How Technology is Changing Accounting Processes: Institutional Theory and Legitimacy Theory Perspective

Afua A. B. Agyekum
Morgan State University

Robert P. Singh
Morgan State University

Given the ubiquitous use of accounting systems in organizations and the rapid advancement of information technology, this conceptual paper discusses how the adoption of information technology which improves accounting functions impacts organizations. Based on the literature, we argue that accounting systems are institutionalized within organizations and provide external legitimacy. Following literature review of the key constructs, we develop four propositions related to how the adoption of new information technologies in accounting impacts institutional processes and legitimacy, and organizational performance. We close with discussion of the theoretical and practical implications, and limitations and future research directions.

INTRODUCTION

Virtually every organization ranging from large to small, manufacturing to services, profit-seeking to non-profit have accounting units and systems (Miller and Power, 2013). Accounting systems form an integral part of organizational structures (Jensen, 1983). Capriotti (2014) argues that the aim of accounting is to provide information to both external and internal users to allow for informed decisions. The American Institute of Certified Public Accountants (AICPA, 1953) defines accounting as the process of recording, classifying and summarizing transactions and events that are of a financial character, either in whole or in part in a significant manner and in terms of money, and interpreting the results thereof. Chapman, Cooper, and Miller (2009) consider accounting as the historically and spatially changing calculative practices, ranging from budgeting to fair value accounting, that allows accountants and others to describe and act on entities, processes, and persons. According to Morgan (1988), the mythological view of accounting considers accounting systems as providing a societal resource used in sustaining myths of rationality and as a means of justifying, rationalizing, and legitimizing decisions that ultimately serve other individuals and social ends.

Tolbert and Zucker (1983) define institutionalization as the process through which components of formal structure become widely accepted, as both appropriate and necessary, and serves to legitimize organizations. Carruthers (1995) explains that organizations integrate rational procedures, processes, and rules into their formal structure; this includes the choice of accounting systems. According to Carpenter and Feroz (2001) the establishment of these structures is in response to pressures exerted by the firms'

environments. To this end, Carpenter and Feroz (2001) argue that institutional theory helps to explain an organization's choice of accounting procedures and systems in their operations. Scott (1998) suggests that accounting systems are one of the most important conventions connecting institutionally defined belief systems with technical activities. This suggests that the inclusion of accounting systems in the formal structure of an entity can be considered a part of the institutionalization process of organizations and provides legitimacy to organizations.

From a legitimacy theory perspective, Suchman (1995) considers legitimacy as a general assumption that considers the actions of an entity as desirable or appropriate within the boundaries of socially acceptable norms, values, beliefs, and definitions. Researchers such as Meyer and Rowan (1977) and DiMaggio and Powell (1983) have argued that several facets of formal structure, policies, and procedures that organizations put in place signify a conformity with institutionalized rules. One of the structures and systems that are considered as a symbol of legitimacy for organizations is the accounting function. Mellemvik, Monsen, and Olson (1988) argue that the main role of accounting in a strong organization is to provide support for the legitimization process of the organization. Becker and Neuheuser (1975) argue that the use of accounting in the organization provides some form of organizational visibility to it. Thus, though organizations may adopt accounting systems for functional reasons, from the legitimacy theory perspective, adoption of accounting system provides legitimacy to the organization.

In an era of technology advancement and rapid growth, the field of accounting is not isolated from the ubiquitous use of technology. Wallman (1997) asserts that information technology is changing more rapidly than anything else. As such, he argues that for accounting to achieve its goal of providing useful information for effective decision making, there is the need for accounting to change with developments in technology. Fisher (1997) asserts that information technology has advanced the role of the accountant in the organization from what he describes as a "spectator to an active player in the management process." Vasarhelyi and Alles (2008) suggest that in the era of the "now economy" that requires information in real time, there is the need for real-time accounting in the organization. Belfo, Trigo, and Estébanez (2015) argue that real-time reporting will aid in providing timely, relevant and reliable information that can enable management to make informed decisions at any time. According to them, this can be achieved with the aid of computer systems. However, Jordan (1999) claims that technology has rendered some accounting practices no longer relevant. He cites the ledger account as one example of accounting practices that has been rendered unimportant in the face of technology. This is because computers are now used as the primary tool to record the information that the ledger account was used to record.

Firms choose generally-accepted accounting systems and processes based on industry and market acceptance of "best practices," which serve to make these firms more legitimate. However, because of improvements in information technologies in recent years, the field of accounting has also changed. What accounting practices in organizations should change because of technology? How and why do certain technologies get institutionalized within the field of accounting? How do organizations that change their accounting practices and systems achieve legitimacy in their industries and within society? What happens to organizations that do not respond to such changes and does it impact perceptions of legitimacy in society? This paper explores these questions from institutional and legitimacy theory perspectives. More specificially, the paper examines how new information technology gets institutionalized in the accounting process and provides legitimacy to the organization.

Based on the literature review in the next section, the subsequent section introduces four propositions aimed at addressing the questions raised in the paper. The significance of the paper to practice and theory is presented in the discussion section. This is done by focusing on what the paper contributes to existing knowledge on institutional theory and accounting, legitimacy and accounting, and technology and accounting. In addition, the discussion section provides limitations of the paper and directions for future research, before final conclusions are offered.

