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To Link this Article: <http://dx.doi.org/10.6007/IJARAFMS/v12-i2/13021> DOI:10.6007/IJARAFMS /v12-i2/13021

Received: 19 February 2022, **Revised:** 21 March 2022, **Accepted:** 30 March 2022

Published Online: 10 April 2022

In-Text Citation: (Mahama & Dahlan, 2022)

To Cite this Article: Mahama, F., & Dahlan, H. M. (2022). HOTE Model for Accounting Information System Adoption for Small and Medium Scale Enterprises in Northern Ghana. *International Journal of Academic Research in Accounting Finance and Management Sciences*, 12(2), 56-83.

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Vol. 12, No. 2, 2022, Pg. 56 - 83

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HOTE Model for Accounting Information System Adoption for Small and Medium Scale Enterprises in Northern Ghana

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Abstract

Accounting information systems (AIS) assist small and medium-sized businesses (SMEs) in making better decisions. SME accounting must be handled effectively in order for them to survive and grow. Previous study on AIS deployment in Ghana has mostly overlooked critical areas such as SMEs. In Ghana, there is currently lack of model that combines all technological, human, organizational, and environmental factors. The human-organization-technology-environment (HOTE) model was created by combining the four categories and investigates factors influencing SMEs' AIS adoption. The most common SMEs AIS adoption factors were then identified. IT officers' innovativeness; staff IT capability; managerial structure; organizational readiness; software perceived benefits; facilitating conditions; competitive pressure and government support are these factors. The technology-organization-environment (TOE) and human-organization-technology (HOT-Fit) models were utilized to build the model. Survey of SMEs was done and evaluated using Partial Least Squares Structural Equation Modelling (PLS-SEM). It demonstrates that 7 of the 11 hypotheses were supported, with one, two, or three hypotheses from each of the four dimensions. Findings will contribute to earlier research by giving theoretical and practical implications for AIS adoption and SMEs performance. Based on the findings, stakeholders were advised to encourage SMEs AIS adoption.

Keywords: Northern Ghana, AIS adoption, SME, Human Organization, Factors

Introduction

SMEs are becoming increasingly important in terms of job creation in Ghana and around the world. SMEs make significant contributions to Gross Domestic Product (GDP) and

poverty alleviation (Nketsiah, 2018). Accounting Information Systems (AIS) are critical in today's SMEs (Ghaffar et al., 2019). AIS is a technology-based system that collects, stores, and processes accounting data. The primary purpose is to provide stakeholders with timely and accurate accounting-based information (Quinn & Strauss, 2018). According to Tilahun (2019), it provides administrators with the accounting data they need to make decisions.

Good AIS will help firms, especially SMEs, perform better (Ghaffar et al., 2019). Approximately 60% of SMEs fail during the first year. One of the biggest reasons for failure is the lack of effective bookkeeping and accounting practices (Musah, 2017). Previous research on AIS adoption in Ghana has largely ignored SMEs. Despite the availability of AIS literature among SMEs in Africa, Asia, the Middle East, Europe and America. The available academic literature on Ghana has a bias against SMEs adopting AIS. Even if there is more empirical evidence in Africa, there is not enough research on SMEs AIS adoption model in Ghana. The Ghanaian studies are primarily on financial institutions and large business. In addition, the research does not incorporate human, organization, technological, and environmental aspects into adoption theories for SMEs. Thus, research combining human, organizational, technological, and environmental elements are required. IT infrastructure, and IT compatibility are important pre-requisites for AIS adoption in SMEs (Awiagah, Kang & Lim, 2016). With the right management structure, AIS is readily adopted

Combined TOE and HOT-Fit models of Yusof, Kuljis, Papazafeiropoulou, and Stergioulas (Alam et al., 2016) will be used as the underpin models in this study. It is rare in the literature of AIS SMEs adoption, therefore creating a knowledge deficit. Therefore, this study proposed a model that combines human, organizational, technological, and environmental dimensions (HOTE), and will also reveal and explain the factors impacting SMEs AIS adoption. The primary purpose of the study is to assess SMEs' use of AIS in Northern Ghana. The following specific goals are specified to achieve the study's stated goal:

- a) To investigate the factors that influence the adoption of AIS by SMEs
- b) To develop AIS adoption model for SMEs based on identified factors

Literature Review

AIS in SMEs

According to Ndesaulwa and Kikula (2016), defining and researching SMEs is not uniform. SMEs are often defined by their personnel count, total investment, and sales volume. SMEs, according to Durst et al (2018) are characterised by their lack of money, human resources, managerial structures, and worldwide market access. Some viable quantitative metrics concepts focus on annual turnover country-wise. For example, the European Union's definition of a SMEs differs from North America's. In China, SMEs are classified by their core business and activity. According to the Ghana Statistical Service (GSS) (2015), large-scale firms employ over 100 people. SMEs employ 6-30 employees, while micro-sized businesses employ 1-5 persons. Scholars and practitioners from around the world have not agreed on a single definition of SMEs. The country-by-country definitions are consistent. This study focuses on SMEs in Northern Ghana and uses a Ghanaian definition throughout. In this study, SMEs are defined as enterprises employing 99 or less workers. SMEs form the backbone of the Ghanaian economy, accounting for around 85% of all businesses (International Trade Centre, 2016).

AIS is a technology-based system that collects, stores, and processes accounting data (Quinn & Strauss, 2018). According to Romney et al (2013) making effective decisions requires an understanding of an organization's overarching business strategy. AIS also boosts business turnover and profitability, which is beneficial to SMEs. Failure to keep complete accounting records is sometimes blamed on a lack of accounting experience (Musah, 2017). The overwhelming majority of SMEs do not prepare financial statements in compliance with SME International Financial Reporting Standards (IFRS) (Musah et al., 2018). The design of an AIS can have an impact on the culture of a company (Romney et al., 2013). There is a substantial correlation between AIS attributes and company performance (Chong & Nizam, 2018). Without AIS, SMEs cannot successfully increase their companies' control systems and accountability, as well as coordinate their activities (Opoku-Ware, 2015). In the lack of AIS, SMEs accounting records cannot support financial performance measurement effectively (Musah, 2017).

The Importance of AIS in SME Performance

SMEs are encouraged to improve the efficiency of their accounting and financial management systems (Ismail et al., 2017). Accounting information systems that are effective ensure that appropriate, adequate, relevant, and true planning is done, that information is collected from all management levels, and that control is improved. It also provides an opportunity to update and align processes with perceived best accounting results (Harash, 2017). Adoption of AIS by SMEs is suggested to achieve the aforementioned goals and increase SMEs' performance. This includes effective monitoring and evaluation, easy adjustment and facilitation of financial statement preparation, as well as simplifying and increasing accounting data understanding, all of which will improve the firm's performance.

Current Researches on AIS Adoption Theories

Theoretical models approach to ICT adoption is genuine in terms of technological, organizational, environmental and socio-cultural features. Use of such hypotheses is feasible and realistic (Hiran & Henten, 2020). Some of them are: Technology-organization-environment (TOE) Framework Model, Roger's Diffusion of Innovation Theory (DOI), Technology Acceptance Model (TAM) and human-organization-technology (HOT-Fit) Model (Iswanaji, 2019; Sallehudin et al., 2019; Scherer et al., 2019; Scott & Mcguire, 2017; Tripopsakul, 2018). The Tornatzky et al. approach, introduced in 1990, was commonly used to measure technology acceptability at the corporate level. Technology, organisational, and environmental contexts are the three sorts of contexts that could hypothetically influence technology adoption (Tripopsakul, 2018). The DOI is defined and used to identify patterns of variation in trends (Scott & Mcguire, 2017). According to Chang (2011), Rogers' theory between 1962 and 2003 works as a methodical system for recognising the dissemination of an innovation. It is a hypothesis that helps to clarify the adoption process of an innovation by exhibiting its entire life cycle in accordance with the stages of communications and interactions with human data. As a result, it proposed recognised understandings of the development of interfaces that enable the usage and access of Twitter hashtags.

TAM, founded by Davis in 1989, is one of the most analytical frameworks for understanding the application of new technologies and use processes, according to Tripopsakul (2018). Perceived usefulness (PU) and perceived ease of use (PEOU) are important factors in the acceptance of new technology. Scherer, Siddiq and Tondeur (2019)

pointed out that, while there is agreement on which TAM characteristics can predict technology adoption, there are some disagreements and incoherent findings in the current industry. According to Alam et al (2016), individuals with long term IT experience and knowledge play a critical influence in firms' IT application adoption. IT infrastructure and perceived compatibility are the two most influential elements. To solve technology, human, and organisational challenges, Yusof, Kuljis, Papazfeirpoulou, and Stergioulas introduced the HOT-Fit paradigm for Health Information System (HIS). The researchers' analysis at the time revealed that current evaluation methodologies used to assess various aspects of HIS should be improved. This model was created following a thorough examination of prior HIS evaluation studies (Yusof et al., 2007).

