ANALYSIS OF STAKEHOLDER FACTORS INFLUENCING THE EFFECTIVENESS OF ACCOUNTING INFORMATION SYSTEMS IN TANZANIA'S LOCAL AUTHORITIES

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ABSTRACT

This paper assesses the stakeholder-related factors which influence Accounting Information Systems (AIS) effectiveness in Tanzania's Local Authorities (LAs). Using data collected from 19 LAs in Tanzania, we tested six factors: management support, qualification of accounting staff, education of councilors, and availability of AIS consultants, external auditor specialization and councilors' involvement in AIS matters using canonical correlation analysis (CCA). The results from CCA show that management support, external auditors' specialization and councilors' involvement are the most critical factors in ensuring AIS effectiveness in the country's local authorities. Next were the qualifications of accounting staff and the education level of councilors, which were established as strong factors for AIS effectiveness in LAs. The study, therefore, concludes that for LAs to have effective AIS they need to take measures such as recognizing the importance of AIS effectiveness in organizational operations, allocate sufficient resources and time for the development and implementation of AIS, provide training on computerized AIS, attract qualified personnel as well as raise the mandatory minimum education level requirement for LA councilors.

Key words: Accounting information systems, stakeholder theory, canonical correlation analysis (CCA)

INTRODUCTION

Accounting Information Systems (AIS) effectiveness is a subject that attracts a lot of interest from both academicians and practitioners. There are a number of reasons for this situation but here we can identify four reasons. First, the interest in AIS effectiveness has increased due to soaring demand for high quality accounting information because such information helps various decision-makers to ensure organizations improve efficiency and achieve accountability (Seddon, 1991;

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Mellemvik, Mansen, & Olson, 1988). Second, following the demand for high quality accounting information, organizations have found themselves investing enormous resources in information technology to ensure that their AIS are effective. This investment has been evidenced by the implementation of advanced computerized AIS in many organizations. Third, the subject has attracted a great deal of interests because AIS effectiveness does not have a single measure to explain (DeLone & McLean, 2003). As such, there are as many ways of measuring AIS effectiveness as the number of studies themselves. Consequently, this has complicated the evaluation of AIS effectiveness in organizations because some studies have focused on technical, others on the individual, and others on organizational AIS level. In this regard, the search for AIS effectiveness measures remains an ongoing process that has yet to be completed. Fourth, searching for the factors that could boost AIS effectiveness remains an issue of utmost significance for most of the organizations. Although they are generally investing huge amounts of resources into improvising their AIS, the questions which are worth asking are as follows: Is the improved AIS system going to be effective? If not so, what can make them effective?

These questions have not only troubled business-oriented organizations but also public sector organizations. The public sector organizations face challenging environment which has increased the demand for financial resources, with financial scandals also escalating (according to corruption level occurring in daily newspapers) as well as an increase in the demand for services from the public sector organizations. This operational environment has exerted pressure on the public sector organizations to ensure that they utilize resources efficiently and effectively as well as deliver services to meet the increased demand (Batley & Larbi, 2004; Broadbent & Guthrie, 1992; Nylén, 2007). Responding to the changing environment, these public sector organizations have looked for new ways of strengthening their financial management practices, including reviewing, revisiting and changing their AIS (Paulsson, 2006, Nyland & Pettersen, 2004; Yamamoto, 1999; Christensen, 2001, 2005; El-Batanoni & Jones, 1996; Godfrey, Devlin & Merrouche, 1996; Lüder, 1992, 1994; Xu, 2003).

The response adopted internationally has also occurred in Tanzania's public sector organizations. Local Authorities (LAs) are one of the types of public sector organizations in Tanzania that have been influenced by environmental pressure. The LAs in Tanzania have adopted the computerized AIS in addition to changing the accounting policies from being cash-based AIS to accrual-based AIS (Heidenhof et al., 2002). Despite all these efforts, empirical studies suggest that designing and implementing effective AIS in the public sector organizations such as the LAs remains a problematic and cumbersome process (Hove & Wynne, 2010; Paulsson, 2006, Yamamoto, 1999; Stanforth, 2010). Studies have indicated that AIS designed and

implemented in most of the public sector organizations have failed to deliver according to expectations. The failure of the systems being implemented in the public sector organizations revitalize the question posed by Carlin (2005) on whether the efforts done by public sector organizations to improve their AIS have helped to make the AIS effective. This question arises from mixed results of empirical evidence conducted so far (see Anessi-Pessina, Näsi & Steccolini, 2008; Bracci, 2006; Carlin, 2003; Cohen, 2007; Christiaens & Rommel, 2007).

This study, therefore, continues these efforts by assessing the efforts of the public sector organization in addressing the issue of AIS effectiveness at the local level in Tanzania. This study holds the view that the mixed results on assessing AIS effectiveness arise due to lack of clear measurements for AIS effectiveness and a clear model for explaining factors behind AIS effectiveness. As such, this study argues that AIS effectiveness is a multidimensional construct whose measurements have to reflect output-orientation, systems-orientation, and user-orientation and organizational orientation, particularly the four-dimension approach. Taken as a whole, we view AIS effectiveness being measured by the quality of accounting information, systems quality, user satisfaction and organizational performance. Whereas the previous literature supports the multidimensional aspect of AIS effectiveness, there is limited evidence of literature that has combined the four dimensions.

Furthermore, this study contends that the important aspect of factors behind AIS effectiveness comes from actors involved with AIS. This is based on the Lüder (1992) model of AIS reforms which identifies AIS stakeholders as including producers and users of the accounting information. However, this classification was criticized by Monsen and Näsi (1998) on the ground that some actors play different roles simultaneously or in different periods. These criticisms made Lüder (2003) review the model by identifying stakeholders with their roles in AIS. Hence, this study postulates that to make AIS effective, there is a need to examine stakeholder-related factors for AIS effectiveness. In fact, most prior studies support the importance of stakeholder-related factors (Choe, 1996; Xu, 2003; Seddon, 1991; Christiaens & van Peteghem, 2004; Yamamoto, 1999; Christensen, 2001). One exception is that some stakeholder-related factors (in the case under review) such the availability of consultants and the educational level of councilors in LAs have not been addressed by the extant literature. This shows that there is still a knowledge gap on the critical stakeholder-related factors influencing the effectiveness of AIS. Therefore, the objective of this paper is to assess the influence of stakeholder-related factors on AIS effectiveness as a multidimensional construct.

The paper is arranged in six sections. The first section provides introduction and the objective of the study. The second section provides the literature review and hypothesis development. This section discusses further how our settings allow us to contribute to the extant literature of AIS effectiveness. The third section covers the research design. The fourth section presents empirical results of the study. The fifth section offers discussion of the findings. The last section covers the conclusion of the study.

