THE MEDIATING ROLE OF AIS SOPHISTICATION ON THE RELATIONSHIP BETWEEN THE ORGANIZATIONAL ATTRIBUTES, IT INVESTMENT, ENVIRONMENTAL CONDITIONS AND ORGANIZATIONAL PERFORMANCE IN SMEs OF SAUDI ARABIA

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ABSTRACT

Accounting Information Systems (AIS) sophistication in Saudi Arabia is not well managed, which leads to sub-optimal organizational performance. From the previous studies, it was obvious that the organizational, technological and environmental context limits the AIS sophistication of SMEs. This study investigated the influence of the organizational factors (importance of IT, owner or manager knowledge, owner or manager education, and owner or manager experience), IT investment and environmental conditions on AIS sophistication and the impact of those factors on the organizational performance of SMEs in Saudi Arabia. This study also investigated AIS sophistication as a mediating variable between the independent variables and the organizational performance of SMEs as a dependent variable in Saudi Arabia. Data were collected in a survey in which 384 questionnaires were distributed to the owners or managers of SMEs in Saudi Arabia, with a 59.6% response rate. Multiple regression analysis was carried out to test the relationships between organizational, technological and environmental contexts and the organizational performance of SMEs. The results of multiple regressions between independent variables and organizational performance indicated that the independent variables had a significant impact on organizational performance. Excluding the relationship of importance of IT and the organizational performance, and the relationship between environmental conditions and the organizational performance. The results revealed that AIS sophistication had a partial mediation association between the independent variables i.e. (owner or manager's knowledge, education and experience), IT investment, and the dependent variable i.e. organizational performance of SMEs in Saudi Arabia. Researchers might adopt future longitudinal studies to investigate and evaluate the extent of the changes at the level of AIS sophistication that influence the organizational performance of SMEs.

Keywords: owner or manager knowledge, IT investment, environmental conditions, accounting information system (AIS) sophistication, organizational performance of SMEs

ABSTRAK

Kecanggihan Sistem Maklumat Perakaunan (AIS) di negara Arab Saudi tidak diurus dengan baik, yang membawa kepada prestasi organisasi yang kurang optimum. Daripada kajian terdahulu atau lepas, jelas bahawa faktor konteks organisasi, teknologi dan alam sekitar mengehadkan kecanggihan AIS PKS. Kajian ini menyiasat pengaruh faktor-faktor organisasi (Kepentingan IT, pemilik atau pengetahuan pengurus, pendidikan pemilik atau pengurus, dan pengalaman pemilik atau pengurus), pelaburan IT dan keadaan persekitaran terhadap kecanggihan AIS dan kesan faktor-faktor tersebut terhadap prestasi organisasi PKS di negara Arab Saudi. kajian ini juga menyiasat kecanggihan AIS sebagai pemboleh ubah pengantara antara pembolehubah bebas dan prestasi organisasi PKS sebagai pemboleh ubah bergantung di negara Arab Saudi. Data dikumpulkan dalam satu instrumen tinjauan di mana 384 soal selidik diedarkan kepada pemilik atau pengurus PKS di negara Arab Saudi, dengan kadar maklum balas atau response sebanyak 59.6%. Analisis regresi berganda telah dijalankan untuk menguji hubungan antara konteks organisasi, teknologi dan persekitaran dan prestasi organisasi PKS. Hasil daripada regresi pelbagai pembolehubah antara pembolehubah bebas dan prestasi organisasi menunjukkan bahawa pembolehubah bebas mempunyai kesan yang signifikan terhadap prestasi organisasi.Tidak termasuk hubungan kepentingan IT dan prestasi organisasi,dan juga hubungan antara keadaan persekitaran dan prestasi organisasi.Keputusan menunjukkan bahawa kecanggihan AIS mempunyai hubungan pengantaraan separa antara pembolehubah bebas iaitu pemilik atau pengetahuan pengurus, pendidikan dan pengalaman, pelaburan IT, dan pemboleh ubah yang bergantung kepada prestasi organisasi PKS di negara Arab Saudi. Para penyelidik mungkin boleh mengamalkan kajian data membujur di masa depan untuk menyiasat dan menilai sejauh mana perubahan pada tahap kecanggihan AIS yang mempengaruhi prestasi organisasi PKS.

Kata kunci: pengetahuan pemilik atau pengurus, pelaburan IT, keadaan alam sekitar, kecanggihan sistem maklumat perakaunan (AIS), prestasi organisasi PKS

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Small and Medium Enterprises (SMEs) have a crucial role in the improvement of the economy (Sitharam & Hoque, 2016). As a strong sector of industrial economy, SMEs contributes to the growth of the economy and to the Gross Demotic Product (GDP) by reducing the level of unemployment rate and poverty rate, and promoting entrepreneurship activity.

For SMEs to perform effectively in developing countries, they must adopt modern technology (Berisha-Namani, 2009; Ongori, 2009). In spite of their important role in these countries, SMEs still encounter many challenges, such as lack of effective human resources, widespread competition, inadequate managerial skills, insufficient use of technology and lack of knowledge; these challenges may negatively influence their performance (Hussain, Farooq & Akhtar, 2012). In this regard, technology can assist in creating substitutes that will help to fill the missing links; using Accounting Information System (AIS) is essential for all organizations generally and in particular for SMEs. Importantly, information is essential for SMEs, in order to cope with the many challenges related to the high level of risk and uncertainty in contemporary competitive markets. Therefore, SMEs must develop AIS and hire well-trained staff with adequate skills and knowledge if they are to perform effectively (Grande, Estebanez & Colomina, 2011). Following this, Sahawneh, Hayek, and Bshayreh (2016) asserted that the AIS contributes to the amount of knowledge and develops the experience which ultimately

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leads to the improvement of the organization and increases its competitive advantage throughout the improved system's capability that offers the right information at the right time. In this regard, the amount and quality of information obtainable from the system to managers is regarded as a good indicator of organizational success. As such, managers who get related and consistent information can plan, develop cost control, and improve the quality of their performance.

AIS is defined as a system that contains two or more interrelated mechanisms that attempt to achieve a particular objective (Hall, 2007). In essence, the main purpose of AIS is to help to create and use accounting information in an efficient and effective way (Romney & Steinbart, 2009). Additionally, as stated by Susanto (2017), information has been recognized to become a major resource for many organizations in both the profit and non-profit in the recent years. In turn, AIS is considered as a system, which is very essential in the organization, because AIS produces important information for an organization. The components of AIS include processes, people, the organization and Information Technology (IT) (Romney & Steinbart, 2009). Ismail and King (2007) emphasized that AIS is an important part of the contemporary information systems being used by SMEs.

The adoption of modern AIS helps organizations to get both historical and future, and financial and non-financial information (Mauldin & Ruchala, 1999). Furthermore, the modern AIS offers different types of information that involve both accounting and non-accounting information with the purpose of assisting management to solve both short-term challenges as well as manage long-term strategic management issues (Mitchell,

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Reid, &Smith,2000). Nonetheless, the traditional AIS cannot advocate business processes or meet all the users' information requirements, which are constantly needed, to enhance performance (Paul, 1994). The issue of IT and AIS has an international perspective (Berisha-Namani, 2009) because modern IT has changed the practices of business worldwide (Salameh & Hassan, 2015). Based on this, modern AIS can help SMEs to improve their performance and obtain a competitive advantage in the market.

Importantly, organizations can deploy technology to enhance and improve AIS in order to develop their strategies for improved performance (Dozier & Chang, 2006; El Louadi, 1998; Van de ven & Drazin, 1985). For example, recent models of accounting like Resources Events Agents (REA) and technology such as relational and object-oriented databases have transformed the ways business organizations perceive AIS (Ismail & King, 2005). The REA accounting model is based on business changes rather than debits and credits as in traditional accounting models, which have been proven ineffective for supporting business (McCarthy, 1982).

In developing countries, the performance of SMEs is still weak and lower than expected, and leads to firms' failure (Apulu & Ige, 2011; Arinaitwe, 2006). Therefore, the performance of SMEs has attracted both governments and researchers to study the reasons behind the low performance rate of SMEs, considering management, education, technical skills, experience, finance, business, personal skills, training, lack of accounting and managerial information systems, and weakness in human relations (Ahmadzadeh, Etemadi & Pifeh, 2011). Research conducted by Tang (2015) indicated

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that SMEs represent about 90% of businesses globally; so, there is a need to identify the factors affecting the SMEs' performance.

According to Global Entrepreneurship Monitor (GEM, 2004), 70% to 80% of SMEs fail within a few years due to the lack of managerial and accounting skills, and prerequisite training. Poor management has also been reported as one of the reasons for failure in most businesses and industries (Olusola, 2011; Wichmann, 1983). Therefore, AIS has become an important tool for the success of small businesses. To support this assumption, a recent study by Zafar *et al*. (2015) indicated that SMEs in Saudi Arabia have become crucial to the economic growth of the country, particularly through implementing and applying information systems methods.

With effective performance, SMEs can potentially contribute to economic growth and job creation in developing countries. However, there are a number of impediments that affect the performance and development of SMEs, including the lack of certain elements such as financial support, managerial skills, equipment, technology, accounting skills, training, employees, managers' knowledge, and education (Ahmadzadeh *et al.,* 2011; Anheier & Seibel, 1987; Cokel & Akoena, 2002; Steel & Webster, 1991). Zafar *et al*. (2015) recent study in Saudi Arabia revealed that SMEs have become essential to the economic growth of the country, particularly whenever an information systems approach has been applied within these enterprises. However, Alsamari and Slade (2013) showed that the owners of SME in the Kingdom of Bahrain and the eastern region of Saudi Arabia are facing a lack of appropriate training for their own projects, with a clear negative impact on them.

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Even though AIS play an important role in the decision-making process in the context of organizations in developing countries, the owners or managers of SMEs are less aware of the significance of IT and AIS than their counterparts in developed countries (Al-Bahaysi, 2006; Alshbiel & Al-Awaqleh, 2011; Amidu, Effah, & Abor, 2011; Ismail & King, 2005).