LITERATURE REVIEW

Before developing the formal propositions in this paper, a review of the literature that provides the intellectual basis for the propositions is offered. More specifically, in this section, we review the literature on accounting and institutional theory, legitimacy theory, and information technology.

Accounting and Institutional Theory

According to DiMaggio and Powell (1983), institutional theory helps to explain the homogeneity of organizational forms and processes. Institutionalization is considered a process that enables society's expectations of what an appropriate organizational form and behavior are to take on rule-like status in thought and action (Covaleski and Dirsmith, 1988). Tolbert and Zucker (1983) define institutionalization as the process through which the formal structure in the organization becomes widely accepted, as appropriate and necessary, and provides legitimation to organizations. Carpenter and Feroz (2001) suggest that under institutional theory, organizations tend to respond to pressures from their environments. They do this by adopting structures and procedures that are considered socially acceptable as the right organizational choice. In addition, Carpenter and Feroz (2001) indicate that one of the assumptions that underlies institutional theory is that organizations adopt structures and management practices that other organizations in their industry consider legitimate. Organizations do this notwithstanding the actual usefulness of the said structures and practices. Studies undertaken by Meyer and Rowan (1977), Palmer, Jennings, and Zhou (1993) and Scott (1987) argue that legitimated structures or practices that organizations adopt are usually transmitted through tradition, imitation, coercion, and normative pressures.

Lounsbury (2008) indicates that one means of understanding institutional theory is to consider it from the theory of isomorphism. Isomorphism is explained as a process through which an organization gains similarity with other organizations within the industry population that are exposed to the same set of environmental conditions (DiMaggio and Powell, 1983). The authors provide two forms of isomorphism namely competitive and institutional isomorphism. Competitive isomorphism entails a system of rationality that stresses market competition, niche change and fitness measures (DiMaggio and Powell, 1983). From the institutional isomorphism perspective, organizations not only compete for resources and customers, but also political power, institutional legitimacy, and economic fitness (DiMaggio and Powell, 1983). In this paper, we proceed based on institutional isomorphism.

According to DiMaggio and Powell (1983), institutional isomorphism posits that organizations adopt the same practices and structures over time in response to common institutional pressures which may exist at the individual, organizational or organizational field levels. DiMaggio and Powell (1983) identify three forms of institutional isomorphism: coercive isomorphism, mimetic isomorphism, and normative isomorphisms. These forms of institutional isomorphism result from resource dependency levels of the organization, uncertainty surrounding business operations, and professionalization respectively (DiMaggio and Powell, 1983). Coercive isomorphism can result from formal and informal pressures that other organizations exert on organizations on which they are resource dependent or due to cultural expectations in the society within which the dependent organizations function (DiMaggio and Powell, 1983). Under mimetic isomorphism organizations faced with uncertainty in the environment respond by adopting structures and procedures that other organizations in the environment have in place and use. Normative isomorphism concerns how organizations adopt structures and procedures based on professionalization. DiMaggio and Powell (1983) suggest that professionalization and the experience gained from the specialized education of management members of an organization will influence the type of structures and procedures that the organization adopts. Usually, management will select the structures and procedures used by other organizations within the industry.

Scott (1987) suggests that organizations conform to such institutional pressures due to the rewards that organizations stand to gain from increased legitimacy, resources, and survival capabilities. Researchers such as Meyer and Rowan (1977) and DiMaggio and Powell (1983) have argued that several facets of formal structure, policies, and procedures that organizations put in place signify a conformity

with institutionalized rules. This helps to provide legitimacy to the organizations and aid them to gain the continuous support of the society that the organization operates within.

As explained in the introduction, institutional theory has been identified as helping to explain an organization's choice of accounting in their operations (Carpenter and Feroz, 2001). Scott (1998) suggests that accounting systems can be considered as one of the most important conventions that link institutionally defined belief systems to technical activities. Collier (2001) indicates that accounting offers consensus among seemingly competitive demands and provides a setting for action in which management of organizations come to terms with the need to meet legitimating requirement of the society. Carruthers (1995) suggests that organizations integrate several rational procedures, processes, and rules into their formal structures, and further states that their accounting systems form part of such rational procedures. This suggests that the inclusion of accounting systems in the formal structure of the organization can be considered a part of the institutionalization process of organizations and provides legitimacy to organizations.

Chapman et al. (2009) argue that accounting provides a mechanism through which organizations incorporate rational conceptions of ways of organizing. Accounting entails a set of procedures aimed at creating and processing information to enable people make informed and highly rational decisions (Chua, 1986, Chambers, 1966). From a mimetic isomorphism perspective, the ubiquity of accounting units and systems (Miller and Power, 2013) provides a basis for the adoption of accounting structures in an organization. Accountants in organizations are usually members of professional bodies such as the American Institute of Certified Public Accountants and the Institute of Management Accountants. These bodies spell out what acceptable accounting systems in organizations should be. Accounting practices and systems include recording, summarizing economic transactions to ensure quality financial reporting, budgeting, taxation, internal controls among others.