LITERATURE AND HYPOTHESIS DEVELOPMENT

An overview of AIS effectiveness measurements

AIS effectiveness is a multidimensional construct as several measures can be used to evaluate it. This arises because AIS is part of management information systems and accounting (Bagranoff, Simkin & Strand, 2005; Murthy & Wiggins, 1999; Samuelson, 1990), which utilises measures of effectiveness from both the MIS and accounting. Since MIS itself has no uniform measure of effectiveness (DeLone & McLean, 2003; Mbamba 2003; Serafeimidis 1997), it is not surprising to find AIS also having several measures of effectiveness. Studies which have accounting functionalism tend to use the measures of accounting information quality such as relevance, timelines, accuracy, consistency and completeness. To accounting functionalism, AIS is just concerned with recording transactions and producing reports (Mellemvik, et al., 1988; Oakes, 2006). However, this approach ignores the fact that accounting is not only a technical aspect but also a response of an organization to social and political pressures (Funnel, 1998). In other words, accounting functionalism adopts the output-oriented approach which ignores the process aspect by focusing only on the AIS output.

Cases of studies, which have focused on MIS, largely tend to use measures with a bias towards the computerization process of AIS. These include systems quality and user satisfaction. Under the system quality measure, the focus is on the process of system design, development and implementation. This measure focuses on the process (i.e. system-oriented dimension) which includes issues such as flexibility, maintainability and investment in the AIS design, development and implementation (DeLone & McLean, 1992, 2003; Mbamba, 2003; Negash, Ryan & Igbaria, 2003). Whereas the systems quality measure has similar limitation to accounting information quality by focusing on the technical aspect, this measure focuses on the system itself and not on the output of the systems as in the case of the accounting information quality.

On the other hand, user satisfaction attempts to measure the social aspect of AIS implemented in the organization. This measure has attracted a number of studies in the AIS field. One reason could be the fact that it blends both output orientation (quality of accounting information) and process of producing the information (system-orientation).

In the first instance, user satisfaction has been expressed by the extent to which users are being satisfied with the output of AIS and whether the system can produce the output they want (Chang et al; 2003; Nicolaou, 2000; Choe, 1996). For example, Choe (1996) used user satisfaction and AIS usage as measures of AIS effectiveness. On the other hand, Nicolaou (2000) used user satisfaction and information quality as measures of AIS effectiveness. Nevertheless, to express user satisfaction in terms of the quality of accounting information assumes that every system user is a decision-maker who needs the information. This approach ignores the fact that users may be satisfied with the system being implemented due to other reasons besides the quality of accounting information.

For example, users may be satisfied with the system because it simplifies their work, or they have the requisite skills that allow them to operate it, or they do not fear that the system will cut their jobs (Melone, 1990; Seddon, 1997; Boockholdt, 1999). As Melone (1990) put it, using the expectancy theory, users are likely to be satisfied with the system if it has value that matches their expectations. As such, in this study we considered user satisfaction needs as a separate measure which captures user satisfaction towards the whole system (i.e. user-oriented.) This view is in line with the argument provided by Samuelson (1990) to the effect that the use-oriented approach helps to ensure that users are involved in designing, developing and implementing the AIS to suit their limits and responsibilities. Furthermore, this approach addresses inherent limitations of user acceptance based on system usage particularly when the system is mandatory, hence compelling users to use the system whether regardless of their preferences.

One measurement which has been utilized by studies from both the MIS and accounting is organizational performance (organizational-oriented measure). This measure attempts to show whether investment in AIS is worthwhile. Organizational performance measure assesses the impact of AIS implementation on resource consumptions; the increase in revenue or increase in the quality of service delivered (Boulianne, 2007; Nicolaou, 2004; Nicolaou & Bhattacharya; 2006). In this study organizational performance was expressed in relation to better fund management (both revenue and expenditure), improved decision-making process as well as meeting current and future organizational need for information. Hence, this study uses four variables—organizational performance, user satisfaction, systems quality and accounting information quality (see Figure 1)—to express AIS effectiveness.

Factors influencing AIS effectiveness

This study relies on the stakeholder perspective on factors influencing AIS effectiveness. Our view is that addressing the factors for system failure, there is a need

to focus on the actors involved in efforts aimed at improving the AIS in the public sector organizations. The stakeholder theory, upon which this perspective is based, recognizes various actors in the organization. According to the stakeholder theory, an organization is an entity with numerous and diverse participants who accomplish multiple and, sometimes, incongruent goals (Freeman & McVea, 2001; Friedman & Miles, 2002; Gomes, 2003; Jones, 1995; Marstein, 2003). The stakeholder theory considers three aspects as shaping the relationship between organizations and various actors: power, legitimacy and urgency (Mitchell, Agle & Wood, 1997). Power is concerned with the ability to bring about the desired outcome, whereas legitimacy is concerned with the perception of desirability and appropriateness of stakeholders' actors within social norms. Urgency, on the other hand, implies that pressing demand of the stakeholders requires immediate actions (Mitchell, Agle & Wood, 1997). These three aspects—power, legitimacy and urgency of stakeholders in the organizations—can be understood only when the stakeholders in the organizations are identified (Preble, 2005). In fact, Freeman et al. (2004) contend that managers need to understand the stakeholders' relationship to be in a position to reduce complex issues business operations face. Moreover, understanding key stakeholders requires, first, the identification of stakeholders, and then the nature of stakeholders in terms of claims and power, performance gaps, prioritization of stakeholder demand and development of organizational response (Preble, 2005).

Even though the literature available demonstrates that there is common agreement on what comprises stakeholders, the aspect of power, legitimacy and urgency create differences among various studies, particularly with regard to who are critical stakeholders. Jawahar and McLaughlin (2001) assert that by only looking at the life cycle of the organizations we can identify critical stakeholders at each stage. On the other hand, Preble (2005) is of the view that critical stakeholders can be identified by assessing their role in influencing survival and providing infrastructure to the organizations. In this regard, it is evident that lack of a clear approach to understanding stakeholders limits the ability in identifying critical stakeholders (Friedman & Miles, 2002). This limitation has created difficulties in identifying stakeholders-related factors in organizations particularly public sector organizations operating in a different environment distinct from one in which business organizations thrive. As Scholl (2001) argues, the stakeholder theory applies to the public sector organizations even though public sector managers perform their duties in public interest whereas business sector managers perform their duties for survival or for-profit because they are both affected or affect various actors who have interest in their organizations.