Underpin Theories for SMEs AIS Adoption

In this study, the TOE and HOT-Fit are underpinned theories/models used to develop the preferred model among the theories. These theories were chosen because, unlike other theories, it focuses more on innovation, which is crucial to AIS acceptability. However, neither of the two models addresses all four aspects of AIS adoption, necessitating their combination. The HOT-Fit model does not include an environmental feature, whereas the TOE model does. Because TOE lack a human dimension, they are useless for addressing AIS adoption difficulties. The HOTE model combines the four components to examine the factors impacting SMEs' adoption of AIS. As a result, the model cannot be used directly and must be updated to integrate constructs based on the identified factors. As previously noted, most adoption models are three-dimensional and emphasize three-dimensional aspects. The majority of models are TOE-related. There have been lack of studies on adoption models and factors that have four dimensions, one of which is human. In this case, a HOTE model is required.

Human Factors

The modern use of resources, experience, and human assets necessitates technological skills. The human factors impacting AIS adoption can be classified as competency, knowledge, skills, and innovativeness (Haafst & Dondjio, 2017). If SMEs have the potential to bring new ideas and think independently, the likelihood of them adopting AIS is high (Brem, Tidd & Daim, 2019). It is well acknowledged that individuals who can work with IT in an organisation play a critical role in the organization's adoption of IT applications (Alam et al., 2016). It has been established that human attributes such as IT knowledge have a relative advantage and effect in the deployment of AIS by SMEs. Businesses will adopt a system that they can manage (Sallehudin et al., 2019).

Organizational Factors

Organizational characteristics, according to Darshi et al., (2020), are relevant and have a favorable association with AIS adoption. These include management structure and organizational readiness. The caliber of management and structure put in place as AIS variables have a significant impact on the relevancy of financial data (Elsharif, 2019). The proper management structure of SMEs will aid in the implementation of AIS (Lihniash et al., 2019). The organizational readiness plays a significant role in convincing SMEs to implement AIS in their particular operations (Ghaffar *et al.*, 2019).

Technological Factors

Ghanaian SMEs understand the importance of IT infrastructure, accounting software

perceived benefits, and IT facilitating conditions in the effective implementation of AIS (Awiagah, Kang & Lim, 2016). Accounting information (AI) that is accurate and reliable can lead to enhanced organizational performance, which is significantly influenced by IT infrastructure (Chong & Nizam, 2018). Information technology infrastructure is the most powerful factor driving technology adoption. IT must be available 24 hours a day, seven days a week, with high speed and the ability to handle massive amounts of data. End users will find it easier to adapt if they have access to IT infrastructure (Nguyen & Nguyen, 2020). The perceived benefits of an AIS will shape stakeholders' perceptions of the AIS. Organizations feel that electronically exchanging information among users is a more convenient and cost-effective manner than traditional data initiatives (Esmailzadeh, 2019).

Environmental Factors

The importance of environmental considerations in the adoption of AIS cannot be overstated (Al-Nasrawia & Thabit, 2020). According to Awiagah et al., (2016), governments require appropriate régime regulations and principles to enhance the authenticity of transactions and motivate private venture. External pressure is having a favorable impact on SMEs' plans to adopt AIS (Kumar et al., 2017). The usage of the AIS by SMEs is influenced positively by competitive pressure (Lutfi et al., 2016). In Ghana, there is minimal research on the subject. The few studies that looked at the factors driving AIS adoption in Ghana favored large corporations over SMEs.

SMEs AIS Adoption Factors

The HOTE dimensions were developed based on earlier research published in 54 journal papers and conference proceedings. To develop the most acceptable language for the factors, experts were consulted. The study identified constructs that will influence SMEs' AIS adoption under the human dimension. Key characteristics are IT Officers' Innovativeness (IOI), Staff IT Capability (SIC), and Accounting Knowledge Competency (KC) (Alam et al., 2016; Brem, Tidd & Daim, 2019). Managerial Structure (MS) and Organizational Readiness (OR) are among the elements under organizational dimension that influence the adoption of AIS by SMEs. OR refers to the level of commitment of stakeholders to IT adoption; MS relates to how enterprises organise their management structure (Darshi *et al.*, 2020; Elsharif, 2019; Lihniash et al., 2019). In the technological dimension, a variety of factors influence SMEs' adoption of AIS. Examples include IT Infrastructure (II), Software Perceived Benefits (SPB), and Facilitating Condition (FC). Some examples include the availability of IT equipment, end-user access to IT infrastructure, and a well-functioning IT infrastructure. Stakeholders' perceptions of an AIS will be shaped by its perceived advantages. By delivering accurate and timely information, AIS can increase data quality and security (Chong & Nizam, 2018; Frimpong et al., 2018; Nguyen & Nguyen, 2020). Among the elements that also influence a company's IT adoption under environmental dimension are government support (GS) and competitive pressure (CP). GS on SMEs refers to policies and laws that help SMEs run more efficiently (Hazam et al., 2019; Awiagah et al., 2016). The competitive environment in which SMEs operate is referred to as the SMEs CP.

Proposed Adoption AIS Model

In an examination of identified elements that influence the adoption of AIS on the performance of SMEs, the proposed model decompose human, organisational, technological, and environmental dimensions into categories. The following research model combines the

TOE and HOT-Fit models. TOE is the most comprehensive and commonly used theory for assessing AIS adoption in SMEs, with an emphasis on three contexts: technology, organisation, and environment (Tripopsakul, 2018). However, in every technological application, the human factor is crucial. That is human characteristics contained in the HOT-Fit model impact technology adoption (Iswanaji, 2019; Sallehudin et al., 2019). TOE is made up of technological, organisational, and environmental components. It consists of human, organisational, and technological components. The human and environmental elements are omitted if either model is employed alone, yet both contain essential factors driving SMEs AIS adoption. Figure 1 depicts the conceptual framework driven by the model.