Carruthers (1995) argues that "accounts are the quintessential rationalized myth, and it is surprising that new institutionalists have not devoted more time to studying them" (p.326). In a similar vein, Abbott (1988) indicates that not much attention has been given to studying professionals as members of organizations. He argues that this insufficient attention is much higher for professions arising out of a commercial enterprise such as accounting.

Accounting and Legitimacy Theory

Legitimacy theory concerns how organizational structures gain acceptance from society at large (Tilling, 2004). Suchman (1995) considers legitimacy as a general assumption that considers the actions of an entity as desirable or appropriate within the boundaries of social norms, values, beliefs, and definitions. Dowling and Pfeffer (1975) explain legitimacy as resulting from the desire of an organization to seek to show the similarity between the organization's associated social values implied by their activities and what is deemed as the norms of acceptable behavior in the larger social system of which the organization is a part. According to Meyer and Scott, (1983) legitimacy refers to the extent to which the display of established cultural accounts in society provides explanations for the existence, functions, and jurisdiction of an organization. Suchman (1995) argues that legitimacy can be construed as an operational resource that the organization utilizes within a competitive environment to pursue organizational goals. In addition, Suchman (1995) posits that legitimacy provides organizational empowerment by portraying organizations as natural and meaningful.

Collier (2001) suggests that the failure of an organization to be legitimated or considered as legitimate may result in legal, economic, or social sanctions to the organization. This assertion underscores the need for an organization to adopt structures that portray it as legitimate in its environment. One of the structures and systems that are considered a symbol of legitimacy for organizations is accounting (Covaleski and Dirsmith, 1988) and Carpenter and Feroz, 1992). Chua, (1986) and Hunt and Hogler (1993) suggest that accounting practices and systems paint a picture of economic and organizational reality. Tilling (2004) suggests that the religious use of accounting rules provides organizational decision-makers with relevant and reliable information that enables them to select the optimal strategy to achieve organizational goals. According to Meyer and Rowan (1977), accounting can be considered as an

example of the various elements of organizational formal structure in bureaucracies that function as myths. Consistent with the discussion above, the authors suggest that accounting provides legitimacy to organizations and helps to project organizations as appropriate, rational, and modern entities. Morgan (1988) argues that the mythological view of accounting considers accounting systems as providing a societal resource used in sustaining myths of rationality, and as a means of justifying, rationalizing, and legitimizing decisions that ultimately serve other individuals and social ends.

Becker and Neuheuser (1975) argue that the use of accounting in the organization provides patterns of organizational visibility to it. Thus, though organizations may adopt accounting systems for functional reasons, from a legitimacy theory perspective, adoption of accounting system offers legitimacy to the organization. Chapman et al. (2009) suggest that accounting performs a ceremonial function that provides legitimation to an organization among its users. Other researchers have also indicated that accounting functions to articulate the forms of management structure and organizational segmentation (Chandler and Daems, 1979) as well as create patterns of power and influence (Bariff and Galbraith, 1978). This is in line with the assertions of institutional theory as postulated by Scott (1987), and Carpenter and Feroz (1992). Meyer and Rowan (1977) argue that organizations use their accounting systems as a means to signify responsibility and avoid claims of negligence. They suggest that the adoption of accounting systems and standards provides organizations with a defense against the perception of irrationality and enhanced moral and financial support from external resource providers.

Furthermore, Carruthers (1995) suggests that the concept of institutionalization considers accounting practices as part of a larger stream of organizational structures and features that organizations can use as a tool of legitimacy. This legitimacy is attained as accounting provides organizations with an appearance of rationality and efficiency. Covaleski, Dirsmith, and Samuel (1996) argue in their study that managerial accounting does not only indicate some form of objective reality for the organization but also may offer ceremonial means that symbolically demonstrate an organization's commitment to a rational course of action. Mellemvik et al. (1988) argue that the main role of accounting in a strong organization is to provide support for the legitimization process of the organization. Thus, accounting processes such as recording, summarizing, preparation of financial statements budgeting, internal controls, taxation among others used in organizations to determine performance, provide a tool of legitimacy to organizations and signals to the environment that the organization operates legitimately. This is due to the ubiquity of accounting in the business environment as accounting is considered a language that defines and specifies organizational goals, procedures, and policies (Chapman et al., 2009).

Accounting and Information Technology

Harvey (1968) considers technology in its basic sense as the mechanism by which organizations churn out product and services. In an era of technology advancement and rapid growth, the field of accounting is not isolated from the ubiquitous use of technology (Miller and Power, 2013). Wallman (1997) asserts that information technology is changing more rapidly than anything else. As such, he argues the need for accounting changes with developments in technology in order for accounting to achieve its goal of providing useful information for effective decision making. Hunton (2002) indicates that information and communication technologies have greatly transformed the nature of business and accounting practice. Granlund (2011) indicates that information technology innovations are usually implemented with the aim to improve task efficiency and increase functional and organizational level performance.