Several studies have applied the stakeholder theory to identify critical stakeholders in the public sector organizations (see Marstein, 2003; Murdoch, 2004; Gomes, 2003,

2004, 2006). For example, Marstein (2003) identified two groups of stakeholders in the public sector organizations—the internal and external stakeholders. This classification is based on their influence in the decision-making process. Internal stakeholders comprise top management, employees, customers and supervisors. External stakeholders, on the other hand, include sector governance, professional associations, proxy agents and critical suppliers. Murdoch (2004) applied the stakeholder theory to resolve the inconsistencies and dilemmas of public sector reforms because he believed the differences in the speed of adopting reforms and applying management techniques resulted from different stakeholders' perspectives.

In the case of the LAs, notable studies include those conducted by Gomes (2003, 2004, and 2006). Gomes (2006) examined the relationship between LAs and stakeholders in the decision-making process in the UK. Gomes (2006) classifies stakeholders who influence decision-making process in the LAs into three categories. The first category is based on the nature of their participation in the decision-making that include power and influence. The second category is based on the participation that involves sources of interest and power. The third category is based on the sources of influence that include the environment where the stakeholders' influence might arise from institutional and technical settings. Thus, according to Gomes (2006), the LAs have a variety of stakeholders that influence and are influenced by the decisions of the LAs. In an earlier doctoral thesis, Gomes (2003) considered important stakeholders in the LAs' decision-making process to include the central government, councilors, employees, health authorities, local businesses and citizens.

Based on the public sector reforms, studies on AIS reforms have attempted to identify stakeholders of the AIS reforms as well as their influence on the AIS reforms in public sector organizations. For example, Lüder (1992), focusing on the demand and supply of accounting information, identified two groups of stakeholders of AIS reforms, that is producers and users of accounting information. Whereas Lüder (1992) identified politicians in the group of producers of accounting information, Christensen (2001) classified politicians as users of accounting information with producers comprising only bureaucratic actors. These differences may be attributed to the fact that some actors may play different roles simultaneously or may play different roles in different periods (Monsen & Näsi, 1998). Due to the limitation of identifying stakeholders using the concept of the demand and supply of accounting information, we just approached the aspect of stakeholders without classifying them into categories. We used Gomes' (2003) identification as our reference point for LAs stakeholders. Thus our identification of stakeholders is based on those which have influenced AIS reforms and include LAs management, staff, politicians (i.e. councilors) and consultants. These stakeholders formed the basis for positing six stakeholder related factors in the research

model: management support, qualification of staff, education of councilors, availability of consultants, councilors' involvement and external auditors' specialization (see Figure 1). These factors are briefly discussed in the following sub-sections which also provide their related hypotheses.

Management support

Management support is crucial for AIS effectiveness since it provides a motion for AIS development and implementation. Lack of management support is a barrier to the achievement of better AIS. Management support includes creating a good environment where AIS can operate effectively and efficiently, allocating resources to acquire necessary facilities and hiring as well as providing incentives to retain the qualified employees (Choe, 1996). Choe (1996) asserts that setting objectives and priorities as well as providing funds for AIS operations are critical for AIS effectiveness. Taking into account, Lüder's (1992) typologies of producers and users of accounting information, management support is a manifestation of the producers of accounting information.

These producers of accounting information, according to Xu (2003), have mainly two responsibilities. First, they have to create and collect data for the AIS, and second they have to manage those who create or collect data for the AIS. Focusing on the producers of accounting information is concerned with the management of the organizations since the management of organizations requires information to make various economic decisions (Seddon, 1991). In this regard, the insights provided by Edwards and Bell (1961, p. 4 as cited by Seddon, 1991, p. 2-5) come in handy: "*[T]he bulk of accounting data is never made available to people outside of the business firm itself… it seems safe to conclude that accounting information must principally serve the functions of management"*. Thus we can argue that for AIS effectiveness, management support is important because management have to provide sufficient support by committing enough resources towards AIS effectiveness. Hence, the following hypothesis:
H_1: There is positive relationship between management support and AIS effectiveness in LAs.

Qualification of personnel

On the issue of qualified personnel, various literatures have come to a consensus that for AIS to perform well, organizations need to recruit competent employees, train them and provide them with incentives to remain with them for their continued meaningful contributions to the organizations. Thus, employees with the right qualification, education, skills and experience can design, implement and operate AIS efficiently (Christiaens & Van Peteghem, 2004; Xu, 2003). The model presented assumes that

qualified and skilled personnel can design, implement and operate AIS so that it can achieve its objectives, hence the following hypothesis:
H_2: There is positive relationship between qualifications of accounting personnel and AIS effectiveness in LAs.

Councilors
Apart from the management and LA staff, another group of stakeholder which is considered important in the LAs under this study in Tanzania is that of councilors. The councilors have been included in the model presented in Figure 1 because they represent citizens' interest in ensuring that the LAs do provide better services and social amenities. They also strive to ensure that the LAs are accountable in the utilization of public resources for the common good. It was considered that including average citizens in the list of stakeholders could not provide enough knowledge on the study since average citizens do have little interest in information provided by the AIS (Christensen, 2001; Yamamoto, 1999). Councilors, on the other hand, were considered to have keen interest in the AIS effectiveness because they want to evaluate the management on whether they are acting in accordance with the people's aspirations. The councilor's political survival depends on the number of votes they get during elections, which are linked to the extent to which they pressurize the management of LAs to perform well (Pollitt & Bouckaert, 2000). As Gomes (2003) explains, councilors are temporary decision-makers who are elected into that role to carry out the most important decisions within the council and, therefore, have power and legitimacy to participate in the decision-making of the LAs. Councilors' interest and active participation, in this regard, will lengthen the period they can hold on to that power and legitimacy in the decision-making process of the LAs (Gomes, 2003). Therefore, they need to strengthen their decision-making capabilities to ensure that they make decisions that serve the interests of the people and ensure that they monitor effectively the performance of the management. Thus, councilors need to ensure that the AIS performs well so that that they can supply accurate and reliable information on the choices and decisions made by the management.

For the councilors, to influence the effectiveness of the AIS, there are some related factors that need to prevail. Christensen (2001) identified issues such as level of education and open participation in the LAs' deliberations to be factors that can influence AIS. The model applied in this study considers adequate level of education as important in enabling councilors to design appropriate policies for AIS. Indeed, designing appropriate policies for AIS requires a good level of education and good experience on financial issues (Christensen, 2001; Lüder, 1992; 1993). As such, an adequate level of education is expected to make councilors understand the technical language of accounting as well as make meaningful contributions geared towards the

improvement of the AIS used. Hence, in case of education of councilors the following hypothesis was tested:

H_3: There is positive relationship between the level of education possessed by councilors and AIS effectiveness in LAs.

