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Assessing the Influence of Adopting Innovative Accounting Information System in Small and Medium Scale Enterprises in Ghana

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Abstract:
In the last decade, there has been much effort by small and medium international firms (SMEs) worldwide to adopt an accounting information system in both private and public sectors. In Ghana, many firms are moving into this sphere of technology, but the influence has not been critically looked at. This study explored the Technology Organization Environment Framework (TOE) that:

- *Influences SMEs,*
- *Analyzes the influence of adopting Accounting Information Systems (AIS),*
- *Takes a critical look at the role of the owners in the adoption process*

The Stratified random sampling was adopted to select 110 respondents from a target group. The primary data was gathered using structured questionnaires and interviews. Cross-Sectional Survey was adopted using questionnaires and gathered data from 110 SMEs in all 16 regions of Ghana. The Quantitative research design was used in the study, and the structural equation modeling technique was adopted in analyzing hypothesized relationships with the help of Smart PLS software. Descriptive and inferential statistics were used to analyze the quantitative data. The descriptive statistics were categorized into percentages, averages, standard deviations, and frequencies. The study revealed that the cost involved in acquiring, implementing, and maintaining AIS deters most Ghanaian entrepreneurs from adopting the technology. One of the greatest challenges of SMEs in Ghana is investing in technologies that will enhance the work and thus often hampers their effort to adopt the needed ICT innovations like AIS. It is recommended that AIS vendors are to develop favorable conditions for SMEs to arouse their interests.

Keywords: *Information, system, accounting, SME, technology, innovation*

1. Introduction

The present economic era in the world is described as the information technology era, and as such, businesses (regardless of size) who fail to adopt modern technologies such as Accounting Information Systems risk being competitively disadvantaged (Alsaaty, 2012; Marston, 2011; Rogers, 2016). This means that every business venture should, as a matter of urgency, leverage on technology to be able to stand the competition in the business world. Studies on how SMEs can use accounting information systems to meet the challenges imposed by rapidly changing technology and increasing global competition are limited. Previous empirical studies by Hla and Teru (2015) provide strong evidence that the relationship between accounting information system and SMEs performance have mainly concentrated on large companies. This is not only the case as to why most SMEs in Ghana do not use any AIS but also SMEs owners' knowledge of Information systems.

An owner with enough IT knowledge can assess awareness through knowledge that will increase confidence and facilitate the adoption of new technology. Lack of IT knowledge creates uncertainty, which in turn limits its adoption. A user's IT knowledge plays a crucial role in the identification of benefits of innovative adoption. The study found that the impact of user's IT knowledge has been overshadowed by organizational and innovation factors that dictate the adoption processes in organizations (Abdul Hameed & Counsell, 2012).

Abdelali (2013) investigated the role of management in the adoption of cost accounting systems and found some of the motives for not using cost accounting systems. The motives included:

- There is a lack of experienced personnel for the identification of cost centres,
- The method used for the calculation of cost is outdated, and
- The management is ignorant of cost accounting as they do not know the functions

The management must be consistent in the usage of an accounting system. Orens and Reheul (2013) found that due to the positive attitude of a CEO towards change and innovation, the factors like experience, CEO tenure, and CEO education do not have any association with the level of holding cash. Azizan and Said (2013) mentioned that for the e-commerce adoption in the hotel industry of Libya, lack of trust in online services, insecurity of personal information, lack of infrastructure, and poor knowledge had been a great challenge.

Abdesamed and Wahab (2014) mentioned that small businesses are important in the economy and its growth because a major part of small firms' external financing comes from bank loans. The acceptance of technology by companies, especially by SMEs in today's highly competitive and fast-growing environment, has made them focus heavily on the achievement of technological superiority that can enhance production and operational performance with the usage of available resources.

Many SMEs do not keep proper books of accounts; they resort to the old system of bookkeeping. Some of them do not even have proper records at all. They just keep all the transactions in their head and may forget some. Given this, some of their debtors may run away with their monies, which will force the owner to wind up the business in the long run.

The few previous studies that sought to investigate Accounting Information Systems adoption laid emphasis on large firms in developed countries (Rahayu and Day, 2015; Rogers, 2016) to the neglect of Small and Medium Enterprises in developing countries. Meanwhile, studies show that Small and Medium Enterprises structurally differ from large firms. For instance, empirical evidence (e.g., Rahayu and Day, 2015; Rogers, 2016) suggests that in SMEs, owners usually directly influence the decision-making process (as far as technology adoption is concerned). This situation is seldom the case in large businesses.