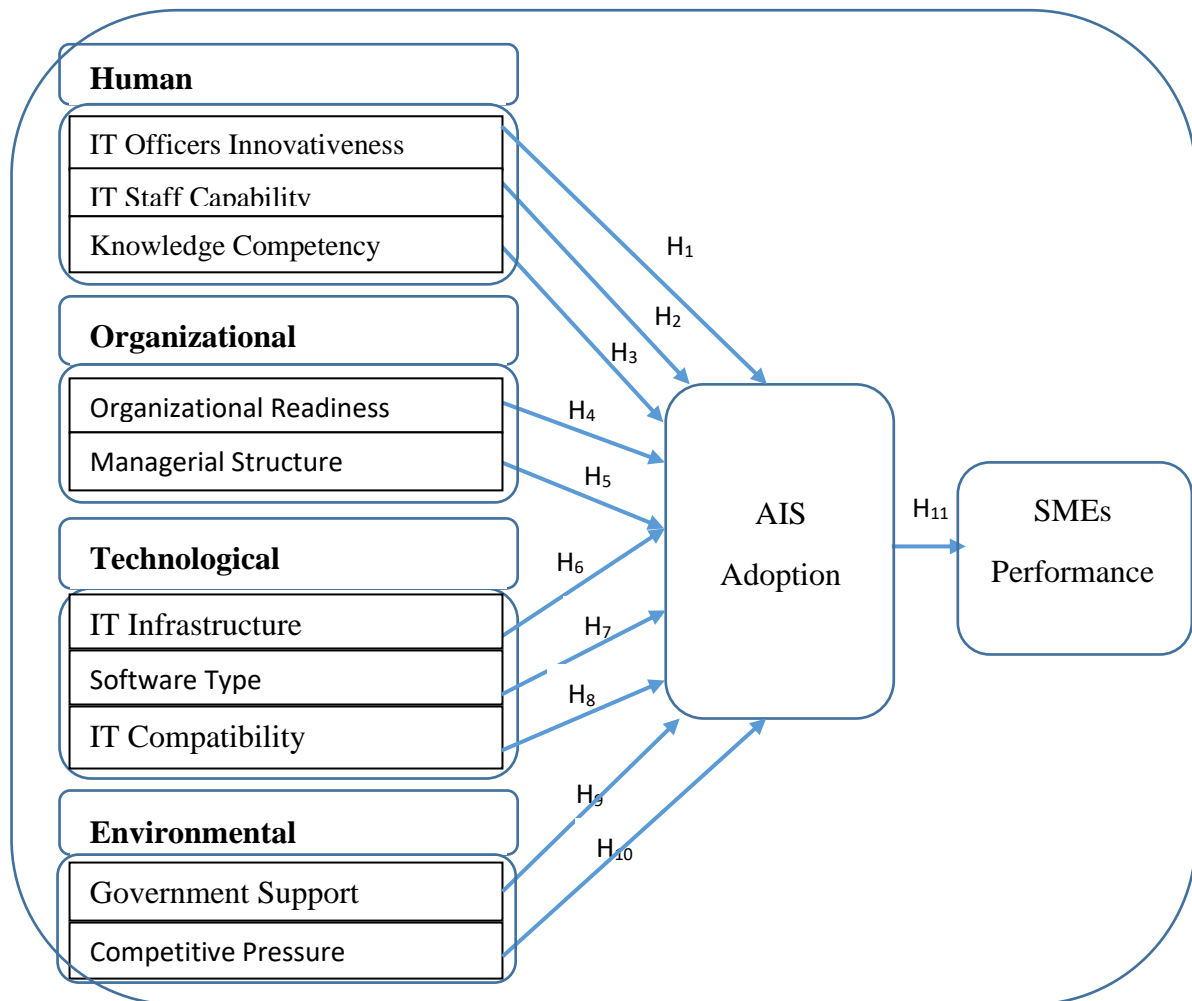


Figure 1: HOTE Model for SMEs AIS Adoption in Northern Ghana

Research Hypothesis Development

Hypothesis testing is an important component of evidence-based research. A well-thought-out hypothesis is half of the solution. Because it is the ultimate goal of any investigation, it must be key to every meaningful study design. To arrive at a tested hypothesis, you must first develop an objective theory. As a result, the study's hypotheses will be created from recognised elements influencing AIS adoption and SME success based on related evaluated literature.

Human Factors

These are the factors that help people comprehend and evaluate AIS adoption. This study focuses on the IT officers' innovativeness, staff IT capability, and knowledge competency. IT officers' innovativeness, staff IT capability, and knowledge competency are elements driving AIS adoption. To be innovative, IT officers must be able to interact with AIS. In this, study, IT Officers Innovativeness (IOI) refers to the innovativeness of SMEs' IT officers in using AIS. As a result, SMEs with the ability to generate new ideas and think independently are more likely to embrace AIS and incorporate new concepts into it. So here's the hypothesis: Hypothesis 1: IT officers' innovativeness will positively influence SME AIS adoption.

The extent to which SME IT workers can collaborate with AIS is referred to as staff IT capability (SIC). The ability of SME workers to work with and communicate with IT is defined as SIC (Alam et al., 2016). Human qualities such as IT knowledge provide a comparative advantage and influence in the deployment of AIS by SMEs (Sallehudin et al., 2019). As a result, the following hypothesis is proposed:

Hypothesis 2: Staff IT capability will positively influence SME AIS adoption.

Knowledge competency (KC) in this study refers to the extent to which the SME has staff with the requisite accounting knowledge. Accounting core competencies are the tools and abilities required for a successful shift to AIS. AIS is critical to a company's overall competitiveness and desirability (Dondjio & Haafst, 2017; Sallehudin et al., 2019). The deployment of AIS by SMEs is influenced by human qualities such as competency and skills (Sallehudin et al., 2019). As a result, the following hypothesis is proposed:

Hypothesis 3: Knowledge competency will positively influence SME AIS adoption.

Organizational Factors

The adoption of AIS by SMEs is influenced by organisational characteristics, procedures, or the environment. It has an impact on how things are done within a SME, as well as the rules and values that are anticipated. Two examples are managerial structure (MS) and organisational readiness (OR). A good MS is required for AIS to be successful and useful. A SME's MS is the organisation of an SME. The MS of SMEs will aid in their adoption of AIS. It has an impact on the relevance of financial data (Elsharif, 2019). Effective AIS adoption necessitates the establishment of a solid administrative framework (Lihniash et al., 2019). As a result, the following hypothesis emerges.

Hypothesis 4: Managerial Structure will positively influence SME AIS adoption.

OR refers to the commitment of organisational stakeholders to the installation of a new application. Adoption of AIS may necessitate financial and behavioural commitments. Examining the relationship between OR and SMEs adopting AIS reveals that OR has a significant impact on SMEs adopting AIS (Ghaffar *et al.*, 2019). Darshi *et al.*, (2020), contend that financial and behavioural commitment are required for SMEs to adopt AIS. So here's the hypothesis:

Hypothesis 5: Organizational readiness will positively influence SME AIS adoption.

Technological Factors

It relates to the impact of new procedures and equipment on SMEs. These criteria are used to assess the technical capabilities of available alternatives. In impoverished countries

such as Ghana, the availability of equipment such as computers and software is important to the adoption of AIS and related technologies. Ghanaian SMEs understand the value of IT infrastructure, software, and compatibility. As a result, these SMEs are more likely to adopt new technologies (Awiagah, Kang & Lim, 2016). SMEs must have suitable IT Infrastructure (II) in order to adopt AIS (Chong & Nizam, 2018). This broadly refers to an organization's IT resources. Thus, in this study, II refers to the availability of IT resources that allow SMEs to adopt AIS (Awiagah, Kang & Lim, 2016). As a result, the following hypothesis was proposed: Hypothesis 6: IT infrastructure will positively influence SME AIS adoption.

The term " Software Perceived Benefits (SPB)" refers to a person's view of the benefits of the system. SMEs AIS SPB refers to the user's view of the software's benefits. The perceived benefits of an AIS will have an impact on how stakeholders perceive the AIS. The perceived benefits of an AIS will shape stakeholders' perceptions of the AIS (Esmailzadeh, 2019). The following is the proposed hypothesis as a result:

Hypothesis 7: Software perceived benefits will positively influence SME AIS adoption.

Facilitating conditions (FC) have a considerable impact on the adoption of new information system improvements (Moghavvemi et al., 2017). The degree to which people believe that the existing organizational and technical infrastructure can enable the adoption of a system is referred to as FC. It refers to the extent to which SMEs' resources can support AIS adoption in the context of this study. The availability of suitable resources and assistance is one of the enabling circumstances for AIS adoption (Ambarwati, Harja & Thamrin, 2020). As a result, the following hypothesis is put forward:

Hypothesis 8: Facilitating conditions will positively influence SME AIS adoption.

Environmental Factors

Environmental factors, for example, influence the decision of various SMEs to adopt a specific AIS. Government support (GS) and competitive pressure (CP) are examples of these. The importance of these components in AIS adoption cannot be emphasised (Al-Nasrawia & Thabit, 2020). According to Awiagah et al. (2016), GS has a significant impact on AIS adoption. The effect of government regulatory support on the adoption of AIS by SMEs is GS. To increase the performance of SMEs in countries that adopt technologies, sufficient government regulatory support is required. Government efforts for AIS adoption include the development of policies for SME operations as well as financial and technological support. As a result, the proposed hypothesis is as follows:

Hypothesis 9: Government support will positively influence SME AIS adoption.

CP refers to the extent of the competitive environment inside the market in which SMEs operate (Yeng et al., 2016). External pressure from competitors, suppliers, and other business partners' influences AIS decision-making (Kumar et al., 2017). As a result, the following hypothesis is proposed:

Hypothesis 10: Competitive pressure will positively influence SME AIS adoption.

AIS Influence on SMEs Performance

SME performance (SP) refers to how well a SME accomplishes its financial and strategic objectives. The use of AIS enhances SME operations and work processes (Imran et al., 2018). By processing data more quickly, accounting software increases the productivity

and profitability of SMEs (Opoku-Ware, 2015). The continued advancement of AIS is expected to have a positive impact (Iswanaji, 2019), enabling for more efficient task completion while improving work quality and production (Arcega et al., 2015). Based on the research, the following hypothesis is proposed:

Hypothesis 11: SMEs AIS adoption will positively influence SMEs performance.