Apart from the level of education of the councilors, another issue which is expected to make councilors influence AIS effectiveness is their involvement. According to Gomes (2006), the involvement of councilors in the decision-making process in LAs is based on power and influence, sources of interest and sources of influence. Gomes (2006) found councilors to be one group of stakeholders with interest, influence and power to influence LAs operations. Certainly, their influence on LAs' operations is likely to induce AIS effectiveness. Indeed, those using accounting information regularly are likely to be familiar with how AIS works. This argument is consistent with the findings of previous studies (Askim, 2007; 2008; Askim & Baldersheim, 2012). Askim (2008), for example, found that the involvement of councilors influences the use information in LAs. An earlier study by Askim (2007), which investigated the significance of performance information for councilors and how the variation (i.e. some councilors making more use of performance information than others) can be explained, found that councilors who are more involved in elderly care, administrative affairs and education affairs use more performance information than others. On the other hand, Askim and Baldersheim (2012) contend that information is very crucial in ensuring that councilors have effective leadership in LAs. These studies have not dealt directly with the influence of councilor's involvement on AIS effectiveness; however, this study argues that the demand for information will positively influence AIS effectiveness. Therefore, considering the importance of councilors' involvement in the effective operations of LAs, the following hypothesis was tested:

H_4: There is a positive relationship between councilors' involvement in LAs' financial matters and AIS effectiveness in LAs.

Consultants

Consultants constitute another group of stakeholders. These provide advice on the AIS functioning after a thorough review when they are required to do so. In this study, after reviewing what the term "stakeholders" means, we grouped consultants under the category of stakeholders of the AIS because they influence or are influenced by the effectiveness of the AIS. Irvine (2007), for example, explains that consultants are required to provide the needed expertise that management lacks either as agents of change or of legitimizing unpopular policies of management. If the AIS perform well, then consultants will not be required to fix any problem. On the other hand, if the AIS

perform dismally, then they would be called upon to solve the problem. The effectiveness of the AIS that the consultant has helped to fix, establish or install will boost the client's future trust and interaction between consultants and public sector organizations. Christensen (2001) underlines the importance of consultants in the AIS of public sector organizations by showing that consultants played a greater role in influencing AIS reforms to accrual accounting system. Thus, the effectiveness of AIS also depends on the availability of consultants as stakeholders.

Recognizing that consultants are stakeholders helps in understanding issues emanating from these stakeholders, which can influence the AIS effectiveness. The argument provided in this paper is that AIS effectiveness will be improved if consultants who can provide assistance on AIS operations are available. Corcoran and McLean (1998) have recognized the difficult inherent in service provision by consultant when they argued that the selection of management consultancy is a complex and difficult task as it requires the evaluation of the consultant's ability to deliver the required services. Despite the availability of a wide range of literature on the influence of consultancy on the public sector accounting, most of the studies have focused on the transformation of the accounting system used. These studies have not discussed the influence of consultants on the effectiveness of AIS.

The availability of consultancy services provides support for AIS effectiveness in several ways. First, it is in terms of professional expertise and advice; second, in introducing more advanced technology concerned with AIS such as new software and accounting techniques; and third, in providing training to producers as well as users of accounting information. Studies, which support the assumptions that AIS effectiveness is influenced by the availability of consultants, include Christiaens and Peteghem (2004), Christensen (2001), Saint-Martin (1998) and Samuelson (1990). In this regard, this study proposes that the availability of consultants is a positive explanatory factor for AIS effectiveness in the LAs. As such the following hypothesis was proposed:

H_5: There is a positive relationship between the availability of consultants and AIS effectiveness in LAs.

External auditors

The last group, which is considered crucial stakeholder of AIS in LAs, is made up of external auditors. Since auditors are concerned with reviewing the AIS, financial reports (which are outputs of AIS) and provide recommendations to be implemented by management, their expertise can contribute significantly to AIS effectiveness. The expertise will be obtained through experience and knowledge on LAs' financial matters and other administrative and political issues. According to Lowensohn et al. (2007)

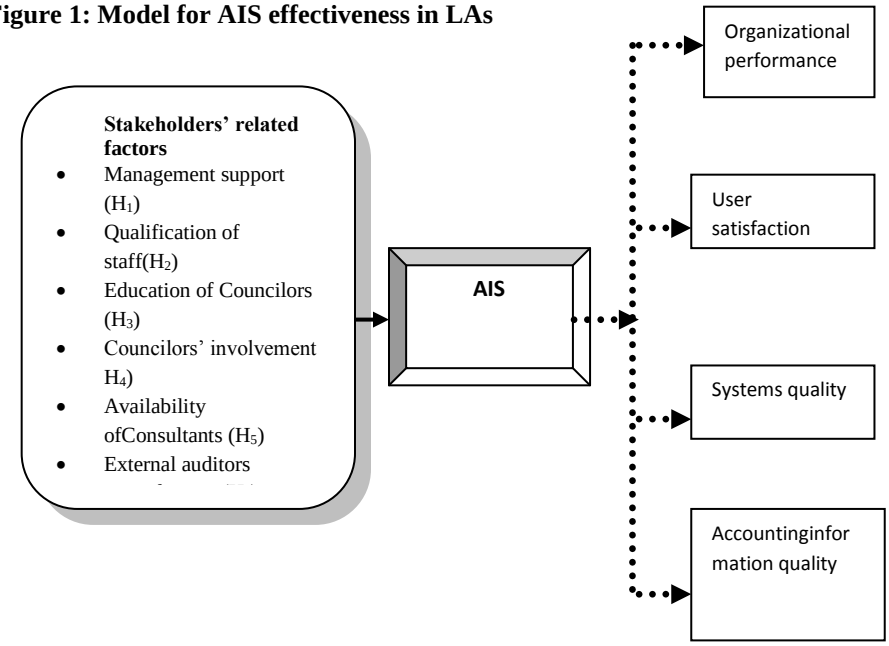
auditors' specialization—or auditors' expertise—is gained from training and practical experience (continuous auditing of a particular industry) either through a market share approach or through portfolio share approach. The market share approach considers auditors with the largest market share to have a substantive knowledge base of that particular industry. This knowledge base is an indication of the amount of the audit firm's investment in a bid to increase returns on investments through large market share (Habib, 2011). On the other hand, the portfolio share approach considers auditors to be specialists in industries from which they can generate the most revenues.