Moreover, in terms of technology infrastructure, the World Bank's ICT Development Index has consistently ranked developing countries at the bottom compared to developed countries. This indicates that factors that influence technology adoption in developed countries may not necessarily be the same as those in developing countries (Rogers, 2016). For example, Rahayu and Day (2015) postulate that drivers of technology adoption among SMEs in developing countries differ from those in developed countries, hence it might be wrong for one to assume that research findings (in relation to technology adoption) from developed countries are necessarily applicable to developing countries.

Many studies confirm that technology adoption enhances a company's performance. In addition, SME business owners' abilities and skills also play a crucial role in SMEs' performance. For instance, it was also claimed by Olise et al. (2014) that ICT adoption improved performance among SMEs. SMEs owners should endeavor to gain status and attitude, which will facilitate their ICT adoption, followed by increased productivity and global competitiveness. In addition, Abd Rahman et al. (2013) focused on the technology adoption behavior of Malaysian food processing SMEs that intend to adopt advanced technology and relate it to firm performance.

Therefore, this article justifies the need to study accounting information systems adoption from a developing country's (Ghana) perspective by taking into account SME owners' innovativeness and its effect on AIS adoption to understand: Does SME readiness matter? This article further empirically examines the relationships between accounting information systems and accounting performance in SMEs, taking into consideration owners' innovativeness.

The study targeted SMEs in Ghana as the scope of the research. Ghana was chosen for the study as it has consistently been ranked among the most dynamic ICT markets in the developing world (The World Bank's measuring the Information Society report, 2016). Concentrating completely on SMEs will guarantee that the study gains focus and remains specific and well-controlled. It will again make it easier to identify the research population faster and more accurately.

2. Literature Review

2.1. Theoretical Frameworks of Technology Adoption

Several theoretical perspectives offer guidance in predicting technology adoption at both firm and individual levels (Ferguson & Seow, 2011; Molinillo & Japutra, 2017). However, the firm level will be considered in this study, considering the technology-organization-environment (TOE) framework.

2.2. The Technology-Organization-Environment (T-O-E) Framework

According to Nkhoma and Dang (2013), Angeles (2014), and Oliveira and Martins (2011), the T-O-E framework consists of:

- Technology development;
- Organizational conditions, business and organizational reconfiguration, and
- Industry environment

The TOE framework proposes that factors determining enterprise system adoption behavior can be broadly divided into three contextual categories, including technology, organizational, and environmental contexts. However, it provides no information on what these specific factors are. First, the impact of the technological context on enterprise system adoption behavior refers to technology-related factors that influence a firm's adoption of an innovative IS (Oliveira & Martins, 2011). The technological context includes all technologies that are relevant to a Firm's operations–whether such technologies already exist in the said firms or are available in the marketplace but not currently in use.

Secondly, the organizational context emphasizes the impact of a firm's profile characteristics, resources, and internal social network on its IS adoption behavior, firm size and scope, formal and informal linking structures, internal communication, peer influence, organizational culture, the quality of human resource and so on. The Organizational context of the T-O-E framework captures attributes of a firm that may influence its decision on technology adoption.

Thirdly, the environmental context emphasizes that a firm's AIS adoption is also significantly influenced by many external factors beyond a firm's control, such as government policies, competitors, and trading partners (Tornatzky & Fleischer, 1990).

For this study, we want to know the readiness of organizations to adopt AIS. The readiness can be financial or technological, and the TOE theory is the best theory that can help me know the true readiness of SMEs in adopting AIS.

2.3. SME Innovativeness and AIS Adoption

A vast literature is evident on the significant positive relationship between innovation and a firm's success (Naranjo et al., 2016). Studies also find that innovation strategies increase the scope of firm success in today's competitive world (Taghizadeh et al., 2016).

Moreover, recently it was concluded that a firm innovativeness leads to superior firm performance in turbulent business environments (Zawawi et al., 2016). Similarly, other studies have also demonstrated the positive impact of innovation on firm performance (Bartoloni & Baussola, 2018; Ribau et al., 2017; Gërguri et al., 2017; Tajuddin et al., 2015). Evidently, innovation is believed to be one of the key drivers of the long-term success of a firm in competitive markets (Naranjo et al., 2016).