Huber (1990) argues that technology enables organizations to identify problems and opportunities quickly and accurately. He further suggests that this development facilitates an increase in availability of relevant and timely information, which in turn enhance the speed and quality of decision-making in organizations. The work of Fisher (1997) highlights several benefits that information technology has had on the field of accounting. Fisher (1997) asserts that information technology has advanced the role of the accountant in the organization from what he describes as spectator to an active player in the management process. This is achieved through the use of information technology to record, summarize, process and prepare financial statements, which eventually frees up time and energy for the accountant to focus on

core management decision making aimed at identifying and resolving problems. This assertion by Fisher (1997) suggests that technology increases the need for accounting in the organization. Hunton (2002) argues that technology has changed the role of the accountant in the organization from the traditional role of recording and preparing financial statements to higher-order critical thinking skills such as developing e-business models, providing independent assurance, and integrating strategic knowledge. Jordan (1999) argues that technology provides tools that help to increase the efficiency of the business including accounting in organizations.

Researchers have argued that financial reporting is the task accountants frequently perform (Belfo and Trigo, 2013; Hall, 2010; Van der Stede and Malone, 2010). Vasarhelyi and Alles, (2008) suggest that in the era of the "now economy" that requires information in real time, there is the need for real-time accounting in the organization. Belfo et al. (2015) argue that real-time reporting will aid in providing timely, relevant and reliable information that enables management to make an informed decision in each moment. The authors argue that such real-time financial reporting can be achieved with the aid of computer systems. There are various accounting software programs to record accounting transactions, process, and prepare financial statements. These are tasks that were done by accounting clerks and officers previously but have now been automated through information technology.

Scott and Davis (2007) suggest that technology has taken over functions that were hitherto performed by analysts, accountants, and clerks in terms of information processing capacity. Jordan (1999) claims that technology has rendered some accounting practices no longer relevant. The ledger account is an example of accounting practices that has been rendered unimportant in the face of technology (Jordan, 1999). This is because computers are now used as the primary tool to record the information that the ledger account was used to record. Hunton (2002) suggests that the traditional functions of accounting ranging from identifying, measuring, and recording accounting transactions are usually routine and predictable. As such, Hunton (2002) argues that these functions can easily be done by cleverly written computer programs. This indicates that accounting practices such as data capturing tasks seem to have been taken over by technology (Hunton, 2002). Burns and Vaivio (2001) suggest that technology drives these routine accounting tasks into out-sourced positions in many organizations.

In addition, Huber (1990) suggests that though technology results in a rise in the number of information sources, it leads to a reduction in the number of intermediate human actors. In a similar vein, the Chartered Global Management Accounts (CGMA, 2013) indicate that the advent of big data raises questions about the future role of finance and accountants in the organization. The report suggests that accountants could be sidelined as the key providers of financial information to report past performance. On the other hand, the report argues that accountants could make good use of big data and use it as a source evidence to provide support for decision making.

Nissen (2006) is of the view that information technology in and of itself does not constitute knowledge required to support action. Weick (1995) believes that as technology spreads, the need for what he refers to as "social sense-making functions" become crucial. Santos (2003) claims that technology on its own does not provide all that is required for decision making. He argues that technology does not increase participants' ability to interpret and create shared meanings from the information received. This assertion suggests that technology does not provide an alternative to the use of accounting in organizations as it does not provide the needed information for decision making and especially financial performance. This implies that technology does not serve as an alternative to accounting in organizations. Rather, technology enhances the use of accounting and thus, provides credence to organization's use of accounting to provide legitimacy. Flowing from this, it can be argued that technology does not provide an alternative to the use of accounting in organizations, rather technology is institutionalized within the field of accounting as it takes over the basic routine accounting functions.

Miller and Power (2013) indicate that the power of accounting is a joint function of a technology. This joint function, Miller and Power (2013) argues reveals and represents economic reality on the one hand, and a body of organized experts who prescribe and diffuse norms of best practice on the other hand. Based on this assertion, and what constitutes institutionalization and legitimacy, one can argue that

technology provides a medium through which accounting practices are institutionalized within the organization as well as provide legitimacy to the organization.

In the following section, four propositions are developed which discuss the impacts of adopting information technology on institutionalization and legitimation processes of organizations. These are aimed at addressing the ranging questions raised in the introduction section of the paper.

PROPOSITIONS

Organizations integrate rational procedures, processes, and rules into their formal structure, and as we have discussed, accounting systems have been identified as part of such rational procedures (Carruthers, 1995). Chapman et al. (2009) argue that accounting provides a mechanism through which organizations incorporate rational conceptions of ways to organize. Accounting entails a set of procedures aimed at creating and processing information to enable people to make informed and highly rational decisions (Chua, 1986, Chambers, 1966). In fact, accounting systems have been identified as one of the most important conventions that link institutionally defined belief systems to technical activities in organizations (Scott, 1998). Collier (2001) suggests that accounting offers the opportunity for consensus among seemingly competitive demands and provides a setting for action in which management of organizations come to terms with the need to meet legitimating requirement of society. This indicates that accounting systems – as a part of the formal structure of organizations – become institutionalized within organizations and help to provide legitimacy to organizations.

In the face of rapid technological changes, there have been calls in the literature for accounting systems to adopt new information technologies in order to improve effectiveness and efficiency (Belfo et al., 2015; Vasarhelyi and Alles, 2008; Wallman, 1997). Given the change in the traditional role of accounting from recording and summarizing of financial records to higher-order critical thinking skills such as e-business models, providing independent assurance, and integrating strategic knowledge (Hunton, 2002), the question that arises is how these changes in accounting functions become institutionalized within organizations. The old functions and role of accounting are likely to change as technology expands the capabilities and expectations for the accounting units of firms.

