, account officers and other accounting personnel of the companies from which respondents were fetched.

To ensure representativeness of the population, the stratified random sampling technique which is a type of probability sampling was adopted for the study. Using the stratified random sampling, the researchers subdivided the population into subcategories known as strata. There were a total of six strata namely; banking industry, information technology (IT) industry, hospitality industry, service industry, manufacturing industry and multimedia industry. At least one company was conveniently selected from each stratum and their accountants, account officers and other accounting personnel were served with questionnaires. SPSS, tables and diagrams was used for illustration and analysis.

4. Findings and Discussion

4.1 Presentation of Results for Research Objectives

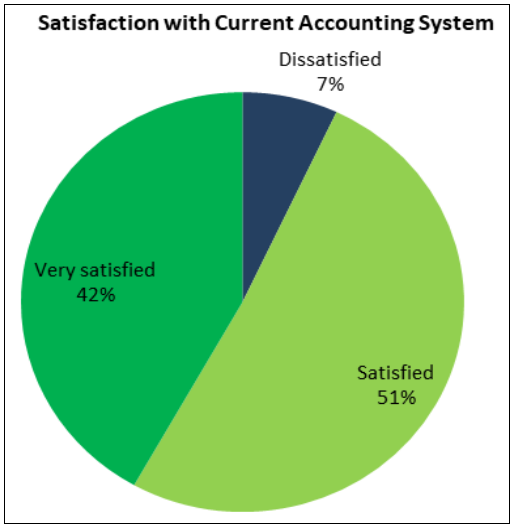
Current Accounting System in respondent's organization

Table 1: Respondents' Current Accounting system

	Frequency	Percent (%)
Manual accounting	4	9.3
Computerized accounting	16	37.2
Both manual and computer	22	51.2
No accounting	1	2.3
Total	43	100.0

Source: Field Study

Table 1 illustrates the current accounting system systems in use in some organization in Ghana. According to the above table 51.2% representing 22 out of 43 responses use both manual and computerized accounting. 37.2% use only computerized accounting representing 16 responses. Manual accounting userswere4 which is 9.3% and only a company does not account for its operations.



***Source*:** Field Study

Fig 4: Satisfaction with current accounting system

The above diagram shows satisfactory level with current accounting system in use. 51% are satisfied, 42% responded very satisfied and only 7% were not satisfied.

4.2 Types of Accounting Software used in Ghana

'Most Used' Accounting Software in Ghana

Table 2: Most Used' Accounting Software

	Responses	
	Frequency	Percent
Microsoft Excel	40	93.02%
Sage	15	38.88%
Tally	16	37.21%
QuickBooks	4	9.3%
SAP	9	20.93%
Pastel	3	6.97%
Others	17	39.53%

***Source*:** Field Study

The researchers sought data on the 'most used' accounting software by businesses in Ghana. The results, as represented above shows that Microsoft Excel is the 'most used' accounting software with 93.02% usage. The data collected showed that even companies that stated manual accounting as their current accounting system also stated that they use Microsoft Excel for some of their accounting operations such as computing sales or payroll.

This finding puts a highlight on Microsoft Excel as a great tool for the accounting profession. Even though Excel does not come pre-automated to carry out accounting operations like Sage or Tally does, it still stands out as a great tool for accountants and account officers.

4.3 Differences between Manual and Computerized Accounting Systems

Another objective of the study was to investigate the

differences that exist between manual and computerized accounting. To achieve this, the researchers proposed four differences and presented it to the respondents via questionnaires. For each difference, respondents were given four options from which to respond. They had the option to "strongly agree", "agree", "disagree" or "strongly disagree." The proposed differences and the accumulated answers given by the respondents are as presented in the *Table 4* below.