Several studies have empirically found the positive impact of innovation on the financial performance of firms under various contexts (Wang, 2014; Bigliardi, 2013; Laforet, 2011). Innovations result in positive outcomes such as a good image and reputation for SMEs and an increase in cost benefits and operational efficiency, leading to superior financial performance (Laforet, 2011). Likewise, a longitudinal survey of 607 high-technology firms also indicated innovation as the key driver of firm performance (Wang, 2014).

Innovation is a key driver of productivity and long-term growth and can help solve social challenges at the lowest possible cost (OECD, 2015a). Innovation in small and medium-sized enterprises (SMEs) is at the core of inclusive growth strategies. The more SMEs are innovative, the more they can be productive, pay better wages, and offer better working conditions to their workers, thus helping reduce inequalities.

2.4. Accounting Information System Adoption

Accounting Information System (AIS) has been described by Urquia, Perez & Munoz (2011) as a system used to record the financial transactions of a business or organization. These systems combine methodologies, controls, and accounting techniques with the use of technology to track transactions and provide internal and external reporting data, financial statements, and trend analysis capabilities to affect organizational performance (Urquia, Perez & Munoz, 2011).

This means accounting systems are responsible for recording classifying, analyzing, monitoring, and evaluating the financial condition of entities, preparing documents necessary for tax purposes, and providing information to both internal and external users to make informed judgments and decisions.

2.4.1. Nature of Current Accounting Information Systems

Empirical evidence suggests that accounting information systems are basically composed of three subsystems, with each system representing a certain managerial level (Hall, 2015)

2.4.2. Transaction Processing Systems

This system performs and records daily routine transactions necessary to conduct business. It allows managers to monitor the status of operations and relations with the external environment (customers, investors, etc.).

2.4.3. Management Information Systems

As the name suggests, it serves middle-level management. MIS provides reports on the firm's current performance based on data from TPS. It provides answers to routine questions with a predetermined procedure for answering them.

2.4.4. Decision Support Systems

This system serves middle management. DSSs support non-routine decision-making, such as the impact of production schedule if sales double. It often uses external information as well from TPS and MIS.

2.4.5. Executive Support Systems

Executive support systems:

- Address non-routine decisions requiring judgment, evaluation, and insight
- Incorporate data about external events such as new tax laws or competitors, and
- Summarize information from internal MIS and DSS

2.5. Accounting Information Systems and Data Management

Initially, AIS mainly helped firms to gain efficiency in the management of accounting data, such as timely information processing and the generation of accurate and reliable information (Mancini, Lamboglia, Castellano, & Corsi, 2017). Recently, AIS technologies have, however, shifted emphasis towards business process integration, as highlighted in Mancini et al. (2017).

Such integration, as Mancini et al. (2017) argue, does not merely represent the implications of information technology. Rather, it represents a different philosophical lens through which one can observe organizational processes

through I.T. Mancini et al. (2017) mention Ubiquity and data sharing as the two most notable keywords that best describe the new philosophy in AIS practice. In terms of ubiquity, Mancini et al. (2016) argue that currently, there is an increasing demand that accounting data and information should flow freely (without restrictions) among firms, groups of people, and even across several functional areas of business. Mancini et al. (2016) argue that the demand for ubiquity is facelifted by the fact that, recently, accounting data and information emanate from collaboration and co-creation through a wider stakeholder engagement process. Besides, Mancini et al. (2016) also note that the present generation of AIS requires accounting information to be organized and managed in a manner to facilitate data sharing and reuse.

2.6. Accounting Information Systems and Sustainability Reporting

New competitive and technological dynamism has triggered a growth in managements' accounting informational needs. Currently, stakeholders with direct financial interests consider not only financial information in making investment decisions but also socially responsible business practices (Mancini et al., 2017). Consequently, the present-day accounting information systems are increasingly incorporating ways and means through which companies can report on their environmental, social, and governance practices to stakeholders (Kerr, Rouse & De Villiers, 2015). This current trend in accounting reporting is what is termed integrated reporting. According to Kerr et al. (2015), the integration of these new variables in accounting reporting generally produces, among others, benefits such as:

- Operationalization of objectives,
- Accountability, and transparency,
- Intensified interactions with stakeholders, and
- Formalization of organizational beliefs, among others

3. Research Methodology

The study adopts the quantitative approach to study to make statistical generalizations about the population. Again, a cross-sectional study is employed to capture data relevant to the study. This study adopts a quantitative research method, specifically a survey. A survey gives a quantitative description of the opinions of a population by studying a sample of that population (Creswell, 2009b). This study considers SMEs from all 16 regions in the country with much emphasis on regional and district capitals. In this study, 110 questionnaires were administered to respondents. All 110 questionnaires were administered to all 16 regions with much emphasis on regional and district capital. The stratified random sampling technique was applied in selecting the 110 respondents for the study. Data collected through the questionnaire were coded and organized into combined constructs in Statistical Package for Social Sciences (SPSS) before they were analyzed with the SmartPLS tool. In this article, Structural equation modeling (SEM) was chosen as the analytical approach.