Given Tolbert and Zucker's (1983) definition of institutionalization as the process through which mechanisms of formal structure in the organization become widely accepted, as appropriate and necessary, and provide legitimation to organizations, any changes in the traditional role of accounting due to technology will eventually need to become widely accepted as organizations within the environment perceive such changes as the new status quo. These changes and the perceptions of what is legitimate happens over time and forces of competition and resource dependency require organizations to adopt the changes in accounting resulting from technology. Also, organizations may adopt the latest changes in accounting due to technology as a response to uncertainty about the effect of such changes on how organizations are perceived. From a normative isomorphism perspective, as the accounting field responds to changes in technology, the changes in accounting become the norm in both practice and academy. As a result, professional requirement and the specialized educational experience of management will positively affect organizations' adoption of the changes in accounting that emanates from the rapid change in technology. Thus, through the concepts of coercive, mimetic, and normative isomorphism, changes in accounting processes will break down former processes and require the new processes to be institutionalized. More formally, we propose the following:

> ***Proposition 1:*** *Changes in accounting practices as a result of the adoption of new technologies increases the role of accounting as a mechanism of institutionalization in the organization.*

Accounting practices and systems are considered as mechanisms that portray a picture of economic and organizational reality (Chua, 1986; Hunt and Hogler, 1993). Tilling (2004) suggests that the religious use of accounting rules provides organizational decision-makers with relevant and reliable information that enable them to select the optimal strategy to achieve organizational goals. Meyer and Rowan (1977) argue that accounting can be considered as a part of organizational formal structures in bureaucracies that

function as myths. They expand on this idea by further arguing that organizations use their accounting systems to signify responsibility and avoid claims of negligence. The authors posit that accounting provides legitimacy to organizations and enables organizations to be projected as rational and modern entities.

Meyer and Rowan (1977) suggest that the adoption of accounting systems and standards provides organizations with a defense against the perception of irrationality and can lead to enhanced moral and financial support from external resource providers. Becker and Neuheuser (1975) claim that the use of accounting in the organization offers patterns of organizational visibility to it. Thus, accounting structures and systems such as recording, summarizing, preparation of financial statements budgeting, internal controls, taxation provide a tool to signal the legitimacy of organizations to the environment. Thus, though organizations may adopt accounting systems for functional reasons, from a legitimacy theory perspective, adoption of accounting system offers legitimacy to the organization.

In the wake of changing roles of accounting from the traditional roles to reflect changes in technology (Hunton, 2002; Wallman, 1997), will accounting still function as a tool providing legitimacy to organizations? Dowling and Pfeffer (1975) consider legitimacy as emanating from the desire of an organization to seek to show similarity between the organization's associated social values. This is implied by their activities and what is deemed as the norms of acceptable behavior in the larger social system in which the organization is a part of. Flowing from this assertion, changes to accounting systems from the traditional role of financial reporting to critical decision making (Hunton, 2002), when adopted by a number of organizations in the environment, eventually becomes what is deemed acceptable and legitimate. Hence, over time, changes in accounting processes as a result of changes in information technology offer legitimacy to the organizations that adopt such changes.

Suchman (1995) argues that legitimacy can be construed as an operational resource that the organization utilizes within a competitive environment to pursue organizational goals. Thus, within a competitive environment, an organization that adopts changes in accounting from the traditional role due to technology, be it disruptive technology or creative technology, could use that as a tool to gain competitive advantage. This is because, over time, the changes in accounting practices and systems resulting from technology becomes the dominant practice and what is deemed acceptable in the society. As such, organizations that adopt the changes in accounting are deemed to be legitimate thereby providing a competitive advantage over those that do not adopt changes. Flowing from these arguments, we propose that:

> ***Proposition 2:*** *Over time, changes in accounting practices as a result of the adoption of new technologies increases the legitimacy of organizations*

According to Granlund (2011), information technology innovations are usually implemented with the aim to improve task efficiency and increase functional and organizational level performance. Jordan (1999) suggests that technology achieves this goal by providing tools that help to increase the efficiency of business functions including accounting in organizations. This is because technology is identified as helping organizations to identify problems and opportunities quickly and accurately (Huber, 1990). Huber (1990) argues that technology results in an increase in availability of relevant and timely information. This, in turn, enhances the speed and quality of decision-making in organizations. Given the aim of accounting to provide information that enhances informed decision, changes in accounting systems due to technology will result in improved decision-making and improve on firm performance.