Differences between Manual & Computerized Accounting

Table 3: Difference between manual and computerized accounting

	Agreed		Disagreed		Total
	Frequency	Percent (%)	Frequency	Percent (%)	
Manual accounting is simpler to use than computerized accounting	20	46.6	23	53.4	43
Accounting software processes and generates reports faster than manual accounting	42	97.7	1	2.3	43
Manual accounting is cheaper than computerized accounting	32	74.4	11	25.6	43
Back up is easy and efficient with computerized accounting than manual accounting	41	95.3	2	4.7	43

***Source*:** Field Study

The table above shows that the first proposed difference, that is, 'manual accounting is simple to use than computerized accounting' is not a strong difference because 23 respondents representing 53.4% did not agree with it as a difference. However, the remaining three differences appear to be major differences between manual and computerized accounting. An outstanding 42 (97.7%) out of 43 respondents agreed with "accounting software processes and the fact that it generates reports faster than manual accounting" as a difference. Also 32 (74.4%) and 41(95.3%) respondents agreed with the third (manual accounting is cheaper) and fourth (backup is easier and more efficient with computerized accounting) questions respectively.

4.4 Factors That Prevent Businesses from Switching from Manual to Computerized Accounting

Table 4: Preventive factors

	Agreed		Disagreed		Total
	Frequency	Percent (%)	Frequency	Percent (%)	
The complexity of accounting software packages	29	67.4	14	32.6	43
High cost of accounting software	29	67.4	14	32.6	43
Fear of computers and technology as a whole	23	53.5	20	46.5	43
Resistance to changes and modern ways of doing things	38	88.4	5	11.6	43

***Source*:** Field Study

The results above explains that 29 and 14 respondents out of 43 representing 67.4% and 32.6% respondents agreed and disagreed respectively to the questions whether or not complexity of accounting software packages and high cost of accounting software preventing businesses from switching from manual to computerized accounting. For fear of computer as a whole account for 23 responds representing 53.5% agreeing whiles 20 respondents representing 46.5% disagreed. 38 and 5 respondents out of 43 representing 88.4% and 11.6% respectively agreed and disagreed respectively to resistance to change and modern ways of doing things.

The results showed that the proposed factors are indeed valid factors which prevent organizations from switching from manual to computerized accounting. The following additional factors were also given by the study respondents as being other factors that hinder the transition from manual accounting to computerized accounting:

- Computerized accounting is associated with computer virus issues
- There is difficulty of staff to adjust to the use of computerized accounting software
- There is the problem of unskilled labour and the cost of training in other to use computerized accounting.
- Inadequate after-sales service by accounting software vendor**s.**

4.5 Factors That Cause Businesses to Switch from Manual to Computerized Accounting

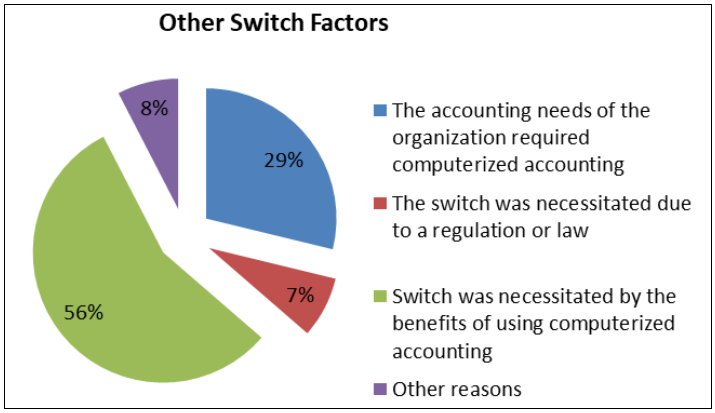
Table 5: Switch factors

	Agreed		Disagreed		Total
	Frequency	Percent (%)	Frequency	Percent (%)	
Speed of processing financial data and generating reports	41	95.3	2	4.7	43
Storing financial information and reports for future use	42	97.7	1	2.3	43
Computerized accounting requires use of fewer accounting personnel	42	97.7	1	2.3	43
Accounting software is able to process large volumes of financial data	42	97.7	1	2.3	43

***Source*:** Field Study

From Table 5, it is evident that speed of processing financial data and generating reports was agreed by 41 out of 43 respondents representing 95.3% with just 4.7% representing 2 respondents disagreeing. Regarding storing financial information and report for future use, computerized accounting requiring use of fewer accounting personnel and accounting software being able to process large volumes of financial data, 42 out of 43 respondents representing whooping 97.7% agreed to all these questions with only 2.3% which is a respondent disagreeing. The proposed factors above are indeed factors that cause organizations to switch from manual to computerized accounting.