4. Results and Discussions

4.1. AIS Adoption by SMEs

Before delving into the level of Accounting Information Adoption, the researcher enquired the respondents if they had any idea about Accounting Information systems, and 75% of the respondents answered in affirmative, whereas 19% said NO. Some respondents, who were left between the two and answered maybe, represented 6%. This is illustrated in figure 1.

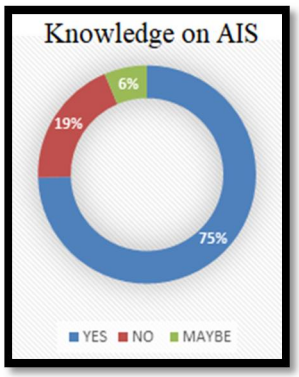

Figure 1: Knowledge on AIS

According to the answers respondent provided on the knowledge of Accounting Information systems:

- 49 respondents representing 44.55%, said they use both manual and computer to record their daily transactions
- 41 (37.27%) respondents said they only use manual tools like cashbooks, sales, and purchases daybooks to record the total receivables and payables.
- 18 (16.36%) respondents affirmed that they fully use computers in their operations. Some of the software they use are adepaye, QuickBooks, Krol, Pharmplus, Tally, and Microsoft Excel.

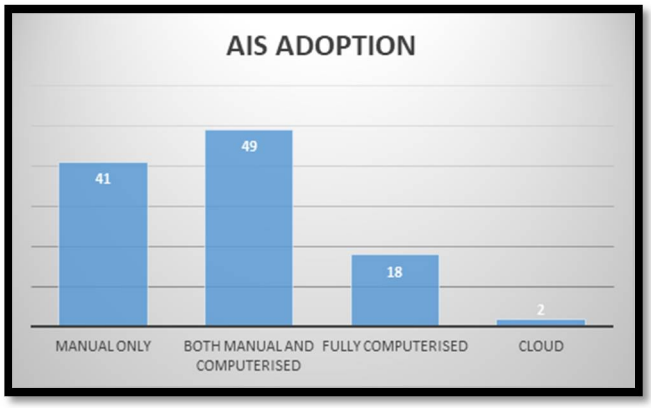

Figure 2: AIS Adoption

In terms of decision-making, the Owners of Small and Medium Scale Enterprises have a major stake. Owners decide the type of AIS to use or even go the manual way. It is, therefore, not surprising that 67% of the respondents were owners of the SMEs that answered the survey questions. SMEs with larger employees and seeking the services of Accountants also recorded 17%, whereas front desk executive officers or secretaries and sales attendants recorded 6%.

4.2. Descriptive Analysis of Measurement Variables

Indicators	Mean	Median	Mode	Std. Dev.
I have practical experience in the use of computers	1.5364	1.0000	1.00	.63067
I hardly accept a new way of doing things	3.2182	3.0000	5.00	1.37061
Always explore a new way of doing things	1.4364	1.0000	1.00	.69767
I have an improvised way of taking records electronically	1.9909	2.0000	2.00	.93353
The cost of buying and renewing AIS is too expensive	1.9273	2.0000	2.00	.84277
Using AIS saves time and increases patronage	1.5091	1.0000	1.00	.60192
AIS is easy to interact with and easy to learn	1.8000	2.0000	2.00	.66083
Accounting information systems do not require too much time in training	1.9182	2.0000	2.00	.83646
Using computers to perform accounting functions makes me concerned about potential damage to hardware infrastructure	2.4000	2.0000	2.00	1.11865
Using computers to perform accounting functions can provide accurate and reliable accounting information to support decision making	1.5545	1.0000	1.00	.71146
Competitive conditions in our industry necessitate AIS adoption	1.6091	1.0000	1.00	.83606
My/Our firm has the required Technology Infrastructure that supports AIS usage	2.1182	2.0000	2.00	.91603
My/Our firm has the financial resources to adopt accounting systems	2.3455	2.0000	2.00	1.11237
My/Our firm has employees capable of using accounting systems	1.9545	2.0000	2.00	.87143

Table 1: Indicator Descriptive Analysis
Source: Field Survey, 2021

Most of the respondents *agreed* that using computers to perform accounting functions can provide accurate and reliable accounting information to support decision-making.