Based on the above discussion, it is obvious that SMEs in developing countries suffer from insufficient education, resources, training, knowledge and skills. Although accounting information is essential for the evaluation of SMEs' performance, managers are unaware of its importance for the success of their firms (Ayanda & Laraba, 2011; Devaraj & Kohli, 2000; Ismail & King, 2005; Maseko & Manyani, 2011; Sian & Roberts, 2009). In addition, many organizations fail to prepare the financial statements, which are the main objective of AIS. SMEs tend to avoid the sophisticated management practices and techniques of recent accounting and financial systems (Agyei-Mensah, 2011; Ayanda & Laraba, 2011; Devaraj & Kohli, 2000; Ismail & King, 2005, 2009; Maseko & Manyani, 2011; Sian & Roberts, 2009).

According to Almoawi and Mahmood (2012), 93% of commercial registrations in Saudi Arabia are SMEs. They play an important role in the economy, contributing 28% of total national economic activity and employing about 40% of the entire workforce (Hertog, 2010). Like other Gulf countries, Saudi Arabia is concerned with how its government supports SMEs in trading using a new system called Kafalah. In this regard, Altokhais (2017) indicated that, the the term Kafalah means the sponsorship institution. Altokhais (2017) added that the Kafalah sponsorship program was launched in the year

2006. This program is working with the corporation of Ministry of Finance in Saudi Arabia government, which is represented by Saudi Industrial Development Fund (SIDF) and banks. More importantly, Altokhais (2017) confirmed that the main objective of Kafalah program is to develop SMEs sector to achieve the goals required for supporting economy as a whole. Besides, SMEs of Saudi Arabia will contribute a significant role to reduce the unemployment rate in the country; SMEs may also play an essential role to develop the national economy as well. Hence, Kafalah program is motivating financial organizations to work closely with SMEs. In addition, the Kafalah program supports SMEs with up to $53.3 million of loan guarantees annually. However, some SMEs in Saudi Arabia have failed because the government focuses only on financial support without providing adequate AIS, ignoring other important support such as employees' skills, managers, technology and training programs (Saudi Arabia-US Relation Information Service, 2010).

In realizing the important role that SMEs play to enhance the economy growth of the country, Saudi Arabia has joined the World Trade Organization (WTO) to engage in global trading competition and follow the policy of AIS, technology, employees' skills, and their effects on business (Li, 2008; Zafar, Almaleh, Alshahri, Alqahtani, and Alqahtani, 2015). However, the performance of the SMEs sector is still weak (Riyadh Chamber of Commerce & Industry, 2011). More recently, Al-namah (2017), declared that, SMEs sector is considered as the key factor to the open economy in Saudi Arabia, whereby this sector is able to generate the economic growth and create employment opportunities. In Saudi Arabia context, SMEs contribute to 21% of the country's GDP and to 53% of the total employment of the country in the year 2016. Besides, Nakhleh

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(2017) reported that, SMEs in Saudi Arabia represent around 90% of the businesses enterprises. The present study, therefore, is crucial in the Saudi Arabian context because the managers and employees of SMEs encounter problems in the use of modern technology, knowledge, managerial skills and AIS, which are required for effective performance. In addition, SMEs in Saudi Arabia face bureaucratic challenges in their activities with the government (Riyadh Chamber of Commerce & Industry, 2011). Ramli (2015) emphasized that the internal users of AIS, managers in particular may make unsuitable decisions because of lacking accounting information and this may lead the whole company to be in risk in the future.

To avoid possible collapse, a company acquires accounting information generated by the AIS to enable it to manage and control its financial and other resources in a better way compared to the traditional manual system of recording process. Besides, Salehi, Rostami, and Mogadan (2010) indicated that the traditional AIS only produces the financial statements provided to the financial executive with less accounting information. Hence, AIS sophistication seems to be crucial for enhancing the performance of SMEs.

The word 'sophistication' in the term AIS sophistication, according to Oxford of Learner's Dictionary (2005), is defined as the sophisticated quality of machinery, technology or computer-based system. In this regard, Ismail (2009) mentioned that AIS is an adequate term to reflect how computer-based accounting system and IT sophistication are close to each other. Ismail (2009) used the AIS sophistication to represent IT sophistication in his study interchangeably. Following this, Perez, Urquia,

and Munoz (2010) indicated that AIS is a tool that can assist organizational management to enhance its control on the firm's operations and to improve its performance. AIS involves identifying, collecting, processing and delivering the accounting information to employees and decision makers through all organizational levels. In this sense, AIS is regarded as a system used to record the financial transactions of a business or company. AIS combines techniques and controls accounting methods to trail financial transactions and to offer internal and external reports of data as well as to assist in the preparation of financial statements and to enhance organizational performance.

Previous studies have focused on different aspects of AIS such as the impact of sophisticated IS on accountants and of the operational and planning sophistication on the performance of SMEs (Hyvonen, 2003; Rom & Rohde, 2006; Spraakman, 2005; Steward, 2004). Others have highlighted the influence of IT on the performance of accounting and the significance of IT and AIS adoption, and the benefits of IT for the organization (Al-Eqab, 2009; Apulu & Latham, 2009; Arendt, 2008; Grover, 1993; Ismail, 2006). Following this, Al-Eqab and Ismail (2011) stressed the sophistication and benefits of IT, environmental factors and organizational factors.

However, previous studies largely ignored AIS sophistication and its impact on performance, being instead descriptively based (Berisha-Namani, 2009; Boulianne, 2009; Maseko, & Manyani, 2011). In this regard, some studies have included variables such as business strategy, environmental conditions and organizational culture (Chong & Chong, 1997; Mia & Clarke, 1999) while Ahmadzadeh *et al.,* (2011) indicated that

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factors like managers' characteristics, employees' IT skills, education, training, and AIS sophistication have been largely neglected in previous studies.

Many studies have focused on the financial problems that firms have encountered, whereas fewer have examined the impact of AIS on SMEs and accounting practices (Shamsul Alam & Anwar Ullah, 2006; Cressy & Olofsson, 1997). In addition, limited studies have been conducted on accounting and professional accountants, managerial skills, workforce, and skills of accounting systems, and their impact on SMEs (Apulu & Ige, 2011; Giorgio & Rotondi, 2011; Gryglewicz, 2011; Mohd Amin, 2001; Nandan, 2010). However, a limited number of studies have focused on the weaknesses of SMEs at organizational, managerial, technical, individual and environmental levels and their impact on the use of IT (Al-Qirim, 2007; Gryglewicz, 2011).

There is, thus, still a need for further research on the impact of IT, environment uncertainty, size, AIS sophistication, and the relationship between AIS and performance (Al-Eqab & Ismail, 2011; Berisha-Namani, 2009; Ferreira & Otley, 2009; Grande *et al.,* 2011; Hammad & Jusoh, 2010). As stated by Ismail (2007), the influence of the technology environment, external business, trading partner support and auditing companies on AIS alignment needs to be investigated. Employees' and managers' skills, users of accounting, education and training, top management support, organizational life cycle stages and the quality of IT also need to be investigated in relation to AIS sophistication (Ahmadzadeh *et al.,* 2011). In the same vein, many researchers (e.g., Ahmadzadeh *et al.,* 2011; Agbejule & Saarikoski, 2006; Al-Eqab & Ismail, 2011; Boulianne, 2007; Sajady & Dastgir, 2008; Wang & Ellinger, 2011) equally assert that

research on the influence of factors related to human resources such as knowledge, education, training, skills, careers, leadership style and AIS sophistication is required.

Furthermore, there are inconsistencies in the results of previous studies, which investigated the impact of IT and AIS on business performance (e.g. Kelly, 1994; Parthasamthy & Seth, 1993). For example, Stassman (1990) and Yosri (1992) found that the relationship between IT and companies' performance was scarcely significant, while no significant impact was found between AIS and managerial performance (Alshbiel & AL-Awaqleh, 2011). Gil (2004) found no significant relationship between AIS and firms' performance.

Lin and Shao (2006) made an important addition to the literature by concurrently studying business issues, the possibility of substituting between human capital and IT capital, examining the IT business value related to the influence of IT on technical efficiency. The main outcomes of the study showed that the correlation between IT investment and technical efficiency was not powerful with reference to the productivity paradox, and specific production frontiers, and was inconsistent with conventional wisdom. Apart from this, IT has significant impacts on some parameters: IT stock, traditional capital and the CES production process. However, it is impossible to replace the role of human capital totally with IT stock, irrespective of the three dimensions of IT (investment in the firm, industry and sector). In this sense, technical efficiency tends to decrease as IT investment increases. The analysis of industry suggests that IT capital is more important for service industry than for the manufacturing sector, although the service sector is less technically efficient than the manufacturing sector.

Some studies have assumed that the influence of IT on the performance of companies is negative (Holland & Lockett, 1997; Morrison & Berndt, 1991). However, research on information systems (IS) has revealed that IS has no direct influence on organizational performance (Baker, Song, Jones, & Ford, 2008; Bouliame, 2009; Etemadi, Dilami, Bazaz, & Parameswaran, 2009; Grande *et al.,* 2011; Ismail, 2009; Kobelsky, Hunter, & Richardson, 2008). On the other hand, the study of Al-dmour, AL-Fawaz, Al-dmour, and Allozi (2017) signified that their review of the pervious works regarding the association between AIS and firm performance indicated that some studies' findings expressed a direct association between AIS and firm performance, while the other studies' findings provided indirect association between AIS and firm performance.

Based on the discussion above, the researcher contends that IT and the organizational and environmental factors, which affect AIS sophistication and the performance of SMEs in Saudi Arabia, need to be investigated. Thus, the current study aims to examine the organizational factors, IT investment, environmental conditions and their influence on AIS sophistication and the organizational performance of the SMEs in Saudi Arabia.

1.2 Problem Statement

The SMEs sector plays a significant role in the economic growth globally (Pham, 2017). In Saudi Arabia context, SMEs sector is considered as the key to unlock economy potential as it contributes to the economic growth and offer opportunities of employment. This sector contributes to 21% of the GDP of the country. Meanwhile, it contributes to 53 % of the total employment of the country in the year 2016 (Rawashdeh and Al-namlah, 2017).