In the Tanzania case, particularly with LAs, the choice and selection of auditors is mainly governed by the laws and regulations, hence leaving little room for employing the market share approach and the portfolio approach. This raises questions on whether auditors' specialization come into play and whether the specializations in question have significant implications on the audit quality because crucial issues which entail economies of scale and high competition as emphasized by Lowensohn et al. (2007) may be precluded under this setup. These questions are crucial because auditors' specialization is not only for economic reasons but also for assessing the magnitude of risks of misstatement. For example, the International Auditing Standard (ISA 315) requires the auditors to possess a thorough understanding of the industry the auditing firm is operating in order to be able to identify and assess the risks of material misstatement. Whereas previous studies have found a positive relationship between auditors' specialization and audit quality (Habib & Bhuiyan, 2011; Lowensohn, et al., 2007; Romanus, Maher & Fleming, 2008), most of these studies have focused on information quality (i.e. the quality of financial reporting). As such, there are limited studies which have examined the relationship between the auditors' specialization and AIS effectiveness, particularly in the countries where the choice of auditors is not that flexible. In this regard, this study proposes that external auditors' specialization is a positive explanatory factor in ensuring AIS effectiveness in the LAs. Given this assumption, the following hypothesis was postulated:

H_6: There is a positive relationship between external auditors' specialization on LA financial matters and AIS effectiveness in LAs.

Figure 1 presents the Model of AIS Effectiveness in LAs shows the variables in the hypotheses and AIS effectiveness measurements:

Figure 1: Model for AIS effectiveness in LAs



RESEARCH DESIGN

Quantitative research can be carried out by using a wide variety of strategies such as surveys and experiments (Creswell, 2003). In this study, the quantitative strategy used a survey research design. The survey research design has been applied widely in both AIS and its parent disciplines of accounting and IS (Pinsonneault & Kraemer, 1993; Chen & Hirschheim, 2004; Hutchison, White & Daigle, 2004). The main advantages of adopting survey research in AIS studies include reaching geographically dispersed sample simultaneously at a relatively low cost as well as the use of standardized questions to facilitate the comparisons of answers.

Survey research can be carried for different purposes such as exploratory, descriptive or explanation. This study was explanatory and, specifically, employed a cross-sectional survey because it was aimed at testing the causal relationship. From the model presented in Figure 1, it is assumed that AIS effectiveness is influenced by factors emanating from stakeholders-related factors. Thus, the aim of this explanatory survey research was to establish the relationship between independent variables

(stakeholders-related factors) and the dependent variables that characterize AIS effectiveness in the LAs.

The data for this study were collected using a survey questionnaire. The questionnaire deployed was divided into sub-sections to cover demographic details of the respondents, characteristics of the LAs, measurements of AIS effectiveness and stakeholders-related factors. On the measurements of AIS effectiveness and stakeholders' related factors, the respondents were required to provide their views based on a Likert scale. The questionnaires were administered to a sample drawn from LAs as part of the LA population. The sample was selected to ensure it represented the population's characteristics.

The sampling frame comprised the list of all LAs maintained by the parent ministry responsible for LAs—the Prime Minister's Office, Regional Administration and Local Government (PMO-RALG). A non-probability (purposive) sampling method was adopted in this study. Purposive sampling selection was considered appropriate because it allowed the researcher to select a sample that fulfilled the purpose of the study (Teddlie & Yu, 2007). As such, to generate the sample for LAs for this study, the country was divided into five zones as used by the National Audit Office (NAO) which is also responsible for auditing and reviewing the AIS of the LAs. From each zone, one region was selected and from each region three LAs were selected. In coastal zone, however, two regions were selected from which seven LAs were selected. The exceptional was to the Coastal zone primarily because Dar es Salaam's three LAs are all urban-based, hence making it imperative to add another region in coastal zone with a more rural-based outlook. In this regard, Mtwara region was added, raising the number to six regions. Mtwara region was also added because, according to the Controller and Auditor General (CAG) reports, it has recorded significant improvements in the quality of financial reporting i.e. from having a number of adverse audit reports in the LAs to qualified and unqualified reports. Consequently, the study selected 19 LAs comprising 11 rural-based and eight urban-based LAs (see Table 1). In this study, target respondents were LAs' councilors, top management and personnel in the accounting and IT departments.

Table 1: Sample of LAs Drawn from Tanzania's Five Zones

Zones	Region selected	LA selected	Type
Coastal	Dar es Salaam	1. Ilala Municipal	Urban
		2. Kinondoni Municipal	Urban
	Mtwara	3. Temeke Municipal	Urban
		4. Masasi District	Rural
		5. Mtwara District	Rural
		6. Mtwara Mikindani	Urban
		7. Tandahimba	Rural
Mbeya	Mbeya	8. Mbeya City	Urban
		9. Mbeya District	Rural
		10. Rungwe District	Rural
Mwanza	Mwanza	11. Magu District	Rural
		12. Misungwi District	Rural
		13. Mwanza City	Urban
Dodoma	Dodoma	14. Dodoma District	Rural
		15. Dodoma Municipal	Urban
		16. Mpwapwa District	Rural
Arusha	Arusha	17. Arumeru District	Rural
		18. Arusha City	Urban
		19. Monduli District	Rural

In terms of data analysis, Gardner (1975) argues that the researcher needs to select statistical techniques which are appropriate in dealing with the type of data being collected. In this study, since the interest was in testing hypotheses, the scale strength and appropriate statistics were used as the basis for selecting appropriate statistical techniques as proposed by Gardner (1975). The data analysis in this study was grouped into two categories: descriptive and inferential analysis. Descriptive analysis involved the demographic details of the respondents and AIS implemented as well as the factors and measurements of AIS effectiveness. Inferential analysis, on the other hand, used to test the hypotheses was Canonical Correlation Analysis (CCA). The CCA was chosen because testing variation among factors within each perspective involved multiple dependent and independent variables which CCA can handle (Gil-Garcia, Chengalar-Smith & Duchessi, 2007; Hair, et al., 2010; Mai & Ness, 1999). Levine (1977) has underscored the assumptions of CCA which include the capacity to allow for testing of a wide variety of possible interrelationships and providing information on the nature of the patterns of interdependence by joining the two sets of independent and dependent variables.

EMPIRICAL RESULTS

Descriptive analysis

In the case of descriptive analysis, demographic details of the respondents and of the AIS in use are presented in Table 2. These results are grouped into the education level of the respondents, position held by the respondents at the time of the study, roles of the respondents as far as the AIS is concerned, nature of the AIS used, areas where computerized AIS is used, reasons for computerizing AIS and type of AIS training attended. According to the results presented in Table 2, the level of education for the majority of the respondents was a bachelor degree (accounting for 59%), which was followed distantly by those possessing Masters degree (accounting for 14%). Those possessing professional qualifications had the lowest representation (only 3.4%). For positions held in the LAs, the majority of the respondents were accountants (50%), followed by others (15.6%) and internal auditors (12.3%). LAs chairmen/mayors constituted the smallest group in the sample as they accounted for a mere 3.4 percent of the total. In terms of AIS-related roles, the majority of the respondents were involved in using the accounting information in performing different tasks (32%) followed by those who collected the data and created information (29.1%) for different purposes. Managers of those involved with designing, developing and operating the AIS amounted to 9.5 percent of the sample.