Miller and Power (2013) indicate that the power of accounting is now influenced and has become a joint function of technology. Thus, change in accounting systems in the organization can be explained as resulting from changes in technology. In an era of "now economy" that requires information in real time, Vasarhelyi and Alles (2008) indicate that there is the need for real-time accounting in the organization. It is believed that such real-time reporting will provide timely, relevant and reliable information that aids management in making an informed decision in each moment (Belfo et al., 2015). The ability of management to make informed decisions helps to improve on firm performance in the long run. Belfo et al. (2015) claim that real-time financial reporting can be achieved with the aid of computer systems. As

such, with changes in accounting, resulting from changes in technology, we offer the following proposition:

> ***Proposition 3***: *Changes in accounting practices as a result of the adoption of new technologies increases firm performance.*

Beyond the individual firm level, changes to accounting practices as a result of new technologies are changing the field of accounting itself. Again, according to Hunton (2002) information technology has changed the role of accounting units from simply recording and preparing financial statements to higher-order critical thinking skills such as developing e-business models, providing independent assurance, and integrating strategic knowledge. Similarly, Fisher (1997) posits that technology has advanced the role of the accountant in the organization from what he describes as "spectator to an active player in the management process." This is achieved through the use of information technology to record, summarize, process and prepare financial statements. Such usage frees up time and energy for the accountant to focus on management decision making aimed at proactively identifying issues that may arise in the future and working to prevent these potential issues from becoming problems.

Scott and Davis (2007) suggest that technology has taken over functions that were hitherto performed by analysts, accountants, and clerks in terms of information processing capacity. As explained earlier, information technologies are changing accounting practices. Jordan (1999) cites the ledger account as one example of accounting practices that have been rendered obsolete in the face of new technology. This is because computers are now used as the primary tool to record the information that the ledger account was used to record. This indicates that data accounting practices such as data capturing tasks seem to have been taken over by technology (Hunton, 2002). Burns and Vaivio (2001) suggest that technology drives these routine accounting tasks into out-sourced positions in many organizations.

Based on this assertion, and what constitutes institutionalization and legitimacy, one can argue that information technology provides a medium through which accounting practices are institutionalized within the organization as well as provide legitimacy to the organization. However, these processes have implications beyond individual firms; they affect accounting itself. Organizations and their top managers must remain cognizant of these changes and know when to adopt technologies which change their accounting practices as those changes are being legitimized. We propose the final proposition:

> ***Proposition 4***: *Changes in accounting practices as a result of the adoption of new technologies are being constantly institutionalized which requires changes to the field of accounting itself.*

DISCUSSION

As we have discussed throughout the paper, accounting is an institutionalized function within organizations and their formal structures. However, advances in information technology are breaking down traditional accounting processes as they help improve efficiency and allow financial managers to further expand their focus to strategic decision making. We argue that the changes require new processes to be institutionalized within firm and that these new processes help stakeholders recognize firm legitimacy and improve firm performance. Over time, the processes become institutionalized within the accounting field itself.

Carruthers (1995) argues that though, accounting provides the most ideal form of rationalized myth in the organization, institutional theorists have not given much time to the study of accounting. In a similar vein, Abbott (1988) suggests that not much attention has been given to the study of accounting professionals, particularly in the organization. This paper contributes to addressing these issues in the literature by highlighting the institutionalized role accounting provides in the organization. This paper suggests that accounting systems adopted by organizations, ranging from recording, budgeting, internal controls, to taxation, sets the organization on a high pedestal in the eyes of the society as operating as an appropriate organizational form. Hence, the need to give increased attention to the study of accounting functions and roles in organizations.

Moreover, this paper highlights that with the advancement in technology, the role of the accountants in the organization has changed from being just spectators to active players in the management process (Fisher, 1997). The increased role and activeness of accountants in the organization provides a basis for giving much attention to studying professionals such as accountants in the organization.

In addition, this paper points out the important role accounting plays in providing legitimacy for organizations. Most studies that have considered the use of legitimacy theory in accounting have focused on environmental accounting (Al-Tuwaijri, Christensen, and Hughes, 2004; Clarkson, Li, Richardson, and Vasvari, 2008; Deegan and Rankin, 1996). However, this paper considers how basic accounting functions such as recording, summarizing, and preparation of financial statements are an important source of legitimacy to organizations. This is due to these basic accounting functions considered as ubiquitous in the business environment. Stakeholders use information provided by firm accounting processes to understand performance and to consider and project how the firm will perform in the future. Such consideration stems from accounting being thought of as a language that defines and specifies organizational goals, procedures, and policies (Chapman et al., 2009).

Most important, this paper proposes that changes are being made to accounting processes and systems as a result of advancing information technologies. While changes in technology can help make accounting functions better, faster, and more efficient, we argue that the impacts on institutional processes should be acknowledged. As institutional systems within the formal structure change, new processes must be institutionalized and accepted. This process can take time and should not be considered easy or simple. Careful management of personnel and resources is needed. This may include training personnel on new technologies and processes, or investing resources on implementing new hardware and software. The changes may be expensive and difficult to implement, but as more and more firms adopt certain information technologies, they become an important source of legitimacy for firms. Managers would do well to recognize this process and try to remain ahead of any emerging trends and changes to accounting processes. At the same time, managers must be careful not to choose new technologies that may not fully develop or be adopted within their industries. A new "fad" product may end up being a costly mistake rather than a time-saving tool to improve productivity. Ultimately, there is a balance that is required when choosing new technologies over fully institutionalized and recognized legitimate technologies that requires managers to weigh the potential gains of adopting a technology against the internal resource and training requirements and external stakeholder reactions to those new technologies. This paper suggests that technology enhances the use of accounting and thus, provides credence to an organization's use of accounting to provide legitimacy. Also, the paper contributes to the literature on accounting and technology, by building on the notion that as technology takes over some accounting functions and renders others such as ledger obsolete (Jordan, 1999), technology is institutionalized within the field of accounting.