The emphasis on the era of globalization pursues the enterprises over the world to have adopted the rapid changes in the area of IT (Zafar *et al*., 2015) because we are living in the era of Information technology society. Zafar *et al*., (2015) indicated that, recently, in Saudi Arabia SMEs have become a critical factor in the economic growth of the country as a result of implementing and applying the features of information system applications in those entities. The authors stressed that the information system within Saudi Arabia context plays an important role in the growth of SMEs' survival. They added that the implementation of information system among SMEs in Saudi Arabia would improve their competitive advantage. The government of Saudi Arabia provides a great financial assist to support SMEs, which is regarded as an excellent opportunity for investors to establish SMEs with the investment of information system adoption (Zafar, *et.al.* 2015).

The important role of SMEs for national growth was long realized by Saudi government. Therefore, the government has incorporated major strategies for the promotion of SMEs in its Vision 2030 document. The plan, under Saudi Vision 2030, is to improve the contribution of SMEs to the GDP from the current 20 % to 35 %. The major essential technique to achieve this is to increase their access to funding (Altokhais, 2017). The Saudi vision 2030 is based on the improvement of entrepreneurial spirit. A key feature of Saudi vision 2030 is to produce partnerships between the government and the private sectors in the areas of economic growth, such as mining, construction, education and health, as well as housing (Alshammari, 2014).

Previous studies reported that, the main reasons for the failure of SMEs are poor record keeping and inappropriate accounting systems (Beaver, 2003b; Berryman, 1983; Harris

& Gibson, 2006; Harris, Grub, & Hebert, 2005; Olusola, 2011; Stamford, 1982; Stokes & Blackburn, 2002). Furthermore, the implementation of AIS in developing countries faces many barriers, such as organizational factors, which influence the way of using AIS and lead to a low level in the overall performance of firms (Khassawneh, 2014). This emphasizes the vital role of AIS in providing managers with timely, reliable and relevant information to help them make suitable and accurate decisions for achieving the organizational goals and objectives (Nabizadeh & Omrani, 2014).

SMEs are considered as a cornerstone for poverty reduction and economic growth. However, 70% to 80% of SMEs fail within their first few years due to lack of managerial and employees' accounting skills (GEM, 2004; Olusola, 2011). Besides, the weakness of managerial, technological, individual and environmental factors leads to SMEs' low performance and an inconvenient competitive position in the market (Al-Qirim, 2007; Bahaddad, Houghton & Drew, 2013; Gryglewicz, 2011). In this regard, a study conducted on Jordanian SMEs by Lutfi, Idris and Mohamad (2016) stated that a computer-based accounting system, i.e. AIS, provides more precise reporting, processes a huge amount of transactions and generates more meaningful reports for analysis; although AIS has certain advantages, SMEs were reported to be lagging behind in their use.

SMEs in developing countries also face operational problems represented by the lack of certain factors such as knowledge, education, experience, technical skills, systems, infrastructure and AIS (Ahmadzadeh *et al.,* 2011; Al-Bahaysi,2006; Apulu & Latham, 2009; Hussain *et al.,* 2012; Nadan, 2010; Olusola, 2011; Sajady & Dastgir,2008;

Zayond, Albohlol, & Mohammad, 2009). Some studies (e.g., Ismail, 2009; Ismail & King, 2005) found that almost 20% of SMEs do not prepare cash and income statements, 40% do not prepare bank reconciliation and balance sheets and over 40% do not prepare ageing schedule and financial ratios that facilitate decision-making. These studies concluded that accounting information usage among the firms is still minimal. In this case, Shareia (2016) stated that the information generated by AIS would be of only limited use in developing countries.

Tang (2015) stated that the international finance corporation report declared that SMEs represent some 90% of business globally. The economy of Saudi Arabia depends to some extent on the private sector in general and on SMEs in particular (Zafar *et al.*, 2015). However, SMEs are facing particular challenges, including the implementation of IT with limited awareness of information systems, lack of IT support, lack of IT literacy and varying skills of IT awareness and management, inexperience in using consultants, lack of suitable infrastructure and limited resources (Ahmad & Siddique, 2013).

The failure of many SMEs is not only due to their need for financial support, but also to the fact that most of those SMEs do not use AIS consistently and their employees are not specialized in the field of business. As such, the use of IT within SMEs in developing countries is still facing many problems in the technical and managerial areas. However, the use of IT could have serious consequences for the performance of SMEs (Argenti, 1976; Beaver, 2003b; Berisha-Namani, 2009; Eunni, Brush & Kasuganti, 2007; Golding, Donaldson, Tennant, & Black, 2008).

Consequently, accounting skills are crucial for SMEs' growth because the inability to install and handle a proper accounting system prevents monitoring business reports and performance. Some other factors that impede SMEs' growth include regulatory problems, the weakness of using information technology, the scarcity of trained and technical man-power and the inability to access the information for the purpose of investment and technologies used in this area (Al-Maliki, 2013). A study implemented by Sitharam and Hoque (2016) among owners or managers of SMEs in South Africa investigated the internal and external factors influencing the performance of SMEs. The findings of the study indicated that several factors might influence the performance of SMEs such as technological capabilities, managerial capabilities, managerial competency (including knowledge and experience), owners or managers skills, and access to finance. The results also revealed that internal and external factors have a significant relationship with the performance of SMEs. The study concluded that the most challengeable factors among SMEs are the competition, which is regarded as the major challenge among businesses.

Another study, conducted by Zafar *et al.* (2015) in Saudi Arabia, indicated that for SMEs to increase and spread everywhere, those entities should be aware of the availability of technologies that can be used for better business uses. However, there are some obstacles faced by SMEs in Saudi Arabia regarding the implementation of IT awareness, lack of IT support, lack of IT literacy, varying skills of IT awareness and management, and inexperience of using consultants regarding the IT matters.

Furthermore, SMEs in Saudi Arabia are supported financially by organizations like Kafalah; however, they fail to use modern technology and AIS, and the firms are not aware of the role of technology and AIS in enhancing their performance (Riyadh Chamber of Commerce and Industry, 2011). In addition, Altokhais (2017) emphasized that the major objective of Kafalah program is to improve SMEs sector to attain the goals required for supporting economy as a whole. Besides, SMEs in Saudi Arabia will play a vital role to decrease the unemployment rate and improve the national economy as well. Therefore, Kafalah program is motivating financial organizations to work closely with SMEs.

Since many countries are open to foreign investment, SMEs face competitive pressure both locally and internationally. However, researchers (e.g. Hodgetts & Kuratko, 1995; Vrazalic, 2006) have found a particular weakness in SMEs due to the lack of financial, marketing, managerial and technological skills, creating challenges, which may impede their growth (Hodgetts & Kuratko, 1995; Lloyd-Reason, 2003; Szegdi, 1989). Most of the managers of SMEs are unaware of the important role that financial and accounting information plays in achieving business success (Ismail & King, 2005; Sian & Roberts, 2009). In such a context, adopting AIS is important to provide financial information and offer support to top management, which are essential for the success of SMEs (Ismail & King, 2005; Sian & Roberts, 2009).

IT is also a critical factor for business productivity (Laudon & Laudon, 2005). For example, investment in e-commerce enables trading partners to exchange transactional data digitally through the web and reduce errors, enhancing productivity and efficiency.

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The most important aspect of e-commerce is its elimination of geographical barriers, giving real-time online access to international markets at affordable costs. Therefore, IT investment contributes to organizational performance (Kim, 2011; Laudon & Laudon, 2005; Liu & Chan, 2010; SAMEDA, 2005). Taking into consideration the importance of technology for SMEs, AIS will help to enhance their performance (Dozier & Chang, 2006; El Louadi, 1998; Grande *et al.,* 2011; Van de ven & Drazin, 1985).

Just as the development of IT is crucial for SMEs to be able to compete in the global market as well as to improve their organization performance (Soon & Zainol, 2011), SMEs in developing countries need to be more creative and innovative. This will increase the national economic growth of these countries (Soon & Zainol, 2011). Following this, accounting information plays a critical role in supporting a variety of business decisions. Extensive use of IT makes accounting functions more effective and efficient in supplementing accounting-related information. However, in spite of the promised benefits of AIS, SMEs have been reported to be lagging behind in their use (Lutfi, Idris & Mohamad, 2016).

A few studies have been conducted on IT in relation to informational, functional, and managerial aspects and their effects on IT benefits (Al-Eqab & Ismail, 2011), although they have largely failed to investigate these factors in relation to AIS sophistication and its impact on performance. In addition, most AIS studies are descriptive in nature, omitting to provide well-documented findings to establish any correlation between AIS and IT and their impact on organizational performance (Berisha-Namani, 2009; Boulianne, 2009); the current research aims to rectify this omission. However, a study

by Harash, Al-Timimi, and Radhi (2014) identified the influences of the use of AIS on the performance of SMEs in Iraq, revealing that the characteristics of AIS, i.e. reliability, relevance, and timeliness, have a significant impact on SMEs' performance.

In addition, some studies have focused on the financial problems that firms face; for example, Fitriati and Mulyani (2015) indicated that AIS provides financial information and enhances decision making in terms of coordination, control of organizational activities and strategy. Others (e.g. Maseko & Manyani, 2011) have further examined the effect of AIS on SMEs and accounting practices, with its impact on the performance of SMEs (Cressy & Olofsson, 1997; ShamsulAlam & Anwar Ullah, 2006). It should also be noted that studies conducted on accounting and the role of professional accountants, managerial skills, the workforce and AIS skills, and their impact on business in SMEs were limited (Giorgio & Rotondi, 2011; Gryglewicz, 2011; Mohd Amin, 2001; Nandan, 2010). These studies have weaknesses in terms of examining the relationship between managerial, technical, individual, and environmental levels and the use of the modern IT and its impact on SMEs' performance (Al-Qirim, 2007; Gryglewicz, 2011; Nandan, 2010).