These results also indicate that some areas have attracted greater attention in the computerization of AIS than others have. Areas with greater attention include the preparation of financial reports (84%), recording of payments (81.2%), revenue recording (74.6%), and preparation of budgets (71.7%). Areas with less attention include the preparation of cheques and invoices (43.5%) and others (10.9%). Accounting for reasons for the computerization of the AIS, the majority of the respondents attributed the development to the central government's pressure (as indicated by 36% of the respondents). This reason was followed by the need to enhance the quality of accounting information (cited by 21.2% of the respondents). Technology change was another major reason (with 18% of the responses). Pressure from donors attracted the least responses (3%). On the issue of attending training for the computerized AIS operations (i.e. EPICOR and PlanREP), the majority of the respondents had yet to attend such training (60.3%). Those who had attended EPICOR training amounted to 23.5 percent and those who had attended PlanREP training represent 16.2 percent of the respondents.

Table 2: Demographic statistics

	n= 179	%
Education level		
Secondary Education	15	8.4
Ordinary Diploma	20	11.2
Advance Diploma/Bachelor	106	59.2
Masters	25	14.0
Professional Qualification	6	3.4
Others	7	3.9
Position held		
Accountant	89	49.7
IT Manager	6	3.4
Treasurer	8	4.5
Internal Auditor	22	12.3
Executive Director	8	4.5
Councilor	12	6.7
Chairman/Mayor	6	3.4
Others	28	15.6
Roles concerned with AIS		
Create or collect information	52	29.1
Manage those who create and collect information	24	13.4
Design, develop and operate AIS	42	23.5
Manage those who design develop and operate AIS	17	9.5
Use accounting information in tasks	57	31.8
Audit or review information in the AIS	40	22.3
Manage data and information quality in the AIS	27	15.1
Nature of AIS used		
Manual Based AIS	30	16.8
Computerized AIS	69	38.5
Combination (Manual and Computerized)	66	37.5
Do not know	14	7.8
Areas which computerized AIS is applied		
Preparation of budgets	99	71.7
Recording revenue	103	74.6
Recording payments	112	81.2
Printing cheques and invoices	60	43.5
Preparation of financial reports	116	84.1
Other areas	15	10.9
Reasons for computerizing AIS		
Central government pressure	64	35.8
Better revenue management	6	3.4
Better expenditure management	4	2.2
Pressure from donors	5	2.8
Technology change	32	17.9
Improve quality of accounting information	38	21.2
Type of computerized AIS training attended		
Training on EPICOR	42	23.5
Training on PlanREP	29	16.2
No training attended	108	60.3

On the other hand, descriptive statistics are presented in Table 3. According to Table 3, the factor with the highest mean score is management supports (3.95) whereas the factor with the lowest mean score is qualification of personnel (3.14). With regard to measurements of AIS effectiveness, the measurement with the highest mean score is accounting information quality (4.618) whereas the measurement with the lowest mean score is organizational performance (4.129).

Table 3: Descriptive statistics

	Min.	Max.	Mean	SD
Factors				
Management support	1.500	5.000	3.950	0.848
Qualification of personnel	1.000	5.500	3.143	0.825
Education of councilors	1.000	5.000	3.506	1.063
Availability of consultants	1.000	5.000	3.389	0.883
External Auditors specialization	1.670	5.000	3.830	0.758
Councilors involvement	1.000	5.000	3.341	0.965
Measurement of AIS effectiveness				
Accounting information quality	1.000	7.000	4.618	0.987
Systems quality	1.000	7.000	4.413	0.977
User satisfaction	1.000	7.000	4.228	1.188
Organizational performance	1.000	7.000	4.129	1.068

Inferential analysis

To analyses stakeholders-related factors using CCA, Multivariate tests of significance were performed to determine whether there is a significant relationship between dependent and independent variables before performing CCA (see Table 4). The results, as presented in Table 4, demonstrate that Pillais (0.383), Hotellings (0.456), Wilks (0.659) and Roy's largest root (0.204) were found to be significant at a 1% significance level. The results indicate the presence of a significant relationship between the dependent and independent variables. In this category, six independent variables were tested for their relationships against four dimensions of AIS effectiveness as presented in tables 4 and 5. From these variables (independent and dependent) four canonical variates were generated. Using F-statistics, Wilks Lambda and Chi-square, the results, as indicated in Table 4, reveal that only two canonical variates (first and second) exceed the critical value at the 5% significance level.

According to Table 4, the first canonical variate has canonical correlation (Rc) of 0.451 which is significant at the 1% significance level ($p<0.01$), whereas the Rc for the second variate is 0.359 which is significant at the 5% significance level ($p<0.05$). The first and second canonical variates make a greater contribution to the total variation of dependent variables, with 56% and 32%, respectively. Even though these two canonical variates are statistically significant, the results show that the second variate is much weaker than the first one. However, since both variates are statistically significant, then the interpretation of these two canonical variates was not done based on the strength of Rc alone. More criteria for interpretation were required because using the significance of Rc alone is considered too restrictive (Mahmood & Mann, 1993). Therefore, redundancy analysis was performed as presented.

Table 4: Multivariate tests of significance

Canonical Variates	Canonical Correlation (R^c)	F-Values	P-Values	Wilks Lambda	Chi-Square	Eigen Values	Contribution (Per cent)
1	0.451	2.889	0.000	0.689	66.585	0.256	56.052
2	0.359	2.057	0.011	0.827	30.259	0.148	32.395
3	0.197	1.037	0.408	0.949	8.269	0.041	8.885
4	0.110	0.645	0.587	0.088	1.931	0.012	2.669

With regard to redundancy analysis, the results of redundancy for the first canonical variate presented in Table 5 indicate that approximately 12% of the variation in the dimension of AIS effectiveness is associated with the variation in the stakeholder-related factors, whereas 5.1% of the variance in the stakeholder-related factors is explained by the variation in the dimensions of AIS effectiveness. For the second canonical variate, redundancy index results indicate that approximately 2% of the variation in the dimensions of AIS effectiveness is associated with the variation in the stakeholders' factors. On the other hand, the dimension of AIS effectiveness explains only 1.6% of variance in stakeholder-related factors. Since the first canonical variate has greater redundancy index than the second canonical variate (12% against 2 %), then it was interpreted for this study.