In addition to the above factors, respondents were also asked if any of the following; accounting needs of the organization, government regulations or law, the benefits of computerized accounting, and any other reason apart from those listed in the Table 2 above, had caused their organization to switch from manual accounting to computerized accounting. The respondents' response to these second set of reasons that cause businesses to switch from manual to computerized accounting are as presented below.



***Source*:** Field Study

Fig 5: Other factors chart

It can be seen from the diagram above that most organizations switch from manual to computerized accounting in order to enjoy the benefits that come with computerized accounting operations. This alone account for 56%, These benefits include faster processing of accounting information, quicker generation of reports and ease of storage and back up. Followed by 29% which were the accounting needs of the organization, requiring accounting software. Other reasons were 8% whereas switching necessitated by regulation and law is 7%.

4.6 Factors That Cause Organization to Move from One Accounting Software to Another

Table 6: Change factors

	Agreed		Disagreed		Total
	Frequency	**Percent (%)**	**Frequency**	**Percent (%)**	
The nature of business (that is, small/medium/large)	43	100	0	0	43
The needs of the organization	40	93	3	7	43
Differences in accounting software costs	35	81	8	19	43
Tastes, competence and preference of the accountants and accounting staff	33	76.7	10	23.3	43

***Source*:** Field Study

Finally, the above Table 6 shows respondents' answers to questions about proposed reasons why some businesses sometimes change accounting software. The table shows that all four factors are justifiable reasons why companies sometimes move from one accounting software package to another. All the respondents to some extent agreed that the 'nature of the organization' is a factor that necessitates the transition to another. 40 out of the 43 respondents representing 93% also agreed that 'needs of the organization' is another factor that caused businesses to change accounting software. For example at one of the service companies surveyed, the researchers gathered that the company switched from Sage to Tally because the latter allows for easy printing of receipts, payment vouchers and other critical reports.

Differences in accounting software costs and tastes and preference of the accountant and accounting staff were also affirmed by 81% and 76.7% respectively as valid reasons why some organizations switch between accounting software types.

5.1 Conclusion

First, most organizations in Ghana use computerized accounting systems. The findings showed that 88.4% of the businesses studied employed some sort of computerized accounting in execution of their accounting operations.

Second, that even though computerized accounting comes with tremendous benefits, certain factors such as fear of computers and computer viruses, resistance to change and modern ways of doing things, and the high cost of acquiring and using accounting software packages, are factors that prevent some businesses from switching from manual accounting to computerized accounting.

And finally, that differences in cost, speed of processing, and storage remain major or fundamental differences between manual and computerized accounting in Ghana.

5.2 Recommendations

- Small businesses who would like to employ the use of computerized accounting but unable to do so due to the high cost of accounting software packages like Sage, Tally and QuickBooks should resort to Microsoft Excel. With appreciable training, Microsoft Excel can be used to execute a good number of accounting operations that would otherwise have been difficult or tiresome to carry out manually.
- Businesses that use manual accounting should switch to computerized accounting or combine both manual and computerized accounting. Even though accounting software packages are relatively expensive than manual accounting, their usage speeds up work, simplifies accounting operations and processes and is fast in report generation. As a result any investment in accounting software will be worth it both in the short term and long term.
- For organizations where resistance to change is a problem, the researchers recommend that change management be carried out prior to switching from manual to computerized accounting. This will ensure adequate compliance and support from staff to the changes that the use of computerized accounting will bring into the organization.
- Finally, the researchers recommend that more researches on computerized accounting be carried out, especially on non-profiting making entities which were not covered in this project.

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