Thus, the reviewed literature indicates the need for further research on the impact of IT and environmental uncertainty on AIS sophistication. For example, Al-Eqab and Ismail (2011) indicated that the association between contingency factors and the sophistication of AIS has been implemented in the current understanding of AIS and its influencing factors. The authors assumed there is a scope for future research studies in Jordan, Middle East countries and globally. In line with this, research studies particularly in the

Middle East are needed to assess the correlation between AIS sophistication and performance (Al-Eqab & Ismail, 2011; Berisha-Namani, 2009; Ferreira & Otley, 2009; Grande *et al.,* 2011; Hammad & Jusoh, 2010).

In the same vein, the review of previous studies reveals a need for additional research on the impact of organizational factors and IT on AIS sophistication (Al-Eqab & Adel, 2013). Moreover, managers' skills, training and the level of education, and IT users need to be investigated in relation to AIS sophistication (Ahmadzadeh *et al.,* 2011). Several researchers have proposed that, future work should investigate the impact of factors related to human resources (i.e. education, knowledge, skills, training and careers) on AIS sophistication (Agbejule & Saarikoski, 2006; Ahmadzadeh *et al.,* 2011; Al-Eqab & Adel, 2013; Al-Eqab & Ismail, 2011; Al-Saleh, 2012; Boulianne, 2007; Sajady & Dastgir, 2008; Wang & Ellinger, 2011).

Masuropperuma and Manawadu (2016) indicated that the majority of SMEs encounter challenges such as lack of accounting knowledge, as well as owners or managers' lack of skills in the field of accounting information. This weakness leads accounting information to be inefficient to support financial performance measurement by SMEs. The findings of the study revealed that most of the SMEs encounter problems of lack of accounting knowledge. In this regard, a study conducted in Turkey by Esmeray (2016) investigated the relationship between the use of AIS by SMEs in Kayseri-Turkey and the indicators of SMEs' improved performance. The major findings revealed a positive and significant statistical association between the use of AIS and the status of managers' education.

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Inconsistent results have been found in studies, which investigated the impact of IT and AIS on business performance. Some studies asserted a positive impact of IT use on business performance (Alshbiel & Al-Awaqleh, 2011; Kelly, 1994; Parthasamthy & Seth, 1993; Shaukat & Zafarullah, 2009; Stassman, 1990; Yosri, 1992). For example, Stassman (1990) and Yosri (1992) found that the relationship between IT and companies' performance was scarcely significant, whereas Alshbiel and Al-Awaqleh (2011) found no significant relationship between accounting information system and managerial performance. Other studies (e.g., Gil, 2004) found no significant relationship between management control systems and the company performance. Others concluded that the impact of IT on companies' performance was negative (Holland & Lockett, 1997; Morrison & Berndt, 1991), or that IS has no direct impact on organizational performance (Grande *et al.,* 2011; Ismail, 2009). Therefore, researchers stressed the need for further research studies to examine the relationship between AIS sophistication, IT and performance (Al-Eqab & Adel, 2013; Baker *et al.,* 2008; Boulianne, 2009; Etemadi*et al.,* 2009; Grande *et al.,* 2011; Kobelsky *et al.,* 2008).

As indicated above, limited studies have been conducted on AIS practices and IT investment, and the impact of these factors on AIS sophistication and the performance of SMEs (Al-Eqab & Ismail, 2011; Al-Eqab & Adel, 2013; Ismail, 2009; Kobelsky *et al.,* 2008; Sajady & Dastgir, 2008). Others (e.g. Ahmadzadeh *et al.,* 2011; Boulianne, 2007, 2009) call for further research to identify the impact of IT or AIS on SMEs' performance. Ignoring the factors which influence AIS sophistication and their impact on performance would potentially weaken the growth of SMEs in global economies in

general, and in developing countries in particular (Ahmadzadeh *et al.,* 2011; Cokel & Akoena, 2002).

The significance of AIS among SMEs in Saudi Arabia was doubtful, as the investment process in AIS is not easy to justify from the owners or managers' perception. In this regard, this study argued that, SMEs among Saudi Arabia require a reaction to the competitive environment in which businesses nowadays face. Consequently, SMEs cannot stay behind in investment in information system and AIS (Trablusi, 2018).

In this case, a study conducted by Trablusi (2018) investigated the effect of using AIS on the organizational performance dimensions (cost reduction, improving quality, and effective decisions making) in SMEs of Saudi Arabia. The findings of the study ensured that the using of AIS has a significant influence on the organizational performance's dimensions. The study concluded that more attention should be directed towards AIS as an important tool for better organizational performance.

Furthermore, a study conducted by Al-Shbiei and Al-Olimat (2016) investigated the effectiveness of AIS as a mediator variable on the association between IT and the competitive advantage. The study findings revealed that there is an influence of IT on the competitive advantage, and there is an impact of AIS effectiveness on the competitive advantage. The findings also revealed that there is a significant impact of AIS effectiveness as a mediator variable on the relationship between IT and the competitive advantage.

Based on the above discussion, the current study aims to identify the extent to which AIS sophistication has been developed and the degree to which investment on IT has been occurred. It also aims to investigate the impact of the organizational context (importance of IT and the manager's knowledge, education and experience), the technological context (IT investment), and the environmental context (environmental conditions) on AIS sophistication as a mediating variable and its impact on the organizational performance of SMEs.

1.3 Research Questions

This research attempts to answer three fundamental questions:

RQ1. What are the factors that influence organizational performance of SMEs in Saudi Arabia?

RQ2. What are the factors that influence AIS sophistication in Saudi Arabia?

RQ3. Is there any relationship between AIS sophistication and the organizational performance of SMEs in Saudi Arabia?

RO4. What is the effect of AIS sophistication as a mediating variable on the association between independent variables and SMEs' performance as a dependent variable?

1.4 Research Objectives

The main aim of this research is to determine the factors that affect AIS sophistication and its impact on SMEs' performance in Saudi Arabia. To achieve this aim, the following specific objectives are derived:

1. To identify the factors that influence the performance of SMEs in Saudi Arabia.

2. To identify the factors that influence AIS sophistication in Saudi Arabia.

3. To investigate the relationship between AIS sophistication and performance of SMEs in Saudi Arabia.

4. To investigate the effect of AIS sophistication as a mediating variable on the association between independent variables and SMEs' performance as a dependent variable.

1.5 Significance of Study

This study is significant from different perspectives. It attempts to fill the gap found in the literature on the factors which influence AIS sophistication and the impact on SMEs' performance, which has not been identified (Al-Eqab & Ismail, 2011; Baker *et al.,* 2008; Berisha-Namani, 2009; Boulianne, 2009; Etemadi *et al.,* 2009; Grande *et al.,* 2011; Hammad & Jusoh, 2010; Kobelsky *et al.,* 2008). Thus, the expected findings of this study will contribute to identifying the relationship between organizational, IT investment, and environmental factors and AIS sophistication and their impact on the performance of SMEs in Saudi Arabia. The focus on Saudi Arabia is important because research on SMEs is limited in this country in particular, and in developing countries in general. Therefore, in Saudi Arabia, SMEs contributes to 93 %of enterprises and represents about 24.7 % of total employment. SMEs are significant for their ability to employ a large work force. Consequently, SMEs decrease the unemployment rate, which is a main concern in Saudi Arabia (Zafar et.al, 2015).

More importantly, a study conducted by Trabulsi (2018) argues that SMEs in Saudi Arabia need to respond to the competitive environment business it is facing today. The results concluded that SMEs can not stay behind in their investment in information

systems together with AIS. Therefore, the current study aims to identify the relationship between organizational factors, IT investment, and environmental factors and their impact on AIS sophistication and on the performance of SMEs in Saudi Arabia context.

In practice, this study is also significant because it will offer a practical contribution at different levels. First, at the level of SMEs, it will motivate managers to improve their work to enhance performance. The findings of the study, therefore, will give insights to the managers into the importance of the use of modern technology, IT investment, accounting information sophistication, knowledge, education and experience in enhancing organizational performance.

Second, this study is significant as it attempts to help the SMEs sector in general to provide service efficiently to the customers and to cope with the challenges of foreign investments. Third, it will help government to establish policies and suitable programs to improve the performance of SMEs through development of AIS and education of employees. Fourth, the setting is Saudi Arabia, a developing country. The findings will be valuable in comparing future studies in developed countries with the findings of the current study.

Finally, the advancement of IT has attracted market niches for competitors from unexpected destinations and places. For example, a study conducted by the joint Economic Committee of the United States Congress revealed that IT is a crucial factor in the current acceleration of productivity growth. Producing and using IT contributes to a revival in productivity. New developments in IT, particularly web-based electronic-

commerce technologies, have already significantly changed the nature of business in SMEs. Thus, taking into consideration the importance of IT within SMEs, IT encourages the competition, which leads this sector to contribute to the economic growth of the country.

1.6 Scope of the Study

The present study is limited to the managers or owners of SMEs in Saudi Arabia. The study is crucial because Saudi Arabia is concerned with how government supports SMEs to conduct trading, with a new system called Kafalah (Saudi Arabia-US Relations Information Service, 2010). This program supports SMEs with up to $53.3 million dollars annually in loan guarantees. However, many of the firms fail because they focus only on the financial problems without paying attention to the improvement of IT, the skills of managers and employees within SMEs (Saudi Arabia-US Relations Information Service, 2010).

Following this, Altokhais (2017) stated that, the important role of SMEs for nationalized development was long realized by Saudi Arabia government. Consequently, the government has integrated vital strategies for the promotion of SMEs in its Vision 2030 document. The plan organized under Saudi Arabia Vision 2030, is to improve the contribution of SMEs to the GDP from the recent 20 %to 35 %. The mainly significant technique for this vision is to raise their access to funding. This engages a significant strategy of encouraging financial institutions to enhance their SMEs funding from the current below 5% to 20 %of all the loans given by them. A common authority for SMEs was recognized in 2015, with the aim of rising the contribution of SMEs to the economy

from 500 billion Riyals in 2014 to 2 trillion Riyals by 2030 (Altokhais, 2017). The report prepared by Jureidini (2017) provides the following details of the status of SMEs. As in several other countries, SMEs produce employment and contribute to the economy growth of Saudi Arabia. About 99 %of businesses in Saudi Arabia are SMEs. These cater to around 64 %of the total employment in the country. Another report (GCF, 2015) indicated that, SMEs comprise about 99% of business establishment and contribute to 62% of the employment. SMEs have excelled in technology sector.