Research Methodology

This research is based on positivism, a scientific approach to inquiry. It entails making generalizations based on observed social truths. This gives objective knowledge and proof free of human bias (Kivunja & Kuyini, 2017; Saunders, Lewis & Thornhill, 2019). Theory can be approved and sanctioned completely or in part. As a result, new concepts are produced and studied in greater depth. The study goal has been to investigate AIS literature for SMEs in Ghana and adoption strategies since 2015. Factors were found in a massive database of AIS adoption papers. SMEs, AIS, companies/general business, government, and others are all included in the search. The HOTE research model that was created combines HOT-Fit and TOE models. The study's questions and assertions were based on previous research (Al-Sabaawi, 2019; World Bank, 2016; World Bank, n.d., 2016; Ahmad, 2012; Ploybut, 2012). The study used closed-ended questions and assertions as well as a 7-point Likert scale. Agriculture, industry, and services are among the study's focus sectors (Ghana Statistical Service (GSS), 2017). A good sample is one that is statistically representative of the population and large enough to answer the research topic (Majid, 2018). This study uses multistage sampling (Sykes et al., 2016) and employed 450 sample size determined from sample size determination table created by Krejcie and Morgan in 1970 (Agyapong & Attram, 2019). PLS-SEM was utilized as the preferred statistical strategy for data analysis (Awang, Afthanorhan, & Asri, 2015).

Result and Discussion

450 surveys were distributed to SMEs, but only 380, or 84%, were returned. The analysis is based on responses from SMEs' owners and finance officers. This was conducted using PLS SEM and IBM SPSS Statistics 20. The indicator construct, convergent, discriminant validity and structural model were evaluated. It compares the outcomes of hypothesis testing and HOTE Model is developed for Northern Ghanaian SMEs. Kurtosis and skewness are measures of a variable's symmetry was done in this study. Normal skew and kurtosis values are -2 to +2 (Tham et al., 2019). Skewness between -3 and +3 is also acceptable, as is kurtosis between -10 and +10 (Ban, 2019). All values for these two tests were within the acceptable range, with the exception of SP_1, which had a kurtosis of 12.042 and a skewness of 2.890. However, this is acceptable because the difference is minor and the skewness is acceptable.

Use of Accounting Information System (AIS)

The AIS is critical for company administration. These individuals provide a wealth of evidence of firm activity as well as accurate information. As a result, all business financial decisions and actions require accurate and timely financial accounts. The results of AIS usage, as well as the time period and AIS software used by the SME, are shown in Table 1.

Table 1: Use of Accounting Information System (AIS)

Item	Number of Respondents	Percentage (%)	
AIS Usage	Yes	283	77.11%
	No	84	22.89%
	Total	367	100.00%
Period AIS Use	Less than 6 months	17	6.01%
	7 months to a year	15	5.30%
	1 – 2 years	71	25.09%
	More than 2 years	180	63.60%
	Total	283	100.00%
AIS Software Use	Spreadsheet	71	25.09%
	QuickBooks	52	18.37%
	Tally	52	18.37%
	Manager	28	9.89%
	Sage	13	4.59%
	Enterprise Resource Planning (ERP)	44	15.55%
	Others	23	8.13%
	Total	283	100.00%

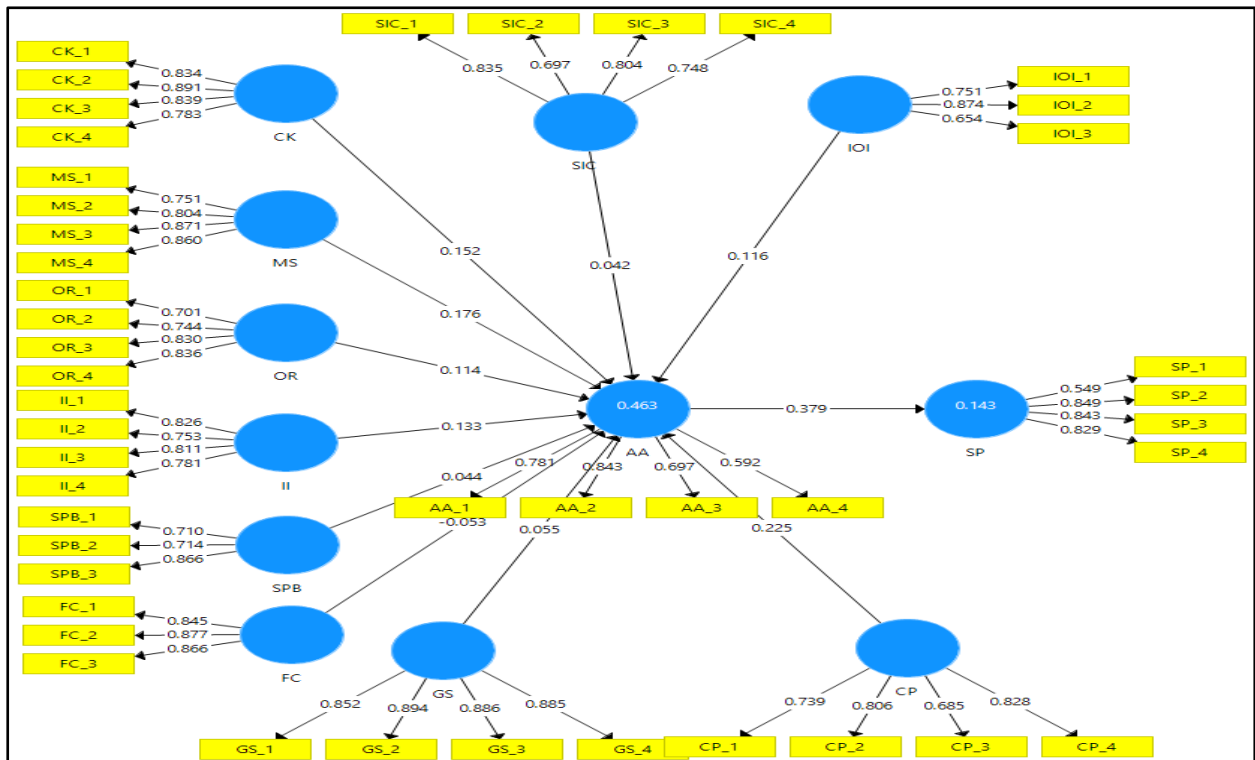
According to Tale 1, 77.11% of respondents use AIS in their SMEs, while 22.89% do not. When it comes to how long SMEs have been utilising AIS, the majority (63.60%) have been doing so for more than two years. While 25.09% have been using AIS for 1-2 years, 6.01% using it for less than 6 months, and 5.30% for 7 months to a year. Respondents were asked to identify their accounting software in terms of AIS software use. With 25.09% spreadsheets, followed by QuickBooks and Tally, each with 18.37%. In addition, 15.55% utilise Enterprise Resource Planning (ERP), and 9.89% use shop manager. Sage is used by 4.59% of respondents, while other custom programmes are used by 8.13%. Because of technological concerns, many SMEs do not use AIS. These impediments can be categorised based on human, organisational, technological, and environmental factors.

The outcomes reveal that human issues that impeded SMEs from adopting AIS were found as a lack of IT Officers' innovativeness, staff IT capability, and knowledge competency. Many SMEs (28.92%) and (22.89%) indicated they are unable to implement AIS due to a lack of IT and accounting skills on their personnel, as well as all three factors. In terms of organisational features, 42.68% of 82 respondents report that their SMEs lack organizational readiness, 30.49% lack managerial structure, and 26.83% lack both managerial structure and organizational readiness. According to the 83 respondents, 20.48% reported a lack of IT infrastructure, 10.84% reported a lack of software perceived benefits, and 7.23% reported a lack of favourable conditions. Concerning environmental difficulties, 56.79% said there was a lack of government support, 22.22% said there was a lack of competitive pressure, and 20.99% said both.

Measurement Model Assessment

Statistical tools which have been used by social scientists for many years to design, analyse, and validate research findings were used. This provided fundamental statistical methods and laid the groundwork for partial least square structural equation modelling. This

method can be used to corroborate or contradict existing theories by uncovering data patterns and linkages (Hult, Ringle and Sarsted, 2021). Indicator and construct reliability are used to evaluate reflective measurement models. To determine the validity of any statistic, the average variance extracted (AVE) is employed. The Fornell-Larcker Criterion, Cross Loading, and the Heterotrait-Monotrait Ratio (HTMT) are other ways for comparing reflectively appraised constructs (Hair Jr. et al., 2021). The assessment measurement model is depicted in Figure 2.



*Note: AA = AIS Adoption; CK = Competency Knowledge; CP = Competitive Pressure; FC = Facilitating Conditions; GS = Government Support; II = IT Infrastructure; IOI = IT Officers Innovativeness; MS = Managerial Structure; OR = Organizational Readiness; SIC = Staff IT Capability; SPB = Software Perceived Benefits; SP = SMEs Performance

Figure 2. The Measurement Model

Indicator Reliability

Internal consistency reliability is a measure of how closely connected two indicators are. In PLS-SEM, composite reliability is an important metric. More trustworthy values imply greater reliability. Lower indicator loadings (0.708) are common in social science research. If indicators are not eliminated when their loadings fall below 0.70, other reliability and validity criteria should be carefully examined. Deleting indicators with loadings ranging from 0.4 to 0.708, for example, should only be considered if it improves internal consistency, reliability, and convergent validity. A score of 0.60-0.70 is required to be considered "acceptable in exploratory research." Values greater than 0.90 (especially 0.95), indicate indicator redundancy, lowering construct validity. Strange responses are possible at 0.95 and higher. Cronbach's alpha approximates true internal consistency reliability even in the absence of tau-equivalence (Hair Jr. et al., 2021).