This conceptual paper has a number of limitation that we want to acknowledge. First, we do not indicate how much change is required from new information technologies to spark institutional changes in accounting processes. We also do not specify the timing or the duration of time that is required to move from one accounting system to another one that can be institutionalized, and further which is recognized as a source of legitimacy for organizations. At this point, we are deliberately vague because measuring the amount of change is difficult and some of the impacts and acceptance of any technology-driven transformation may be industry specific. Our goal was to introduce the broad concepts and it is left for future research to examine these other issues.

Second, we do not include any discussion of the size of organizations. It is likely that firm size will play a role when adoption of new technology impacts accounting systems and form part of the institutionalization and project the organization as legitimate. For a small firm, moving from paper ledgers to a computer spreadsheet may have a large impact; whereas for large firms the technology-based change may require millions of dollars across multiple units and geographic areas. Obviously, different organizations may differ in the level and complexity of accounting systems that will portray them as legitimate and provide a mechanism for institutionalization. Furthermore, the level of technology will be

different for different organizations. As such, there is the need to consider the level or degree of technology advancement for various organizations in this paper.

We recommend testing the propositions through empirical study. The nature of the propositions clearly call for longitudinal study. Studies which can show the process of breaking down institutional processes and the establishment of new accounting procedures, processes, and systems demand longitudinal study. This can also help to address the limitation that we identified regarding how long the process takes. Studying firms of various sizes in various industries could also help researchers identify generalizable aspects of the propositions vs. industry-specific factors. While we believe that the adoption of new technologies that fundamentally change and improve accounting processes can improve firm performance, more fine-grained analyses are needed. That is, it is not clear how much change is required to improve firm performance. Also, could too much change be disruptive and lead to diminishing returns? Significant changes may force changes in corporate culture which may not be beneficial to firms. This remains an empirical question.

CONCLUSION

The limitations that we identified notwithstanding, we believe the paper makes a contribution in that it explains how accounting systems are relevant in organizations as they provide a mechanism for the institutionalization of the organization and provide legitimacy to the organization in the sight of the society. In addition, the paper points out that the rapid change in technology has led to some accounting functions taken over by technology while others are made obsolete. While new technology enhances the effectiveness and efficiency of accounting systems in the organization, it must first be institutionalized within organizations and any new technologies should also help the organization further legitimate itself with external stakeholders. Over time, well-recognized and used technologies are likely to take over and automate some accounting functions, which is likely to result in certain technologies being institutionalized in the accounting field itself. In addition, changes in accounting systems in response to technology growth increases the role of accounting in providing legitimacy to the organization as well as a mechanism of institutionalization, and thereby increase firm performance. We have introduced new directions that we hope will lead to much needed further research.

REFERENCES

Abbott, A. (1988). The system of professions: An essay on the division of labor.

American Institute of Certified Public Accountants (1953). AICPA committee on terminology. Accounting terminology, bulletin No. 1review, and resume. New York.

Al-Tuwaijri, S. A., Christensen, T. E., & Hughes, K. E. (2004). The relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach. *Accounting, Organizations and Society*, 29(5), 447-471.

Bariff, M. L., & Galbraith, J. R. (1978). Intraorganizational power considerations for designing information systems. *Accounting, Organizations and Society*, 3(1), 15-27.

Becker, S. W., & Neuhauser, D. (1975). *The efficient organization*. Elsevier Science Ltd.

Belfo, F., & Trigo, A. (2013). Accounting information systems: Tradition and future directions. *Procedia Technology*, 9, 536-546.

Belfo, F., Trigo, A., & Estébanez, R. P. (2015). Impact of ICT innovative momentum on real-time Accounting. *Business Systems Research Journal*, 6(2), 1-17.

Burns, J., & Vaivio, J. (2001). Management accounting change. *Management Accounting Research*, 12(4), 389-402.

Capriotti, R. J. (2014). Big data: Bringing big changes to accounting. *Pennsylvania CPA Journal*, 85(2), 36-38.