The main purpose of this study is to investigate the factors of IT investment, organizational, and environmental conditions that affect AIS sophistication and their impact on the performance of SMEs. The targeted respondents are the managers of SMEs in Saudi Arabia, who can provide important information on how to improve their performance; they are the only source that can provide adequate knowledge about their firms and the significant factors that affect AIS sophistication and SMEs' performance.

1.7 Definitions of SMEs and variables

Table 1.1
Definition of Key Terms

Term	Definitions of SMEs and Variables
Small and Medium Enterprises	SMEs are classified as businesses with 250 or fewer employees (McMahon, 2001).
Accounting Information System	AIS is a set of two or more interrelated components that work together to generate and use accounting information in an effective and efficient way (Romney & Steinbart, 2009).
Importance of IT	Managers' perception of the importance of technologies in the context of their organizations (Ismail & Abidin, 2009).
Owner or Manager's Knowledge	The knowledge level related to financial and managerial accounting techniques, word processing, spreadsheet, database, accounting, e-mail, Internet and computer-assisted production management applications (Ismail & King, 2007).
Owner or Manager's education	College business courses in accounting or related business topics taken by managers (Rachagan, Tong, Terpstra & Mahenthiran, 2014).
Owner or Manager's Experience	Previous experience in the industry or related business experience (Dokko, Wilk & Rothbard, 2009).
IT investment	Organizational investment employing or producing IT or IT-related assets. Each investment has or will acquire costs for the investment, has expected benefits arising from the investment, and deadlines, and has or will require risks associated with engaging in the investment (Badescu & Garces-Ayerbe, 2009).
Environmental Conditions	Include factors outside the boundaries of the organization: customers, suppliers, competitors, socio-political and technological factors (Cong & Chong, 1972; Kettelhut, 1992).
AIS Sophistication	The extent of adoption or use of AIS in the business. It also represents the AIS applications portfolio adopted by the firm. AIS are measured by the level of AIS application (Ismail & King, 2007).
Organizational Performance	Evaluation that provides information for managers to support the achievement of their organizational strategic objectives (Jusoh & Parnell, 2008).

1.8 Organization of the Thesis

The thesis is organized into six chapters. Table 1.2 provides a description of each.

Table 1.2
The Six Chapters

Chapter	Description
Chapter One	General background of the setting of the study. This chapter also presents the statement of the problem, research objectives, and research questions. It concludes with the significance and scope of the study, and operationalized definitions of the key terms.
Chapter Two	A related literature review providing an overview of organizational performance, AIS sophistication and independent variables. It also provides information related to the theoretical framework.
Chapter Three	The research framework and hypotheses; the discussion includes the related theory and the hypotheses.
Chapter Four	Research design, validity and reliability of the instrument, sampling size, procedures, data collection processes and analysis methods.
Chapter Five	Results and data analysis. The results are tied to the research questions and the hypotheses.
Chapter Six	Discussion. The findings are then compared with earlier related studies and supported by interpretations and justifications.
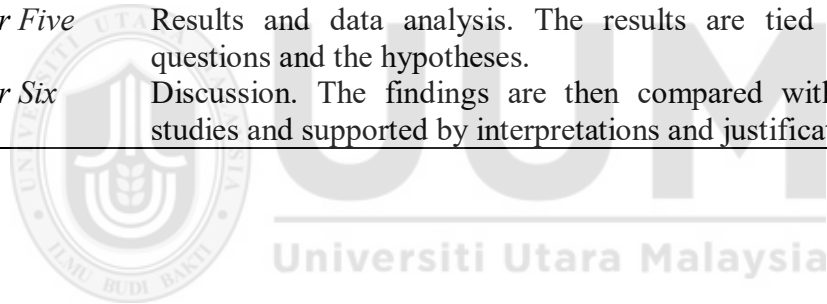
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the related literature. According to Cooper and Schindler (2008), the literature review is considered as the basis of any study. The theoretical perspectives, which lead to the development of the research framework and the analytical establishment of the link between the research and previous related studies, are discussed in depth. In addition, issues related to the factors that influence the sophistication of AIS and its impact on the performance of SME thoroughly discussed.

2.2 Small- and Medium-Sized Enterprises in Saudi Arabia

The role played by Saudi Arabia in the development of the world economy is critical. The kingdom covers a total land mass of 2.15 million square kilometers, or 80% of the whole Arabian Peninsula. The population was estimated at 28,136,977 in 2013, although the figure includes both nationals and non-nationals. More than 60% of the population lives in the urban centers. Saudi Arabia is naturally blessed with crude oil, and its economy depends heavily on the oil sector. Some 75% of the budget revenues and 90% of the export earnings comes from the oil industry, and 45% of the national GDP is generated from it; 40% of the GDP comes from the private sector (UNDP, 2005-2009). This has led to a declaration by the government of the need for the nation to be less dependent on oil through diversification (UNDP, 2005-2009).

The role played by SMEs is crucial to the value added in the economy of many countries (Rao, Metts & Monge, 2003). SMEs are regarded as being better able to accept administrative services and guidance in emerging ideas than are large corporations, due to their flexible nature (Rao *et al.,* 2003). In this regard, the structure of an organization creates a great distinction between SMEs and large enterprises, which are usually restricted and governed by internal regulations and several procedures between managerial levels (Kartiwi & MacGregor, 2007).

Huang and Brown (1999) stated that SMEs face increasing competitive advantage problems within their domestic and global business environment because of their inability to understand the market orientation within which they operate. For example, SMEs could achieve a cost competitive advantage on marketing their product through the use of accounting skill (Farm & Smeltzer, 1989), but this opportunity may be lost by poor management and lack of technology adoption in the marketplace (Freel, 2000). However, the technical and accounting skills of SMEs and their management facilities may be of great assistance in the adoption of new ideas with better financial situations (Bharadwaj, 2000).

In the context of Saudi Arabia, Li (2008) indicated that SMEs play a significant role in fostering understanding of national policy of the nation towards the use of technology in various business disciplines. In particular, Saudi Arabia is a member of the WTO, in which more technological professionalism is required than in the past. In turn, this has made it necessary to study the factors that influence AIS sophistication and organizational performance in Saudi Arabian SMEs. Al-namah (2017) indicated that,

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SMEs sector considered as the key factor to the open economy in Saudi Arabia. Whereby this sector is able to generate the economic growth and create employment opportunities. In Saudi Arabia context SMEs contributes of 21% to the country's Gross Domestic Product (GDP) and 53% to the total employment of the country in the year 2016. Following this, Nakhleh (2017) stated that, SMEs in Saudi Arabia represent around 90% of the businesses enterprises.

The Chamber of Commerce of Saudi Arabia is a perfect and major hub where SMEs can be taught about their significant roles in the economy (Chamber of Commerce & Industry, 2011). One of the primary challenges of SMEs in Saudi Arabia is how they will be developed to suit various sectors of the economy (Li, 2008). This development is expected to come together with technological innovation in line with current trends, irrespective of cultural differences throughout the world. It presents an opportunity to reduce the unemployment rate as SMEs represent 93% of firms in Saudi Arabia (Ismail, 2004).

Courtheoux (2003) stated that many of these SMEs operate within an environment where internal management is being challenged by the difficulties of accessing important data and reliable statistics upon which to base future planning. Despite some SMEs in Saudi Arabia benefitting from IT, most of them are still regarded as being below the desired level. Hence, it is essential to study factors that influence the performance of the SMEs and those required in upgrading human resources (Al-Saleh, 2012). To the latter are limited by the nature of the institutes in Saudi Arabia, which do not offer short training courses on accounting or planning?

The Saudi Arabia Industrial Development Fund, Ministry of Finance and local banks, responsible for financing activities in SMEs, have recognized by the Saudi Arabian government and by private enterprise. The, Kafalah program established the potential and the need of SMEs for a strong base of support (debt and equity), training and business services. SR200 million ($53.3M) that includes a loan guarantee covering about 75% of the amount financed has been given to SMEs by these authorities. According to the Saudi Arabia–US Relations Information Service (2010), 1,113 SMEs had been the beneficiaries of this program up to the year 20. However, it should be noted that the support is only limited to financial aspects and little help is given to other aspects such as owners' training programs. This has resulted in the failure of SMEs, negatively affecting the national economy (Shalaby, 2004).

Managers are also required to update their AIS to ensure accurate decisions and continuous running of the business. The preparation of this kind of AIS is done for managing and maintaining confidentiality of the organizations (Cagwin & Bouwman, 2002). Following this, a study conducted by Sacer and Oluic (2013) stated that AIS is an important component in the preparation high-quality information for a wide range of users. Therefore, the development of new and innovative AIS is required in the management processes of organizations; modern approaches to AIS can integrate the business process within various departments of an organization and assist managers in drawing the necessary conclusions.

Most Saudi companies use traditional accounting methods in decision-making. The government has worked hard to reduce the use of these traditional methods and

encourage the application of modern AIS in decision making and performance enhancement (El-Ebaishi, Karbhari & Naser, 2003). Many accountants have recently adopted the new accounting techniques, contributing to generating records that can be transferred directly to managers for decision-making (Dunk, 1992). Trigo, Belfo and Estebanez (2016), address the role of business process management (BPM) and associated technologies in supporting or evolving the current AIS; even though the traditional systems fulfill the need of the financial reports, AIS collect and consolidate data from central databases, generating information, which can be easily comprehended by decision makers.