Construct Reliability and Validity

Analyzing data, taste, smell, and so on may be difficult if the questionnaire construct has not been validated. The construct validity of a questionnaire is determined by examining its association with other variables. Construct validation is classified as small, moderate, or large according on whether the observed correlation coefficient is 0.1, 0.3, or 0.5 or greater. It is determined by the correlation coefficient, which is 0.5. The two types of construct validity are convergent and discriminant (Architha and Sreeramana, 2020).

Convergent Validity

It assesses the degree of agreement among several indicators of a particular concept (Hamid, Sami and Sidek, 2017). The factor loading, composite reliability (CR), and average variance extracted (AVE) of the indicator must all be examined. Cronbach's alpha examines a questionnaire's internal consistency to ensure that survey responses are consistent. According to experts, an alpha of 0.70 or higher indicates good internal consistency. A Cronbach's alpha of 0.7 or below suggests inconsistency (Architha and Sreeramana, 2020). The AVE is the grand mean of the squared loadings of the construct's indicators (Hamid et al., 2017). The AVE must be more than 0.50 to be considered valid.

Table 2: Reliability and Convergent Validity

Construct	Indicator	Outer Loading	Cronbach's Alpha >0.6	Composite Reliability >0.7	Average Variance Extracted (AVE) >0.5
AIS Adoption	AA_1	0.781	0.710	0.821	0.539
	AA_2	0.843			
	AA_3	0.697			
	AA_4	0.592			
Competency Knowledge	CK_1	0.834	0.858	0.904	0.702
	CK_2	0.891			
	CK_3	0.839			
	CK_4	0.783			
Competitive Pressure	CP_1	0.739	0.766	0.850	0.588
	CP_2	0.806			
	CP_3	0.685			
	CP_4	0.828			
Facilitating Conditions	FC_1	0.845	0.829	0.897	0.745
	FC_2	0.877			
	FC_3	0.866			
Government Support	GS_1	0.852	0.902	0.932	0.773
	GS_2	0.894			
	GS_3	0.886			
	GS_4	0.885			
IT Infrastructure	II_1	0.826	0.805	0.871	0.629
	II_2	0.753			
	II_3	0.811			
	II_4	0.781			

IT Officers Innovativeness	IOI_1	0.751	0.640	0.807	0.586
	IOI_2	0.874			
	IOI_3	0.654			
Managerial Structure	MS_1	0.751	0.840	0.893	0.677
	MS_2	0.804			
	MS_3	0.871			
	MS_4	0.860			
Organizational Readiness	OR_1	0.701	0.785	0.861	0.608
	OR_2	0.744			
	OR_3	0.830			
	OR_4	0.836			
Staff IT Capability	SIC_1	0.835	0.773	0.855	0.597
	SIC_2	0.697			
	SIC_3	0.804			
	SIC_4	0.748			
SMEs Performance	SP_1	0.549	0.775	0.856	0.605
	SP_2	0.849			
	SP_3	0.843			
	SP_4	0.829			
Software Perceived Benefits	SPB_1	0.710	0.664	0.809	0.588
	SPB_2	0.714			
	SPB_3	0.866			

Table 2 shows that the composite reliability of all constructs is over 0.70. Aside from two constructions with Cronbach's alpha values of 0.640 and 0.664, all other constructs have Cronbach's alpha values between 0.710 and 0.902. The AVE values range from 0.539 to 0.773, both larger than 0.5. Thus, the constructs are internally consistent and explain 50% or more of the variance in the indicators.

Discriminant Validity

The degree to which two variables differ is referred to as discriminant validity (Mahmoud et al., 2018). This metric compares the uniqueness of a construct to others in the model. The classic Fornell-Larcker measure is calculated by multiplying each reflectively rated construct's AVE by the squared inter-construct correlation (Hair Jr. et al., 2021). The square root of AVE must be greater than the variables (Mahmoud et al., 2018). According to research, this metric performs poorly when construct loadings change merely little and fails to objectively discover discriminant validity issues. HTMT correlation ratio is the cross-construct correlations of an indicator. The discriminant validity is hampered by high HTMT values. A 0.90 threshold is advised for related constructs such as cognitive, affective, and loyalty. HTMT of 0.90 or above indicates a lack of discriminant validity. A threshold value of 0.85 is recommended when the concepts are more distinct (Hair Jr. et al., 2021). To measure discriminant validity, the HTMT correlation ratio was used. This criterion has a higher specification and sensitivity rate (97-99%) than the cross-loadings criterion (0.00%) and the Fornell-Lacker criterion (20.82%) (Hamid, Sami and Sidek, 2017). Table 3 shows the HTMT correlation ratio.

Table 3: Heterotrait-Monotrait Ratio (HTMT)

	AA	CK	CP	FC	GS	II	IOI	MS	OR	SIC	SP	SP B
AA												
CK	0.634											
CP	0.651	0.533										
FC	0.539	0.622	0.484									
GS	0.504	0.554	0.533	0.453								
II	0.432	0.223	0.145	0.560	0.098							
IOI	0.653	0.505	0.633	0.416	0.602	0.285						
MS	0.673	0.698	0.527	0.705	0.444	0.365	0.522					
OR	0.591	0.455	0.328	0.548	0.334	0.691	0.440	0.613				
SIC	0.612	0.746	0.528	0.571	0.542	0.393	0.652	0.569	0.510			
SP	0.503	0.280	0.331	0.360	0.079	0.407	0.181	0.365	0.326	0.154		
SP B	0.419	0.461	0.334	0.565	0.295	0.363	0.362	0.465	0.338	0.398	0.467	

Table 3 shows that, the HTMT values are all within the 0.85 range. Overall, discriminant validity is accepted for the measurement method, and discriminant validity between constructs is supported (Hamid, Sami and Sidek, 2017). The analysis concluded that the measurement model's reliability and validity were satisfactory. The measurement model's estimated findings show that the measurements and constructs are trustworthy and valid. This study's measurement model can be applied to the structural model to provide insight.

Path Coefficient (β)

Path coefficients are used to estimate structural model connections between constructs. It is usually between -1 and 1, but it might be smaller or larger. Positive path coefficients are typically associated with statistically significant correlations, whilst negative path coefficients are typically associated with weaker relationships. Low numbers close to 0 are rarely significant. Using the bootstrap standard error, compute t values and p values. The empirical t value is greater than the critical value. The most common critical values for two-tailed tests are 1.65 (significant level = 10%), 1.96 (5%), and 2.57 (1%). The critical values for one-tailed tests are 1.28 (significant level = 10%), 1.65 (5%), and 2.33 (1%). In nature, researchers frequently use a 10% significance level (Hair et al., 2017). Figure 3 depicts t-statistics for each path. Only the path from Facilitating conditions (FC) to AIS adoption (AA) has a value of $\beta = -0.053$.