In addition to the above, most of the respondents agreed that AIS is easy to interact with and easy to learn. However, others posit that they are innovative and, for that matter, disagree to the question that I hardly accept a new way of doing things.

Most of the respondents agreed to the fact that the cost of buying and renewing AIS is too expensive.

4.3. Statistical Analysis of AIS Adoption via PLS-SEM

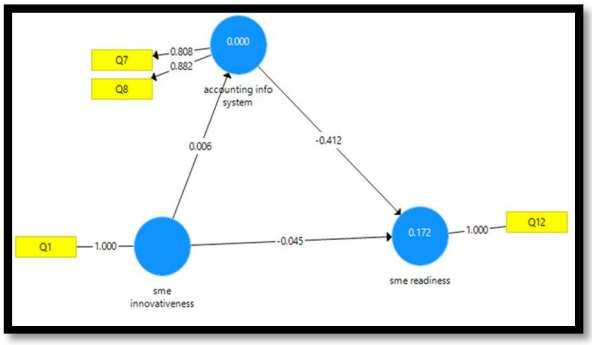

Figure 3: Results of PLS Analysis

Indicators	Accounting Info System	SME Innovativeness	SME Readiness
Accounting info system	0.916	-	-
SME innovativeness	0.077	1.00	-
SME readiness	-0.641	-0.264	1.000

Table 2: Fornell-Larcker Criterion
Source: Field Data 2021

From table 2, the square root of the accounting information System is 0.916, which is more than another measured variable. Similarly, SME innovativeness has a higher variance of 1 when it is measured against itself and other indicators.

4.3.1. Heterotrait-monotrait Ratio of Correlations

The modern approach to check discriminant validity is to use Heterotrait-monotrait ratio of correlations (HTMT), which is proposed by Henseler, Ringle, and Sarstedt (2015).

HTMT is defined as 'the mean value of the item correlations across constructs relative to the (geometric) mean of the average correlations for items measuring the same construct' (Hair *et al*., 2019).

Henseler et al. (2015) proposed the superior performance of HTMT by means of Monte Carlo simulation study, and the results indicated that HTMT is able is achieve higher sensitivity and specificity rates (that is, 97%-99%) as compared to cross-loadings and Fornell and Lacker (0.00% and 20.82% respectively). A required threshold of 0.90 is recommended (Gold, Malhotra, and Segars, 2001; Henseler *et al*., 2015)

	Accounting Info System	SME Innovativeness	SME Readiness
Accounting info system	-	-	-
SME innovativeness	0.194	-	-
SME readiness	0.524	0.047	-

Table 3: Heterotrait-Monotrait Ratio (HTMT)

It is noticed from table 3 above that none of the HTMT correlations between latent constructs exceeded or was even equal to the cut-off threshold value of 0.90, indicating a higher level of discriminant validity in the research model. Also, the highest HTMT correlation between constructs in the matrix was 0.524 (between latent constructs '*SME readiness* and *accounting information)*, which is still below the cut-off point of 0.9.

Moreover, *SME Readiness* and *SME innovativeness* exhibited the highest level of discriminant validity as their HTMT ratio of correlation was the lowest in the HTMT matrix. Thus, an HTMT ratio of 0.047 was recorded. All the other constructs in the model demonstrated discriminant Validity.

5. Conclusion

The study revealed that 89 respondents claim the cost of buying Accounting Information Systems is expensive for SMEs to afford hence resorting to a manual way of taking records. This finding validates with the findings of Senyo, Effah, and Addae (2016) and Thong (1999), who found that SMEs in developing countries usually tend not to be financially sound and, hence, are more likely to adopt a relatively less expensive technology. The study brought to bear that SMEs whose owners are more educated, innovative, and have good skills in the use of computers are more likely to adopt AIS technology than otherwise. The study brought to the limelight that Owner Innovativeness indirectly influences AIS adoption through organizational readiness. Thus, organizational readiness facilitates the relationship between owner innovativeness and AIS adoption). This study has brought to bear that competition in SMEs' business world (for example, those from competitors, trade partners, financial institutions, etc.) does not influence AIS adoption.

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