The majority of SME owners in Saudi Arabia are unaware of AIS, so their accountants must be introduced to them. A recent study conducted in Saudi Arabia (Zafar, Almaleh, Alqahtan & Alqahtan, 2016) discussed in detail the challenges to SMEs in Saudi Arabia, supporting their arguments by the findings of Ahmad and Siddiqui (2016), that even though SMEs appear to be on the increase they have to be conscious of the new technologies available for business use. Challenges to SMEs in the implementation of IT and information system include their limited awareness, lack of IT support, lack of IT literacy, inadequate management, inexperience in using consultants, lack of an appropriate infrastructure and limited resources (Zafar, *et al*., 2016). Ramli (2015), highlighted that, the internal users of AIS, managers in particular may make unsuitable decisions because lacking of accounting information and this may lead to the future of the whole company to be in the risk situation. In turn, a company acquires accounting information that generated by the AIS to enable it to manage and control its financial and other resources in a better way comparing to the traditional manual system of

recording process. In this regard, in a recent years SMEs have become a critical factor in the economy growth of Saudi Arabia, mainly when those entities are applying and conducting accounting information systems (AIS) approaches with SMEs sector (Zafar *et al.,* 2015). Therefore, AIS in Saudi Arabia should correspond to the use of modern IS techniques to enable international trading competencies (El-Ebaishi *et al.,* 2003). An increase in organizational performance has been achieved in SMEs as result of the using of advanced AIS (Grande *et al.,* 2011).

Importantly, one of the challenges, which Saudi Arabia faces in the use of accounting practices, is the incapacity to provide training to the accountants in the use of technology in their profession. Many SMEs that are well versed in the use of technology received their training in either the United States or the United Kingdom. However, on their return to Saudi Arabia they used traditional accounting techniques, because of the reluctance of the owners of SMEs to use accounting software in daily activities (El-Ebaishi *et al.,* 2003). A recent analytical study in Bahrain and eastern Saudi Arabia (Alsamari *et al.*, 2013) found that lack of good training for SME projects in which has been owned by owners in either the Kingdom of Bahrain or eastern region of Saudi Arabia has clear negative impacts on their projects. More seriously, the significant role of SMEs for national growth was long realized by Saudi government. Consequently, the government has incorporated major strategies for the promotion of SMEs in is Vision 2030 document. The plan, under Saudi Vision 2030, is to develop the contribution of SMEs to the GDP from the current 20 percent to 35 percent. The majority crucial technique to attain this is to increase their access to funding. (Altokhais, 2017). The Saudi vision 2030 is about the expansion of the Saudi's vision 2030 is based on the

development of entrepreneurial spirit. The instigator of the blueprint is Mohammed bin Salman, Saudi's deputy crown prince. The venture launched in the year 2016, providing the implementers a tight agenda of about 15 years. A key trait in the vision of Saudi 2013 is to create partnerships between the government and the private sectors in the areas of economic growth, such as mining, construction, education and health, as well as housing (Alshammari, 2014).

2.3 Accounting Information System Sophistication

Boulianne (2007) observes that AIS is part of information system, which managers of organizations use in taking decision (Gelinas, Sutton & Hunton, 2005). Based on the preceding definitions, it can therefore be concluded that AIS can be defined as the timely approach of receiving, transferring, processing, storing, retrieving and delivering data in an appropriate manner that will help the management in making appropriate decision. Furthermore, a study conducted by Fitriati and Mulyani (2015), stated that, AIS provides financial information and supporting the decision tasks in the coordination context of organizational activities control and strategic decision-making. In this regard, their study examines the factors that influence accounting information system (AIS) success and accounting information quality. Their results indicated that, there is a significant relationship between AIS success and accounting information quality.

Additionally, financial reporting being an important component of AIS has equally attracted the attention of various scholars (Hite, 1998; Holmes & Nicholls, 1988). This is especially noticed as most of the organizations around the world have opted for the

adoption of IT systems for storing data instead of using such innovation analysis, modeling, appraisal and simulation (Reid & Smith, 2002).

Accordingly, Holmes and Nicola (1988) developed instrument which researchers use in determining factors which influence the preparation of AIS for legal and other business purposes. Therefore, their study examined the degree of sophistication through which owners and managers of small businesses prepared accounting information, and considered whether such accounting information was prepared using internal sources.

In addition, AIS also provides certain information such as low account balance sheets, tax returns, budget cash flow and profit and loss statements. According to Holmes and Nicholls, (1988) AIS equally provides information about manufacturing statements, ratio analysis, sources and uses of funds, job costing reports, break-even-analysis and cash flow statements. However, the inadequacy of the AIS is due to the industrial sector of business, owner or manager education, and the limited capital base, which thereby warrants the interest of researchers on small and medium enterprises. Following this, a study conducted by Trigo, Belfo, and Estebanez (2016) indicated that AIS fulfils the requirements of financial reports, the data collection from the central databases and consolidating it, in such a way the information could be consumed easily by the decision makers within an organization.

Trigo, Belfo, and Estebanez (2016) stated that, there are some accounting activities and practices face particular concerns, in which represent serious challenges that may effect on the process of real- time accounting or reporting. In this regard, they added in their

research, real-time reporting in accounting has many advantages comparing with conventional periodic reporting because the higher competition among enterprises requires for more updated information. Therefore, Belfo (2012), indicated that, the successful implementation of AIS rely on taking into a consideration of technological maters. Hence,Trigo, Belfo, and Estebanez (2016) addressing some technological maters of challenges of implantation of real-time reporting for accounting information systems (AIS) for example, AIS involving a certain activities such as business process management and business activity monitoring that require providing more extensive accounting reporting with several process.

Additionally, a study implemented by Harash, Al-Timimi, and Radhi (2014), examined the impact of using accounting information system (AIS) on the performance of SMEs. And their finding of the study is expected to assist owners and managers of SMEs to recognize the importance of using AIS in order to attain the performance. They indicated in their study the using of AIS is affected by, a number of characteristics such as, reliability, relevance, and timeliness that influence SMEs' performance.

Furthermore, Moscove, Simkin and Bagranoff (2011) equally confirmed that AIS shortcoming also extends beyond the confine of financial information but also incorporates non-financial information. Therefore, the function of AIS has therefore, been expanded to include the preparation of reports not just for accountants but also for other users (Vaassen, 2002). Many types of information required for planning, control and management are therefore presented in the modern AIS.

Fundamentally, AIS is implemented in different forms ranging from computerized and sophisticated systems to non-existent and formal systems. For instance, an organization may execute AIS as a paper-based process by applying a computerized process. However, evidence has shown that SMEs are using both strategic and operational practices for measuring the level of sophistication of AIS based on integration, scope, timeliness and aggregation as the four dimensions of measuring AIS sophistication (AL-Eqab & Ismail, 2011; Chenhall, 2003).

Previously studies on IS, IT and AIS have classified systems into various levels. The common phenomenon in these studies is that, AIS sophistication is contingent on some variables which these previous studies employed, in anticipation of the type of information supplied (Reid & Smith, 2000). It should equally be noted that, previous studies focused on the features of organizations, their culture and the life cycles as the factors.

In line with Reid and Smith (2000) and Thong (1999), previous studies were carried out on the sophistication of IS and adoption of information among small businesses. Their findings, however, showed that the features of organizations with respect to the level of employees' IT knowledge and business size indicate the sophistication and degree of adoption of IT. Therefore, the present study examines the link between the organizational context (manager's knowledge, importance of IT, manager's experience and education) and the influence of these factors on AIS sophistication and its impact on organizational performance of SMEs.

However, the findings of previous studies such as Bouwens and Abernethy (2000); Chenhall and Morris (1986); Chia (1995); Gordon and Narayanan (1984); and Pavlatos and Paggios (2009) revealed a significant link between decentralization and information characteristics in a broad scope of aggregation, integration and timeliness that positively enhances performance. This impact was found on the managerial performance for all the four features of information systems: aggregation, timeliness, scope and integration. However, findings from these studies indicate that the higher the level of sophistication of information features, the more positive its influence on managerial performance, especially when it comes to highly centralized conditions. A negative influence on performance was observed under low decentralization.

More importantly, Ali, Omar, and Baker (2016) examined the impact of AIS on the organizational performance and the moderating effect of organizational culture on the relationship between AIS success factors and organizational performance. They identified four AIS success factors: service quality, information quality, data quality and system quality, implemented in their study as the determinants of organizational performance. They concluded that service, information and system quality are significant AIS success factors for organizational performance. Organizational culture also helped to improve performance through interaction with information quality, data quality, and system quality. Khasawneh (2014) measured the influence of manager tenure, AIS sophistication, internal experts and firm size and their influence on AIS effectiveness. However, in this study, the researcher examines the factors affecting AIS sophistication.

Soudani (2012) examined the usefulness of AIS for effective organizational performance. He defined AIS as the whole of the related components working together to collect, store and disseminate data to meet the target of planning, control, coordination, analysis and decision making. He found that AIS is very useful and has an impact on organizational performance in listed companies in the Dubai financial market.

Patel (2015) defined AIS as a structure used to gather, store, direct, process, recover, and report financial data. He added that this financial data could be used by owners, accountants, advisors, business analysts, managers, chief financial officers, auditors and regulators, and tax agencies. His study emphasizes the importance of accounting information in decision making, as accounting information plays a crucial role in the decision-making process of managers relating to the financial and economic issues.

The literature therefore suggests a significant fit between AIS sophistication and IT benefits such as monitoring the accuracy of information output. The correlation between AIS design sophistication and the contingency of IT factors, was examined by Al-Eqab and Ismail (2011) who, found that the relationship had a significantly positive impact on AIS design.

Based on the discussion above, it can be concluded that, AIS features can be influenced by environmental features such as, styles of decision-making and organizational structure. This conclusion is inferred from Mauldin and Ruchala's (1999) model on the relationship between task performance and organizational, cognitive styles and AIS sophistication design. The model's central point is based on the task demands,

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frequency of occurrence, mental processes and complexity of accounting tasks. The model therefore suggests that AIS sophistication and task requirements should be matched.

Further, Ismail and Abidin (2009), studied SMEs in Malaysia concerning how they are implementing AIS sophistication, considering managers of accounting systems, managers' accounting knowledge, effectiveness of consultants, government agencies and AIS. They found that the knowledge of accounting possessed by managers and the effectiveness of vendors was significantly influenced by AIS effectiveness, and recommended that SMEs need better knowledge of business information requirements.

In addition, Zayond *et al.,* (2009) studied various factors that are preventing the development of AIS in the Syrian economy, discovering that economic factors were the major barrier inhibiting the development of AIS as traditional accounting systems were still in use. Officials were ineffective in the establishment of accounting systems, signifying that the auditing and accounting professions do not have qualified human resources.