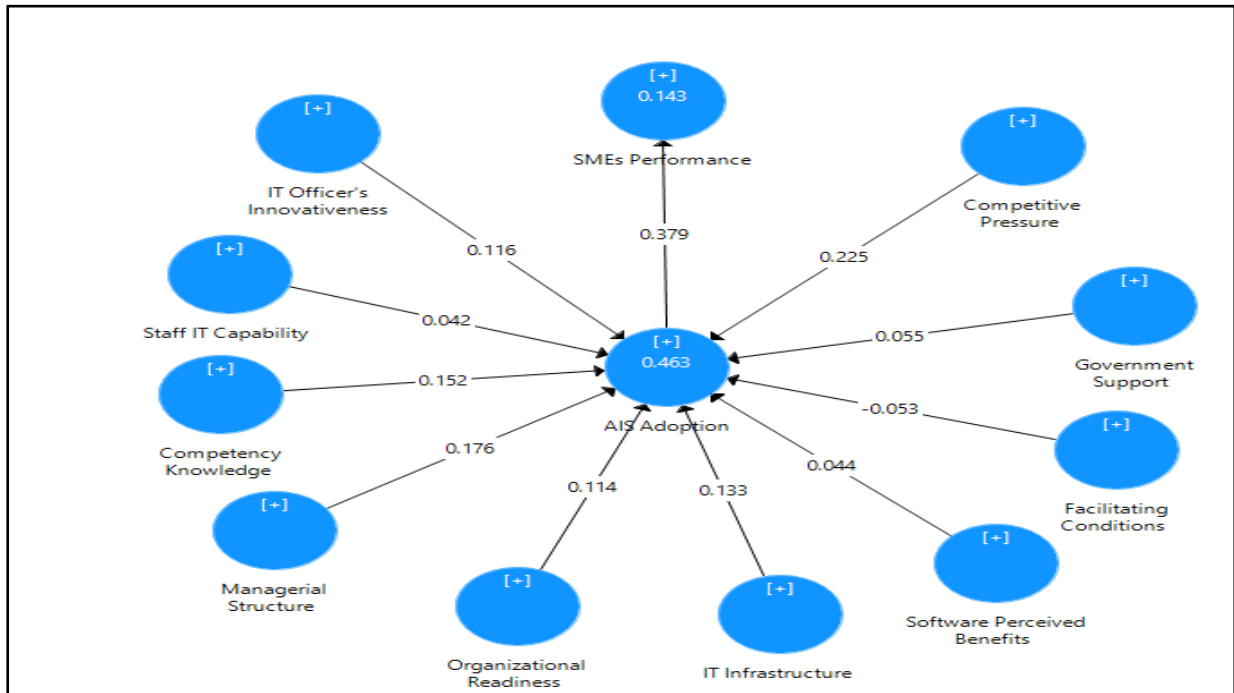


Figure 3. Path Coefficients

Discussion about Research Hypotheses

The hypotheses testing is critical in this study. To begin, a well-thought-out hypothesis must be developed and tested. The study hypotheses were developed to forecast the outcome of the study. To arrive at a tested, falsifiable, and realistic hypothesis, deductive processes were used. The relationship between two or more measurable variables is expressed in the form of a relationship statement (Mourougan and Sethuraman, 2017). Path coefficients, t-values, and p-values were used to analyze them. The t-value significance level was set to >1.28: significant level = 10%; >1.65: significant level = 5%; and >2.33: significant level = 1%. The p-value significant value was set to: 0.10: significant level = *, 0.05: significant level = **, and 0.01: significant level = *** (Hair et al., 2017). If the p-value falls within these three ranges, the association is supported. The study hypothesis testing structural model analysis results are summarized in Table 4.

Table 4: Summary of Hypotheses Testing

Hypothesis	Description	β	T Values	P Values	Significant Level	Results
H ₁	IOI -> AA	0.116	2.308	0.011	**	Supported
H ₂	CK -> AA	0.152	2.082	0.019	**	Supported
H ₃	SIC -> AA	0.042	0.678	0.249	NS	Not Supported
H ₄	MS -> AA	0.176	2.287	0.011	**	Supported
H ₅	OR -> AA	0.114	1.478	0.070	*	Supported
H ₆	II -> AA	0.133	1.954	0.026	**	Supported
H ₇	SPB -> AA	0.044	0.928	0.177	NS	Not Supported
H ₈	FC -> AA	- 0.053	0.752	0.226	NS	Not Supported
H ₉	GS -> AA	0.055	0.949	0.172	NS	Not Supported
H ₁₀	CP -> AA	0.225	3.976	0.000	***	Supported
H ₁₁	AA -> SP	0.379	5.702	0.000	***	Supported

Note: Significant value: (*p < 0.10, **p < 0.05, ***p < 0.01 and NS: Not significant)

Table 4 shows that the relationships between the IT officer's innovativeness, competency knowledge, managerial structure, organizational readiness, IT infrastructure, and competitive pressure to AIS adoption, as well as AIS adoption to SME performance have been supported. Staff IT capability, software perceived benefits, facilitating conditions, and government support relationships with AIS adoption is not supported. Each hypothesis is thoroughly discussed in turn.

Hypothesis 1: IT Officers' Innovativeness will Positively Influence SME AIS Adoption

The findings of this study's hypothesis testing show that the innovativeness of IT officers has a beneficial impact on SMEs AIS adoption in Northern Ghana. This is consistent with recent research in the field of AIS adoption (Alam et al., 2016; Brem, Tidd & Daim, 2019; Elsharif, 2019; Ghaffar et al., 2019; Haafst & Dondjio, 2017; Sallehudin et al., 2019; Tilahun, 2018). IT officers' innovation aids in the adoption of new systems and reduces the uncertainty associated with AIS implementation. Being innovative is critical in today's competitive business world. As a result, staff in SMEs who can think independently are more inclined to accept AIS and absorb new ideas. Employee creativity should be related to the use of AIS and the performance of SMEs. As a result, IT professionals must consider how their innovative actions might assist SMEs enhance their performance.

Hypothesis 2: Staff IT Capability will Positively Influence SME AIS Adoption

Staff IT capability has an insignificant link with SMEs' adoption of AIS. Other investigations have revealed the inverse (Alam et al., 2016; Haafst & Dondjio, 2017; Iswanaji, 2019; Owusu et al., 2020; Sallehudin et al., 2019; Tilahun, 2018). According to these studies, human technical competencies influence technology application. Employees that are capable contribute to the absorption of innovation, making AIS easier to execute. IT-savvy employees are critical to an organization's IT adoption. IT officers' abilities are one of the human aspects driving AIS adoption. The research, like other studies on Ghanaian SME AIS use, failed to reveal a correlation between employee IT skill and adoption. According to Ocloo et al. (2018),

low AIS adoption rates are attributable to a lack of IT skills among personnel. Some SMEs continue to use notebooks and scrap paper to record transactions (Mahama & Dahlan, 2020).

Hypothesis 3: Competency Knowledge will Positively Influence SME AIS Adoption

Hypothesis three (3) demonstrates a significant and positive relationship between competency knowledge and SMEs' adoption of AIS, confirming the hypothesis. This finding is consistent with previous research (Alam et al., 2016; Haafst & Dondjio, 2017; Sallehudin et al., 2019). Human variables promoting AIS adoption are classified in the study as competent knowledge, talents, and inventiveness. This includes, but is not limited to IT competencies of the personnel. As a result, employees' IT skills will aid in their adaptation to the new platform. A system that is easy to manage will be welcomed by businesses. As a result, one of the fundamental human aspects driving AIS adoption is competency knowledge. Human characteristics such as competency understanding also have an impact on SMEs' adoption of AIS.

Hypothesis 4: Managerial Structure will Positively Influence SME AIS Adoption

According to this study, managerial structure is favorably connected to SMEs' adoption of AIS, supporting hypothesis four (H₄). This finding is consistent with previous studies (Elsharif, 2019; Lihnash et al., 2019; Owusu et al., 2020; Tripopsakul, 2018). According to these findings, top management of Ghanaian SMEs utilizing AIS is willing to adapt to emerging technologies in order to help drive strategic organizational goals. The organizational environment of a business is linked to resources and traits such as managerial structure. AIS adoption is hampered by a lack of management support. Adopting AIS necessitates a good management structure in order to be effective. The proper management structure of SMEs would aid in their adoption of AIS.

Hypothesis 5: Organizational Readiness will Positively Influence SME AIS Adoption

As demonstrated in Table 4, there is a significant relationship between organizational readiness and SMEs' adoption of AIS. Other research indicates a significant correlation between organizational readiness and AIS adoption. Ghaffar et al. (2019), for example, discovered that organizational readiness influences SMEs' adoption of AIS. Darshi et al., (2020), state that organizational readiness in terms of financial commitment, and acceptability is critical for AIS adoption. Companies that employ AIS demonstrate a willingness to adapt to changing technologies in order to achieve their strategic objectives (Owusu et al., 2020).

Hypothesis 6: IT Infrastructure will Positively Influence SME AIS Adoption

According to the findings of this study, IT infrastructure has a positive effect on AIS adoption. The findings back up previous research findings that IT infrastructure has an impact on AIS adoption (Alam et al., 2016; Awiagah, 2016; Darshi, 2020). The most crucial technological aspect is IT infrastructure. Ghanaian SMEs recognize the importance of IT infrastructure in AIS adoption. Lack of IT services and financial resources for hardware and IT infrastructure impedes enterprise adoption of AIS even further. As a result, a strong IT infrastructure encourages SMEs to use AIS. Adoption of AIS by SMEs will profit significantly from the favorable benefits of IT infrastructure, which will increase the SMEs' overall performance.