The results from the examination of the canonical loadings for the first canonical variate show that the independent variables with canonical loadings of equal or exceeding a benchmark of 0.30 to be five out of six. Stakeholder-related factors with canonical loadings of 0.30 or greater are management support (0.933), involvement of councilors (0.465), qualification of staff (0.430), education of councilors (0.332) and external auditor specialization (0.317). In the case of dependent variables, all of the four variables have canonical loadings exceeding a benchmark of 0.30. The rank order of the absolute values of the canonical loadings for the dimensions of AIS effectiveness

contributing to the first canonical variate are accounting information quality (0.967), systems quality (0.768), user satisfaction (0.742) and organizational performance (0.505). Out of the five factors, management support (p=0.000) and external auditors specialization (p=0.01) were found to be significant at 1% significance level. On the other hand, councilors' involvement (p=0.02) was found to be significant at 5%. The remaining two factors—qualification of accounting staff (p=0.071) and education of councilors (p=0.071)—were found to be significant at 10% level of significance.

From these findings, it can be established that management support, councilors' involvement, qualification of staff, education of councilors as well as external auditors' specialization are significantly and positively correlated with all dimensions of AIS effectiveness. However, these stakeholders' related factors (management support (H_1), qualification of staff (H_2), councilor involvement (H_4), education of councilors (H_3) and external auditors' specialization (H_6)) are more significantly related to the quality of accounting information and system quality dimensions than the remaining dimensions. In other words, all the five hypotheses were supported in this aspect. On the other hand, the availability of consultants was insignificantly correlated with dimension of AIS effectiveness (because its canonical loadings of 0.133 is less than the benchmark of 0.30 at significance level of 0.212 ($p>0.05$). This means that H_5 was not supported in this aspect.

However, when cross-loadings are applied for the stakeholder-related factors, only management support was found to be significantly correlated with three dimensions of AIS effectiveness (in the rank order of accounting information quality, systems quality and user satisfaction). These findings indicate that some stakeholder-related factors have stronger influence on AIS effectiveness than others do. In particular, management support exhibits stronger influence than the remaining five factors, while availability of consultants does not exhibit significant influence on AIS effectiveness (when both loadings and cross-loadings are used).

Table 5: Canonical correlation results

Variables	1st Canonical Variate Loadings	1st Canonical Variate Cross-loadings	2nd Variate Loadings	2nd Variate Cross-loading	Sig. of F
Independent (Predictor Set					
1. Management Support***	0.933	0.421	0.241	0.086	0.000
2. Qualification of personnel*	0.430	0.194	0.294	0.105	0.071
3. Education of Councilors*	0.332	0.150	0.372	0.133	0.076
4. Availability of Consultants	0.133	0.060	0.383	0.138	0.212
5. External Auditor Specialization***	0.317	0.143	0.538	0.193	0.010
6. Councilors' Involvement**	0.465	0.210	-0.092	0.033	0.022
Redundancy Index	***0.051***		***0.016***		
Dependent (Criterion Set)					
1. Accounting Information Quality	0.967	0.437	0.042	0.015	
2. Systems Quality	0.768	0.347	0.521	0.187	
3. User Satisfaction	0.742	0.335	0.104	0.037	
4. Organizational Performance	0.505	0.228	0.621	0.223	
Redundancy Index	***0.119***		***0.022***		

Note * p < .1, ** p < .05, *** p < .01

DISCUSSION

This study investigated six stakeholder-related variables: management support, qualification of staff, education of councilors, availability of consultants, councilors' involvement, education level of councilors and external auditors' specialization. All these factors were tested using CCA to determine their influence on AIS effectiveness. The results indicate that five factors—management support, external auditors' specialization, councilors' involvement, qualification of accounting staff and education of councilors—were statistically significant, implying that they positively influence AIS effectiveness. In addition, CCA results show that these factors have more influence on accounting information quality and systems quality dimensions than other effectiveness dimensions. Whereas there is universal agreement that the goal of AIS is to provide useful accounting information (Seddon, 1991), what remains unclear from this study (and deserving elaboration) is the strong relationship between councilors and systems quality. For example, it is understood from previous studies that management support is crucial in ensuring systems quality (Choe, 1996; Kriebel & Raviv, 1980; Seddon, 1991; Vaassen, 2002; Xu, 2003) but the literature on councilors' influence on systems quality remains rather limited. However, one plausible explanation for the situation could be the structure of the LAs whereby councilors play a crucial role in the operation of the LAs. In this setting, for councilors to make decision, they require

relevant accounting information from AIS, and hence will pressure the LA management (appointed officials) to implement well-functioning AIS.

The first factor is management support. This factor has been recognized to be an important one for AIS effectiveness in a number of studies. For example, there are those studies which found that management support is crucial to ensure funds, policies, goals and systems planning are in place (Choe, 1996; Sabherwal et al., 2006). Furthermore, there are those studies which consider management support as capable of increasing commitment to AIS implementation (Newman & Sabherwal, 1996; Xu, 2003; Xu, et al., 2003); increasing organizational participation in the AIS development and implementation (Choe, 1998; Kim, 1988); as well as reducing user resistance (Lee & Kim, 2007). The results from CCA analysis are also consistent with previous works as they reveal that management support is crucial in ensuring AIS effectiveness because they indicate that LA managers have to recognize the importance of AIS, devote adequate time and resources. The findings here, therefore, suggest that enhancing AIS effectiveness needs to emphasize how to establish positive attitudes of managers of LAs towards the AIS.

The second factor found to be statistically significant under stakeholder-related variables is the councilors' involvement. The results are consistent with previous works of Gomes (2003, 2006) who found that the councilors' involvement in the decision-making process is crucial because, as elected office-bearers, they carry the mandate of the electorate they represent. This aspect of representing people, gives the councilors power and influence on LAs operations. As such their involvement is more likely to influence AIS effectiveness because AIS is part of the LAs operation issues.

The third factor which was found to be statistically significant under the stakeholder-related factors is the availability of qualified accounting personnel. Previous works on AIS effectiveness (Choe, 1996; Ittner & Lacker, 1995; Samuelson, 1990; Xu, 2003) and those on AIS reforms (Christiaens & Van Peteghem, 2004; El-Batanoni & Jones, 1996; Godfrey et al., 1996; Lüder, 1992; Yamamoto, 1999), found that qualified accounting personnel, as users of AIS, possess skills that allow them to identify systems requirements. Hence this knowledge is determinant for AIS effectiveness. In this regard, the findings reveal that the availability of qualified accounting personnel is positively associated with AIS effectiveness. As such, LAs have to make efforts aimed at recruiting and retaining qualified accounting personnel (Christiaens & Van Peteghem, 2004; Ridder et al., 2005; Xu, 2003). In addition, these findings are in line with the suggestions provided in the CAG reports of 2006/2007 (p. 99) that there is an urgent need to recruit qualified accounting personnel.