Corresponding with the above, the design and development as well as the degree of AIS adoption has been explored in previous studies (e.g. Lee & Runge, 2001; Mitchell, Reid & Smith, 1997; Thong, 1999). Moores and Yuen (2001) and Reid and Smith (2000, 2002) also investigated the formality and complexity of AIS, using the functionality of accounting (Pizzini, 2006) and enterprises resource planning (ERP) systems (Nicolaou & Reck, 2004). Lee and Runge (2001), Ibrahim, Angelidis and Parsa (2004) and Reid

and Smith (2000, 2002) measured the frequency of computer usage and application in achieving business objectives in organizations, using the complexity of Management Accounting System (MAS) and the extent of the adoption of IT as the measure.

Grande *et al.* (2011) found a positive relationship between SMEs that adopted AIS for banking and fiscal management and better performance. This study, however, confirms the scarcity of literature linking the use and application of AIS and performance and productivity indicators in SMEs (Choe, 1998).

It is therefore clear from the discussion above that few studies have investigated the likely factors that influence AIS sophistication. However, it proved that there is a relationship between AIS sophistication determinants (manager's knowledge, importance of IT, manager's education, IT investment, manager's experience, and environmental conditions) and the performance of SMEs. This implies that AIS sophistication mediates between independent variables and SME performance (dependent variable). Table 2.1 summarizes studies that have considered AIS sophistication.

Table 2.1
Summary of Past Research on AIS Sophistication

Authors	Key Variables/ Constructs	Findings
Boulianne (2007)	Strategic choice, AIS design and business-unit performance.	Results of a research survey and secondary data analysis of 88 Canadian business units suggest that for prospector strategic-types, and to a lesser extent for defender strategic-types, broad-

Table 2.1 (Continued)

Authors	Key Variables/ Constructs	Findings
		scope AIS is associated with higher performance.
Grande *et al.* (2011)	The use of the AIS in Spanish banks, and performance.	Interesting results: there is a positive relationship among the SMEs that use AIS for fiscal and bank management and better performance This research provides value added in accounting literature given the scarcity of works dealing with the relationship between the application and use of AIS and performance and productivity indicators in SMEs in Spain.
Choe (1998)	Task uncertainty, organizational structure, design accounting (scope, timeliness, and aggregation), and performance.	A less structured organization, broad scope, timely and aggregated information with high user participation has a positive influence on performance.
Al-Eqab and Ismail (2011)	Environmental conditions, IT sophistication, business strategy, cost leadership, innovative differentiation, and AIS design.	This study has deepened current understanding of AIS design and its influencing factors, and has provided useful insights into the sophistication of IT development in Jordan. It also showed that all factors influence significantly AIS design except environmental conditions.
Ismail and Abidin (2009)	Managers of accounting systems, managers of accounting knowledge, consultants' effectiveness, vendor's effectiveness, government agencies'	Managers of accounting knowledge, managers of effectiveness of vendors and accounting firms significantly enhanced AIS effectiveness.

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Table 2.1 (Continued)

Authors	Key Variables/ Constructs	Findings
	effectiveness, accounting firm effectiveness and AIS effectiveness.	
Zayond *et al.,* (2009)	Economic factors and AIS.	Economic factors are inadequate for suitable AIS. Based on the note that traditional accounting system is still well used and are inefficient.
Khasawneh (2014)	AIS sophistication, manager tenure, firm size, internal experts, and AIS effectiveness.	A positive influence between organizational factors, AIS sophistication and AIS effectiveness.
Fitriati and Mulyani (2015)	Examines the factors that influence AIS success and accounting information quality.	There is a significant relationship between AIS success and accounting information quality.
Harash, Al-Timimi, and Radhi (2014)	They examined the impact of using AIS on the performance of SMEs.	Their findings are expected to assist owners and managers of SMEs to recognize the importance of using AIS in order to attain performance
Ali, Omar and Baker (2016)	They examined the impact of AIS on organizational performance and the moderating impact of the organizational culture in the relationship between AIS success factors and organizational performance.	Service quality, information quality, and system quality are considered as the significant AIS success factors for enhancing the organizational performance.
Soudani (2012)	Examines the usefulness of AIS for effective	AIS is very useful and has an impact on the

Table 2.1 (Continued)

Authors	Key Variables/ Constructs	Findings
	organizational performance.	organizational performance of listed companies in Dubai financial market.

2.4 Determinants of Organizational Performance, and AIS Sophistication

Based on the previous discussion, determinants of organizational performance and AIS sophistication are considered in this study in three constructs: (1) organizational context; (2) IT investment; and (3) environmental conditions.

2.4.1 Organizational Context

Previous studies investigated whether operating organizational context in relation to the characteristics of the manager, and strategic procedures are contingent with aspects of the manager (Lee & Runge, 2001). The behavioral conduct of the managers of SMEs is vital to the high degree of centralization within the organizational structure of small businesses, so critical decisions are the responsibility of the manager. Therefore, particular personal characteristics can influence the decision-making process of these small business managers (Lee &Runge, 2001).

The decisions of the managers are considered important in improving the performance of firms, and researchers believe that small business in the US fails because of the incompetence of the managers (Beaver, 2003a, 2003b; Beaver & Jennings, 2005; Harris & Gibson, 2006; Jennings & Beaver, 1997; Monk, 2000; Rogoff, Lee, & Suh, 2004). According to Jennings and Beaver (1997), the major source of small business failure can be apparently non-rational behaviour and decisions of the manager.

In the literature on SME managers' behavioral studies, the expression of the idea of an entrepreneur versus a craftsman is frequently approached (Aldrich & Martin, 2001; Beaver, 2003c; Bracker, Keats, & Pearson, 1988; Bracker& Pearson, 1986; Matthews & Scott, 1995; Simpson*et al.,* 2004). The question is whether managerial style has a relationship with planning sophistication and its influence on financial performance (Bracker & Pearson, 1986).

Matthews and Scott (1995) found that including perceived environmental uncertainty influences the sophistication of planning in both types of business. Beaver (2003b) opined that the difference in decision making among managers of SMEs relies on whether the owner is a contractor or on the type and size of the firm requiring a particular type of AIS sophistication. He concluded that most small business managers are more concerned about survival, growth and independence. Khasawneh (2014) studied organizational factors (manager's tenure, firm's size, and internal experts), and their effect on AIS effectiveness.

More attention was paid to the personality characteristics of managers (Bracker *et al.,* 1988; Bracker & Pearson, 1986; Rauch, Frese, & Sonnentag, 2000). Bracker *et al.* (1988) investigated the impact of owner characteristics on the relationship between planning sophistication and performance among small enterprises. Christopher (1998) examined the aspects of minority business owners that affect the degree of business performance.

The impact of the CEO's characteristics on the extent of IS adoption in SMEs was studied by Thong (1999), resulting in the identification of two characteristics, innovativeness and IS knowledge, based on the abilities and inclinations of the CEO. Although SMEs' adoption of an IS is influenced by the characteristics of the CEO, the extent of the adoption is influenced by organizational characteristics (Thong, 1999). Nevertheless, either knowledge gained through formal education, previous experience, or informal training is considered as a vital attribute in a successful entrepreneurial venture (Aldrich & Martinez, 2001).

In view of the discussion above, this study will concentrate on the following factors: (1) importance of IT, (2) manager's knowledge, (3) manager's education, (4) manager's experience.

2.4.1.1 Importance of IT

According to Ismail and Abidin (2009), the International Federation of Accountants indicated that the competition on IT is considered as important, because it is used extensively in the business world. They also examined the factor of perception in influencing the importance of IT in the Malaysian context. They used a questionnaire and their findings revealed that the extensive adoption of IT brings further business opportunities.

As mentioned earlier, IT is used extensively throughout the business world, and IT competency is therefore, considered as an essential factor for specialized accountants

because of its ability to improve the effectiveness and efficiency of the auditing profession (IFAC, 2001; Ismail & Abidin, 2009).

Previous studies on the performance of firms, assert the relevance of the perceived importance of IT; operational and strategic tools for small business influence their performance.(Bracker *et al.,* 1988; Bracker & Pearson, 1986; Holmes & Nicholls, 1988; Huck & McEwen, 1991; Jones, 1985, 1992; Lee & Runge, 2001; Pineda, Lerner, Miller, & Phillips, 1998; Pizzini, 2006; Reid & Smith, 2000; Rogoff *et al.,* 2004; Stephens, Evans, & Matthews, 2005; Thong, 1999). Thus, the use of AIS affects the importance and advantages in SMEs.

Lee and Runge (2001) stated that the characteristics of managers influence the extent to which IT can be adopted in SMEs. In this regard, the manager's perception of the importance and benefits of IT that have been gained in business is associated with the level to which IT is adopted in the firm (Lee & Runge, 2001). This scenario is termed AIS sophistication. Therefore, the manager is biased in the demonstration of the perception of the importance of IT that enhances or hinders performance (Rogoff *et al.,* 2004). Following this assumption, Stephens et al. (2005) explored the importance of the implementation gap in the area of criteria or standards required for performance excellence (CPE) practices in small businesses. Their findings illustrate that the higher levels of importance of IT are reflected in the higher levels of its implementation. Hence, the manager's knowledge of the relative advantages, or perceived importance of IT in the business, is related to the AIS sophistication level (Lee & Runge, 2001).

Managers need additional information in planning and control; therefore, there must be an increase in system sophistication, particularly in the areas of the analysis of budget and variances. Jones (1985, 1992) stated that several studies have examined the behavior of managers in making decisions, expressed by either the requirements of the new managers or the need for additional information. This in turn increases the managers' awareness of the importance of accounting and accounting control systems, which really means that the new manager needs a type of IT system, which generates all the detailed information necessary to derive benefit for the organization.