Carpenter, V. L., & Feroz, E. H. (1992). GAAP as a symbol of legitimacy: New York State's decision to adopt generally accepted accounting principles. *Accounting, Organizations and Society*, 17(7), 613-643.
Carpenter, V. L., & Feroz, E. H. (2001). Institutional theory and accounting rule choice: an analysis of four US state governments' decisions to adopt generally accepted accounting principles. *Accounting, Organizations and Society*, 26(7), 565-596.
Carruthers, B. G. (1995). Accounting, ambiguity, and the new institutionalism. *Accounting, Organizations and Society*, 20(4), 313-328.
Chambers, R. J. (1966). Accounting. *Evaluation and Economic Behavior (Prentice-Hall, 1966)*.
Chandler, A. D., & Daems, H. (1979). Administrative coordination, allocation, and monitoring: A comparative analysis of the emergence of accounting and organization in the USA and Europe. *Accounting, Organizations and Society*, 4(1-2), 3-20.
Chapman, C. S., Cooper, D. J., & Miller, P. (2009). Linking accounting, organizations, and institutions. *Accounting, Organizations, and Institutions*: Essays in honour of Anthony Hopwood, 1-30.
Chartered Global Management Accountants Report (CGMA). (2013). *From insight to impact: unlocking Opportunities in Big Data*. United Kingdom
Chua, W. F. (1986). Radical developments in accounting thought. *Accounting Review*, 601-632.
Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(4), 303-327.
Collier, P. M. (2001). The power of accounting: a field study of local financial management in a police force. *Management Accounting Research*, 12(4), 465-486.
Covaleski, M. A., & Dirsmith, M. W. (1988). An institutional perspective on the rise, social transformation, and fall of a university budget category. *Administrative Science Quarterly*, 562-587.
Covaleski, M. A., Dirsmith, M. W., & Samuel, S. (1996). Managerial accounting research: the contributions of organizational and sociological theories. *Journal of Management Accounting Research*, 8, 1.
Deegan, C., & Rankin, M. (1996). Do Australian companies report environmental news objectively? An analysis of environmental disclosures by firms prosecuted successfully by the Environmental Protection Authority. *Accounting, Auditing and Accountability Journal*, 9(2), 50-67.
DiMaggio, P., & Powell, W. W. (1983). The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields. *American Sociological Review*, 48(2), 147-160.
Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. *Pacific Sociological Review*, 18(1), 122-136.
Fisher, S. A. (1997). In defense of double entry accounting. *National Public Accountant*, 42, 33-34.
Granlund, M. (2011). Extending AIS research to management accounting and control issues: A research note. *International Journal of Accounting Information Systems*, 12(1), 3-19.
Hall, J. A. (2010). Financial Reporting and Management Reporting Systems. *Accounting Information Systems*, 349-393.
Harvey, E. (1968). Technology and the structure of organizations. *American Sociological Review*, 247-259.
Huber, G. P. (1990). A theory of the effects of advanced information technologies on organizational design, intelligence, and decision making. *Academy of Management Review*, 15(1), 47-71.
Hunt, H. G., & Hogler, R. L. (1993). An institutional analysis of accounting growth and regulation in the United States. *Accounting, Organizations and Society*, *18*(4), 341-360.
Hunton, J. E. (2002). Blending information and communication technology with accounting research. *Accounting Horizons*, 16(1), 55-67.
Jensen, M. C. (1983). Organization theory and methodology. *Accounting Review*, 319-339.

Jordan, A. S. (1999). The impact technology is having on the accounting profession. *Journal of Accounting Education*, 17(2), 341-348.
Lounsbury, M. (2008). Institutional rationality and practice variation: New directions in the institutional analysis of practice. *Accounting, Organizations and Society*, *33*(4), 349-361.
Mellemvik, F., Monsen, N., & Olson, O. (1988). Functions of accounting—a discussion. *Scandinavian Journal of Management*, 4(3-4), 101-119.
Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340-363.
Meyer, J. W., & Scott, W. R. (1983). Centralization and the legitimacy problems of local government. *Organizational Environments: Ritual and Rationality*, 199, 215.
Miller, P., & Power, M. (2013). Accounting, organizing, and economizing: Connecting accounting research and organization theory. *Academy of Management Annals*, 7(1), 557-605.
Morgan, G. (1988). Accounting as reality construction: towards a new epistemology for accounting practice. *Accounting, Organizations and Society*, 13(5), 477-485.
Nissen, M. E. (2006). *Harnessing Knowledge Dynamics: Principled Organizational Knowing and Learning*. Hershey, PA: IRM Press.
Palmer, D. A., Jennings, P. D., & Zhou, X. (1993). Late adoption of the multidivisional form by large US corporations: Institutional, political, and economic accounts. *Administrative Science Quarterly*, 100-131.
Santos, F. M. (2003). The role of information technologies for knowledge management in firms. *International Journal of Technology, Policy, and Management*, 3(2), 194-203.
Scott, W. R. (1987). The adolescence of institutional theory. *Administrative Science Quarterly*, 493-511.
Scott, W. R. (1998). *Organizations: Rational, Natural, and Open systems.* 4th Ed. Upper Saddle River, NJ: Prentice-Hall.
Scott, W. R., & Davis, G. F. (2007). *Organizations and organizing*: *Rational, Natural and Open Perspectives*.
Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571-610.
Tilling, M. V. (2004). Some thoughts on legitimacy theory in social and environmental accounting. *Social and Environmental Accountability Journal*, *24*(2), 3-7.
Tolbert, P. S., & Zucker, L. G. (1983). Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform, 1880-1935. *Administrative Science Quarterly*, 22-39.
Van der Stede, W., & Malone, R. (2010). Accounting trends in a borderless world.
Vasarhelyi, M. A., & Alles, M. G. (2008). The "now" economy and the traditional accounting reporting model: Opportunities and challenges for AIS research. *International Journal of Accounting Information Systems*, 9(4), 227-239.
Wallman, S. M. (1997). The future of accounting and financial reporting, part IV:" Access" Accounting. *Accounting Horizons*, 11(2), 103.
Weick, K. E. (1995). *Sensemaking in organizations*. Thousands Oaks, CA: Sage