As suggested by stakeholder theorists, the possession of the right qualifications, education background and experience give employees power and urgency of meeting their demands such as motivation and rewards (Xu, 2003). As such, the availability of qualified accounting personnel has a positive bearing on AIS effectiveness. In this study, comparing the respondents' profile in terms of education and experience revealed that most of the accountants have, at least, a Bachelor Degree which indicates the availability of qualified accounting personnel (see Table 2). Using canonical loadings, this factor has loadings of above 0.3 but it is only significant at 10% level. Yet, close examination of the profile of the respondents indicates that the majority of the employees lacked expertise in specific areas such as the use of EPICOR and Plan REP. Several studies (Christiaens & Van Peteghem, 2004; El-Batanoni & Jones, 1996; Godfrey, et al., 1996; Lüder, 1992; Yamamoto, 1999; Xu, 2003) found that there was limited number of qualified personnel. The findings in this study, on the other hand, show that the major problem was not lack of qualified personnel but the employees' limited exposure to relevant training on the computerization process of AIS.

The fourth factor which was found to be statistically significant under stakeholder-related variable is the availability of educated Councilors. Previous works on the education of Councilors (Christensen, 2001; Lüder, 1992, 1994) and their experience in dealing with financial issues (Christensen, 2001, Lüder, 1992, 1993) found that the education and experience of councilors are crucial in AIS effectiveness primarily because they can help enhance financial disclosure and financial management practices. In this study, comparing councilors' involvement and availability of educated councilors on financial matters, it was established that the latter influenced the former as the more educated and experienced the councilors were on financial matters the more likely they were to get involved in addressing such matters in the LA deliberations (Christensen, 2001; Gomes, 2003; Pollitt & Bouckaert, 2000; Yamamoto, 1999). These findings support the suggestions of external auditors, as provided by CAG Report of 2006/2007, to the effect that the education level requirement for councilors in Tanzania need to be raised to ensure that their contributions are much more meaningful. Indeed, the CCA results imply that the availability of educated councilors in the LAs is likely to improve AIS effectiveness.

The fifth factor, which was found to be statistically significant, is external auditors' specialization. As other factors in this category, this factor was also found to have more influence on accounting information quality and systems quality than user-satisfaction and organizational effectiveness. Two reasons may explain this situation. The first is the quality of accounting information. External auditors are responsible for assessing and verifying the adequacy and reliability of the accounting information. The second involves the assessment of the quality of information auditors have to verify to ensure

the effectiveness of the AIS. This implies that the external auditors have to check the quality of the system itself. To perform their duties effectively, external auditors have to possess adequate knowledge on the organizations they are auditing. Previous studies (Habib & Bhuiyan, 2011; Lowensohn et al., 2007; Romanus, Maher & Fleming, 2008) found that the auditors' specialization is associated with AIS effectiveness. These studies emphasized the importance of auditors' specialization in a particular industry or area as this allowed them to acquire adequate experience and knowledge to discover more errors and provide substantive explanations in their audit findings aimed at eventually improving the AIS operations. Hence, CCA results are consistent with previous studies by suggesting that the specialization of external auditor is positively related to AIS effectiveness.

On the other hand, the availability of consultants was found to be statistically insignificant, implying that the availability of consultants is not associated with AIS effectiveness. These findings are not consistent with previous studies on AIS reforms (Christiaens & Van Peteghem, 2004; Christensen, 2001), heavy reliance on consultants by public sector organizations (Saint-Martin, 1998), and the role of consultants in AIS operation (Samuelson, 1990; Thong et al., 1994). Two plausible explanations can explain this difference. First, according to the LAs settings and implementation of computerized AIS, the consultants involved with AIS in the LAs were procured by the central government, which in addition recruited the financial experts to oversee the computerization of the AIS in the LAs. These financial experts were deployed as an alternative to the use of consultants. Second, some LAs have IT departments or have accountants with knowledge about computerized AIS. These LAs staffs are used to solve some of computerization problems which, otherwise, would have required the use of consultants.

CONCLUSION

This study identified and examined six stakeholder-related factors influencing AIS effectiveness in Tanzania's LAs. The factors identified were management support, availability of qualified personnel, availability of educated councilors, availability of consultants, external auditors' specialization and councilors' involvement. It was hypothesized that these stakeholder-related factors have a positive influence on AIS effectiveness. Using the CCA approach, it was established that out of the six factors under review, three—management support, external auditors' specialization and councilors' involvement—were found to be the most critical factors in promoting AIS effectiveness. The other two factors—qualification of LAs staff and availability of educated councilors—were not found to be as critical as the first three factors despite being significant to some extent. In this study, only one factor— the availability of consultants—was found not to be positively associated with AIS effectiveness. This

has more to do with the LAs' modus operandi in Tanzania that allowed them to operate with alternatives without recourse to the services of external consultants.

Based on the results, we can draw a number of conclusions from this study. First, to have effective AIS, the management has to provide adequate support in terms of resources from the design to the implementation stage as well as ongoing use of the AIS. This can only be achieved if the management recognizes the importance of AIS in organizational operations. Second, to have effective AIS requires the utilization of external auditors with good expertise on the financial matters relating to LAs and the public sector in general. Such experienced auditors can help provide well-informed recommendations which can improve AIS operations. Third, AIS effectiveness requires the active involvement of councilors on LAs' financial matters relating. Their active involvement is important because councilors have the power to approve and influence LAs' operations. As such, for the smooth implementation of the AIS, their involvement is crucial. However, these councilors ought to possess ample education and training on fiscal or financial issues to make their contributions to AIS effectiveness much more meaningful. This entails putting some mechanisms in place that would increasing the level of understanding of financial matters among these stakeholders which may include setting a minimum education requirement and providing short training for elected councilors. Fourth, the LAs need to have qualified accounting staff with skills and knowledge to design, develop and implement appropriate AIS. In this regard, the LAs need not only attract well-qualified staff but also expose them to specific areas of expertise such as computerized AIS, systems analysis and systems development. Consequently, exposing the staff to specific areas of expertise they lack may reduce dependence on external consultants which, in this study, were found not to influence effectiveness of AIS in the country's LAs.

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