Hypothesis 7: Software Perceived Benefits will Positively Influence SME AIS Adoption

The hypothesis testing results were for the relationship between software perceived benefits and AIS adoption contradicts Hypothesis seven. This is consistent with previous study on Ghana (Mahama & Dahlan, 2020; Ocloo et al., 2018). According to reports, Ghanaian SMEs are unable to use AIS due to a lack of understanding of its benefits. However, some SMEs continue to record transactions on paper, while others rely primarily on MAS. In contrast, (Awiagah, Kang & Lim, 2016; Esmailzadeh, 2019) discovered a significant correlation between software perceived benefits and AIS adoption. Accounting software perceived benefits are essential to Ghanaian SMEs when it comes to AIS adoption. The perceived benefits of an AIS will influence stakeholders' attitudes and enhances both quality and quantity while also speeding up the process.

Hypothesis 8: Facilitating Conditions will Positively Influence SME AIS Adoption

The study found no significant positive relationship between facilitating conditions and AIS adoption. This discovery is consistent with some previous research, but not all. SMEs may be unable to adopt AIS due to a lack of advice, timely support, or resources, according to Ambarwati, Harja and Thamrin (2020). They did not adopt AIS because they were unable to obtain assistance, support, or resources. Ghanaian SMEs, according to Awiagah, Kang & Lim (2016), recognize the need of creating conditions for AIS adoption. This also demonstrates the need for enabling conditions for SMEs to adopt AIS.

Hypothesis 9: Government Support will Positively Influence SME AIS Adoption

Contrary to hypothesis nine, this study demonstrated that government support had no effect on SMEs' adoption of AIS. This result is consistent with previous studies, particularly in the field of SME AIS adoption, which used Ghana as a case study. According to Ocloo et al. (2018), government support Ghanaian SMEs AIS adoption. The findings, however, contradict previous research (Awiagah, 2016; Hazam et al., 2019; Opoku-Afriyie, 2019). These studies emphasize the importance of government assistance in enabling the sector to meet domestic and international demand for information technology infrastructure. The Ghanaian government's policies aided internet adoption, while deregulation of the ICT industry improved the availability of numerous IT-related services.

Hypothesis 10: Competitive Pressure will Positively Influence SME AIS Adoption

The study finds link between competitive pressure and AIS adoption. Recent AIS adoption research on SMEs (Ismail, 2015; Kumar et al., 2017; Lutfi et al., 2016; Yeng et al., 2016) has shown that competitive pressure has a significant impact for AIS adoption. According to these findings, in this competitive environment, firms are more likely to utilise AIS based on the success of their competitors. External pressure is assisting SMEs in implementing AIS. Competitors, suppliers, and other business partners all have an impact on AIS adoption decision-making.

Hypothesis 11: SMEs AIS Adoption will Positively Influence SMEs Performance

The findings of this study support the previously established link between SMEs and performance. These findings are consistent with other recent studies on SMEs' use of AIS (Al-Halabi, 2019; Arcega et al., 2015; Chong & Nizam, 2018; Harash, 2017; Iswanaji, 2019; Opoku-Afriyie, 2019; Opoku-Ware, 2015; Wan Ismail et al., 2017). AIS accelerates data processing, generates reports, and increases business turnover and profitability. It increases efficiency

while improving work quality and quantity. AIS assisted SMEs in improving their overall performance by assisting with their recording and financial management systems.

In conclusion, 6 out of 10 hypotheses on SMEs AIS adoption as well as hypothesis on AIS adoption on SMEs performance were supported, indicating that AIS adoption has an impact on the performance of SMEs. Four out of ten (10) hypotheses on AIS adoption, however, were unsupported. In all, seven (7) of the eleven (11) hypotheses were found to be supported. Figure 4 depicts them.

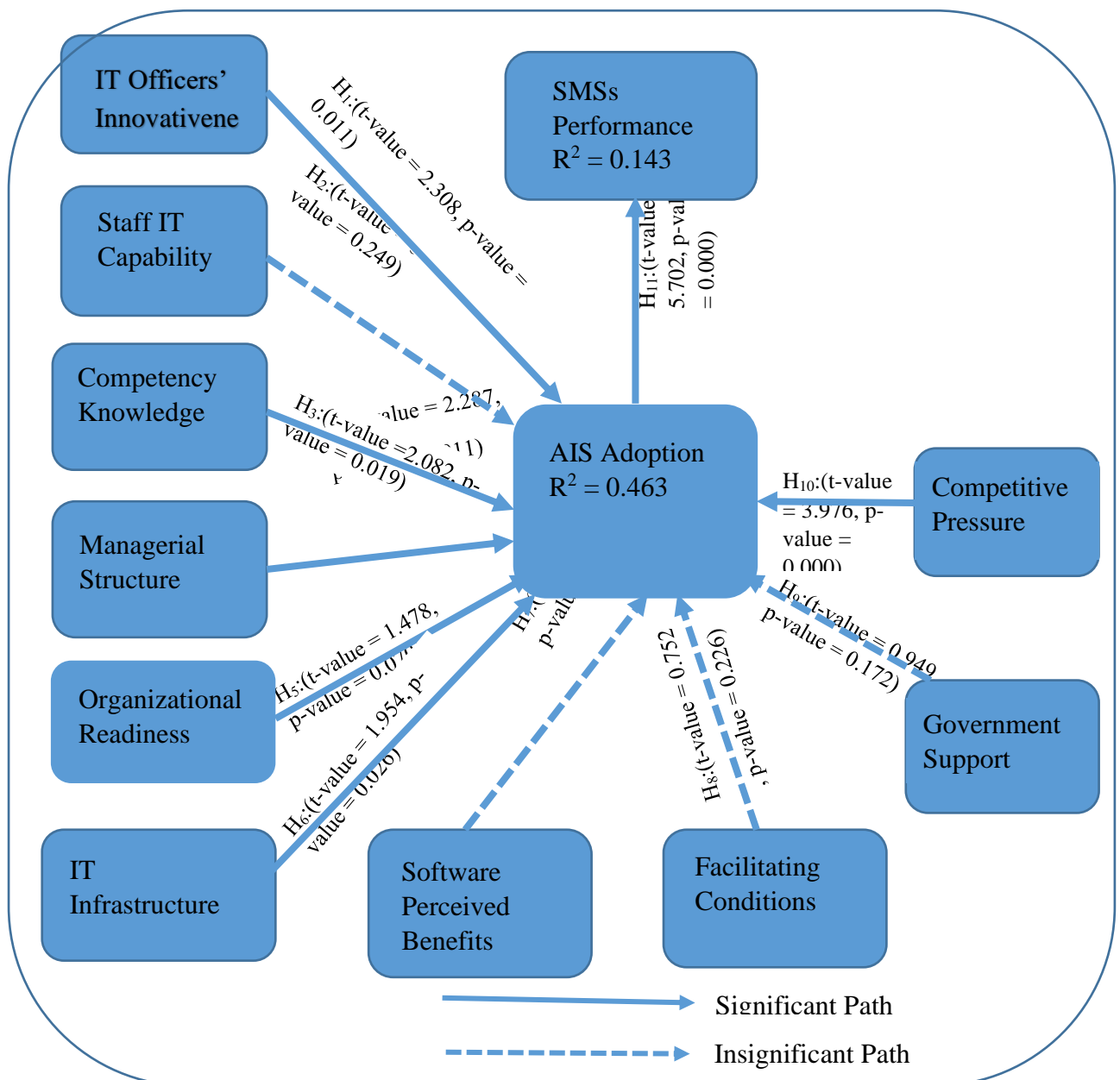


Figure 4 Structural Model Testing Results

SMEs AIS Adoption Model for SMEs in Northern Ghana

Figure 5 depicts the final model developed following the structural model analysis. HOTE Model for SMEs in Northern Ghana on AIS Adoption is the name of the model. IT officers' innovativeness, competency knowledge, managerial structure, organizational

readiness, IT infrastructure and competitive pressure have a direct impact on SMEs AIS adoption. Whiles SMEs AIS adoption also has a direct impact on SMEs performance. However, staff IT capability, software perceived benefits, facilitating conditions and government support do not have a direct impact on SMEs AIS adoption. There was at least one significant and good hypothesis in each of the four dimensions of factors influencing AIS adoption. That is, AIS adoption by SMEs was influenced by human, organisational, technological, and environmental variables. The final model is shown in Figure 5. Below.

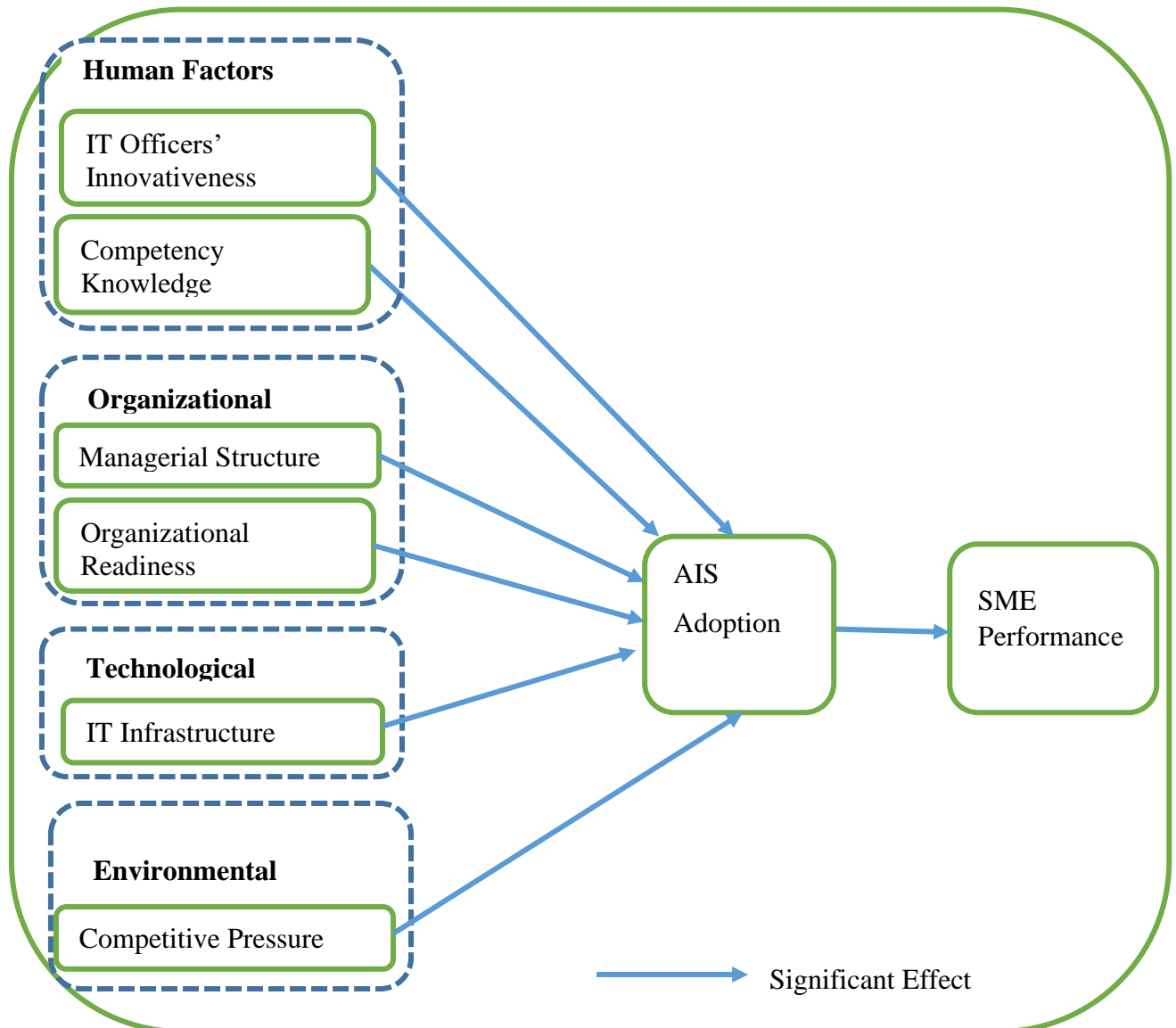


Figure 5 HOTE Model for SMEs in Northern Ghana on AIS Adoption

Conclusions, Limitations and Recommendations

Conclusion

This section highlights the study's findings in respect to the research questions and hypotheses that were created during the study's run. The study's limitations are explored, as well as several prospective areas for further investigation. In Northern Ghana, there is a paucity of models in Ghana that include human, organizational, technological, and environmental elements for SMEs adopting AIS. The four-dimensional HOTE model was

developed to fill a vacuum in the SMEs AIS adoption model, as well as an under-exploration of the critical components required for SMEs AIS adoption. It also adds to the paucity of literature on AIS adoption by SMEs. The vast majority of SMEs in Northern Ghana are still not using AIS. Lack of government assistance and organizational readiness are the two most prominent stand-alone reasons for SMEs not implementing AIS. According to the data analysis, the services sector dominates the business operations of SMEs. The study polled 450 SMEs in Northern Ghana, yielding 380 useful responses. The study's major purpose is to add to knowledge by identifying four demission factors that influence SMEs' adoption of AIS. It also intends to develop a model for SMEs based on the factors observed and give recommendations to enhance AIS adoption.

The TOE framework model and the HOT-Fit model served as theoretical foundations for the study. The TOE framework model and HOT-Fit model factors (IT officers' innovativeness, IT capability, and knowledge competency; managerial structure and organizational readiness; IT infrastructure, accounting software perceived benefits, and IT facilitating conditions; government support and competitive pressure) were then combined and classified as human, organizational, technological, and environmental factors, resulting in the proposal of an early HOTE model for SMEs AIS adoption in Northern Ghana.

The primary goal of the study was to "develop an AIS adoption model for SMEs based on identified factors." The final version of the survey instrument was used to collect data. To assess 367 useful respondents, SmartPLS v3 was employed as a statistical tool. The initial purpose of this research was to examine the model for SMEs adopting AIS in Northern Ghana. The SmartPLS v3 statistical tool was used to do this. The quantitative test results revealed that IT officers' innovativeness, competency knowledge, IT infrastructure, managerial structure, organizational readiness, and competitive pressure have a positive relationship with SMEs adopting AIS in Northern Ghana, and AIS adoption has a significantly positive relationship with SMEs performance. On the other hand, there was no significant association between AIS adoption by SMEs in Northern Ghana and staff IT capability, software perceived benefits, favorable conditions, or government support.

The vast majority of SMEs in Northern Ghana are still ignorant of the advantages of adopting AIS. SMEs could take advantage of the numerous benefits of implementing an AIS in their operations. This will help them achieve a high and acceptable level of performance. As a result, stakeholders should make a greater effort to encourage SMEs to collaborate more. To ensure sustainable economic development, SMEs must have professional assistance in the form of financial literacy training, as well as monitoring and supervision to gain suitable feedback. SMEs should understand the need of financial literacy and begin taking short courses to enhance their financial foresight, get more financial knowledge, maintain financial discipline, and benefit from technical and management support services. Through its agencies, the government should provide help in the form of incentives, training, and financial assistance. This will empower IT professionals to use IT, enhance understanding of software's perceived benefits, and provide enabling conditions for SMEs. This could benefit SMEs in Northern Ghana in adopting AIS.

Research Contribution and Implication

The study's findings could help SMEs function more efficiently. The report, however, emphasizes the importance of SMEs adopting AIS and performing effectively in order to remain competitive. This initiative has created a model for SMEs to use when adopting AIS in Northern Ghana. Human, organizational, technological, and environmental factors are all taken into account. A four-dimensional model that incorporates TOE and HOTE-Fit has not previously been examined, particularly in Ghana. There is no model that incorporates all four characteristics, and determinants influencing SMEs' adoption of AIS are understudied. Based on two technology adoption theories, this study presents a four-dimensional model (HOTE) for SMEs AIS adoption in Northern Ghana.

The study will also assist SMEs in adopting AIS as a unique concept in Northern Ghana. However, most previous AIS adoption research has focused on larger enterprises, with only a few studies concentrating on SMEs, particularly in Ghana. This study fills in the gaps left by previous studies on AIS adoption in Ghana, which predominantly favored financial institutions while ignoring other important sectors such as SMEs. The study adds to the corpus of knowledge by incorporating four dimensions in the factors driving SMEs' adoption of AIS. Making the HOTE model contain components from the four dimensions' aids in closing a gap in the SMEs adoption model as well as the under-exploration and under-research of crucial factors required for SMEs adoption. As a result, this contributes to the scant study on AIS adoption by SMEs.

Limitation of Research

This work has limitations, despite its practical and theoretical importance. The sample size, location, and sample size of the study are all limitations. Despite the fact that the participant pool was drawn from registered SMEs, the results may not be totally generalizable. The study concentrated on SMEs and only a portion of one country. Despite the positive outcomes of the study, the sample size was limited to registered SMEs in Northern Ghana rather than all Ghanaian enterprises. As a result, the opinion pattern formed by this differs from those of other sectors, such as large corporations. This study focused on the factors that influence SMEs' adoption of AIS.

Suggestions for Future Research

The current study focuses on SMEs in Ghana that are using AIS. Other elements have been mentioned but not thoroughly investigated. Future research should consider mediators of the links between SMEs' AIS adoption and SMEs' performance.

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