Al-Ansi, Ismail and Al-Swidi (2013) examined the relationship between the level of IT utilization and the factors that affect it among auditors in Yemen. Their proposed model examines the effect of IT knowledge, IT training and type of firm on the use of IT. They distributed a questionnaire among external auditors from both Big-4 and non-Big 4 companies. Out of 350 questionnaires, distributed 197 were returned, considered sufficient for data analysis. They use Partial Least Squares (PLS) to analyze their data, and concluded that, IT knowledge and training are essential contributions to IT utilization among external auditors. These researchers followed Ismail, Abidin (2009), Greenstein, and Mckee (2008), who grouped IT importance into five dimensions: general office automation, audit automation, e-commerce technologies, and system design and implementation. Their results indicated that the information system audit in Malaysia is still at the minimum level. If individuals have insufficient knowledge of IT and have not joined any training program to improve their capabilities, the utilization of the IT system, is expected to be at its lowest level (Al-Ansi, Ismail, & Al-Swidi 2013).

Holmes and Nicholls (1988) examined the factors that affect the degree of sophistication of the managers' accounting information used in decision making in small businesses. Their findings revealed that only a few SME managers prepare or obtain accounting information other than constitutional reports; the managers were found to obtain only the information they considered important in meeting legal requirements. However, it was concluded that, training and the education would influence the importance of IT attached to AIS by the managers.

It was believed by the owners of small businesses in Jamaica that maintenance of the financial records is vital if the firm is to achieve competitive advantage and improve performance (Huck & McEwen, 1991). However, they recognized that there is an inverse relationship with respect to environmental uncertainty. Environmental uncertainty increased if the manager was unable to foresee or comprehend the environment due to lack of IT or recognize the importance of IT, and both entrepreneurial and non-entrepreneurial managers tended to decrease their level of sophistication in planning (Matthews & Scott, 1995). The manager concentrated on other matters considered more important to them at the time. Matthews and Scott (1995) also considered the awareness of the manager about the importance of IT to be an important factor affecting the performance of the businesses.

Merhout and Buchman (2007) examined the skills required by employers for IT audit functions. They divided these skills into three groups: technical skills and capabilities, organizational skills and business knowledge, and audit and technical knowledge. The findings determined that auditors should have interpersonal skills enabling them to

interact at various levels for both personal and technical skills, to enhance understanding of the various technologies applied within the organization (Merhout & Buchman, 2007).

Pineda *et al*. (1998) focused on the variables affecting information search activities that managers must face in decision-making. The importance of the decision in the eyes of the manager influenced their information-search activities. Information-search activities were more intensive in the areas, which the managers felt were most important and less intensive in areas they considered to be of less importance. Overall, the managers relied more heavily on internal than external sources in making decisions. They relied on their own knowledge and expertise to influence firms' performance.

Rauch *et al*. (2000) concentrated on the sophistication of planning in a cultural context. They looked at two very different cultures, Ireland and Germany, hypothesizing those cultural influences determine uncertainty avoidance; uncertainty avoidance affects planning, and therefore planning facilitates avoiding uncertainty (Rauch *et al.,* 2000). They found that in Ireland, a culture with low uncertainty avoidance, less planning was more common with managers not wanting to invest the time or money that planning requires, in addition to the desire for increased flexibility in operations.

Rai *et al.* (2010) investigated the alignment between the perceptions of IT importance and the level of knowledge among auditors working in Australia. They concluded that the level of IT knowledge among Australian auditors was lower than their perception of the importance of technology. The auditors had a wide knowledge of email,

communications software and electronic spreadsheets, but poor knowledge of system sophistication and programming tools.

In Germany, a culture with high uncertainty avoidance, more planning was evident. The overall findings indicated that there is a positive association between achievement orientation and the success of small enterprises (Rauch *et al.,* 2000). Meanwhile, the managers' knowledge of the relative advantages, or perceived importance, of IT in the business had a relationship with the level of sophistication of AIS (Lee & Runge, 2001). In this sense, AIS sophistication in turn has the potential to influence performance (Rogoff *et al.,* 2004).

The significance of IT to companies generally and SMEs in particular is often identified as an effective way of enhancing accounting functions. Appropriate use of IT ensures timely and accurate accounting reports and other financial information for managers, in relation to the effects of their decision-making and the results of their business operations on the firm's performance. (Halabi, Barrett, and Dyt 2010; Saeidi, 2014). A recent study by Al-Nuaimi, Mohamed and Alekam (2017) investigated the direct and the indirect association between IT, Activity-Based Costing (ABC) implementation, and organizational performance. The implementation of ABC was found partially to meditate the association between IT, ABC implementation and organizational performance.

To recap, there is a potential relationship between the perceived importance of IT and AIS sophistication, and between the perceived importance of IT and organizational

performance. Thus, this is included in the theoretical research framework. Table 2.2

summarizes these past studies on the importance of IT.

Table 2.2
Summary of Past Research on the Importance of IT

Authors	Key Variables/ Constructs	Findings
Rauch *et al.,* 2000	Culture, uncertainty avoidance, achievement orientation, and performance of SMEs in Ireland and Germany.	There is a positive association between achievement orientation and the success of small enterprises
Matthews and Scott (1995)	Manager's awareness of importance of IT.	Manager's awareness of the importance of IT is a crucial factor affecting the performance of the business
Evans and Matthews (2005)	Operational and strategic tools for SME; perceived importance of IT	Confirm the relevance of the perceived importance of IT; operational and strategic tools influence the performance of the business.
Rai *et al.,* (2010)	Perceptions of IT importance, level of knowledge, communication software, and electronic spreadsheets.	Knowledge of system sophistication tools is low in Australia.
Ismail and Abidin (2009)	IT importance, general office automation, audit automation, e-commerce technologies, and system design and implementation.	AIS audit in Malaysia is still at the lowest level
Stephens *et al.,* (2005); Lee and Runge (2001)	Importance of IT, implementation of IT, and AIS sophistication.	Higher levels of importance of IT are reflected in higher levels of implementation. The perceived importance of IT in business is related to AIS sophistication level.

Table 2.2 (Continued)

Authors	Key Variables/ Constructs	Findings
Halabi , Barrett, and Dyt 2010; Saeidi, 2014	Appropriate use of IT for accounting functions and the organizational performance of the firm.	Appropriate use of IT ensures timely and accurate accounting reports and other financial information for managers; it affects operational performance.
Al-Nuaimi, Mohamed, and Alekam (2017)	Direct and indirect association between IT, Activity-Based Costing (ABC) implementation and organizational performance.	Implementation of ABC partially meditated the association between IT, ABC implementation and organizational performance.

2.4.1.2 Owner or Manager's Knowledge

Knowledge is the information known by the users (Hannabuss, 1987), helping decision making when users interact with other users in the organizations (Becerra-Fernandez & Sabherwal 2001; Birkinshaw, Nobel & Ridderstrale 2002; Ibrahim & Nissen, 2003; Postrel 2002; Rulke & Galaskiewicz, 2000). Managers' knowledge can strongly affect the design of the organization (Ibrahim & Nissen, 2003).

Ismail (2009) examined the relationship between AIS sophistication, managers' participation in AIS implementation, managers' accounting system knowledge, managers' accounting knowledge, and the effectiveness of consultants, of vendors, of government agencies, of accounting firms and of AIS within SMEs in Malaysia. He found that the manager's accounting knowledge, and the effectiveness of vendors and accounting firms significantly enhanced AIS effectiveness, and recommended that

SMEs need to obtain adequate accounting knowledge to better comprehend business information requirements.

Ismail and King (2007) investigated the relationship between IT sophistication and the manager's knowledge, external expertise, internal expertise, and firm size and AIS alignment in manufacturing SMEs in Malaysia. The results suggest that the firm's level of IT maturity, the level of the manager's accounting and IT knowledge, the use of expertise from government agencies and accounting firms, and the existence of internal IT staff affected AIS alignment. Future research should employ sophisticated techniques such as structural equation modeling and include external variables such as the external business and technological environment and trading partner support.

Hussin and Suhaimi (2011) and Ismail & King (2007) argued that to have appropriate knowledge would be significantly helpful for owners or managers to engage and to administer e-business operations, consistent with the requirements of the business strategy. It is fascinating to note that companies considered unsophisticated IT/IS knowledge (e.g. word processing, presentation, and spreadsheet applications) as ordinary, and obligatory for day-to-day managerial tasks. Such basic knowledge offers limited support for the introduction of advanced technologies, for example e-business. Practical, extensive knowledge of sophisticated advanced IT/IS applications are important, and successful companies recognize this more than do less successful companies. In this regard, having sufficient knowledge of advanced IT/IS enables the manager to plan and to move the company towards more strategic use of e-business.

These findings are in line with many studies that emphasize the critical role of the knowledgeable manager in facilitating e-business alignment.

Sophisticated managers of SMEs may be conscious of the benefits of compensating for their own insufficient knowledge or skills by utilizing service providers (Ismail & King, 2007; Watson, 2003). Audet and St-Jean (2007) concluded that SME managers who knew more about service providers used their services more than did managers who had no information about these services. However, less sophisticated or capable SME owners or managers might be unconscious of their own weaknesses and the need to ask for support and advice, believing they can do it all themselves (Watson, 2003).

Sallem, Nasir, Nori and Kassim (2017) said that accounting is generally recognized as playing a crucial role in the daily basis of the company's transactions. To ensure the smooth flow of organizational activities, managers are expected to have an adequate level of accounting knowledge, and to be familiar with the different tasks accounting tasks (Sallem, Nasir, Nasir, & Kassim, 2017).

Researchers have found that managers' knowledge about accounting and its significance to business strategies are two important factors influencing the adoption of AIS and its sophistication (Davila & Foster, 2005). Another of the initial studies on AIS (Gordon, Larcker, & Tuggle, 1978) grouped the features of information into seven: scope, source, aggregation level, currency, time horizon, frequency of use, and required accuracy. The characteristics of information were related to different management, operational and

strategic functions. As such, AIS characteristics depend on the focus, form, format, time horizon, orientation and their frequency.

Wenger (1986) studied the relationship between knowledge drivers and performance, adopting the immediate indicators of managers' knowledge and performance including knowledge quality and user knowledge satisfaction. The findings supported an association between knowledge drivers and performance. Steiner (1972), Shaw (1981), McGrath (1984), Liang (1994), and Stasser and Stewart (1992) also found a strong relationship between the knowledge possessed by group members and performance, concluding that knowledge flows remain a competitive advantage and assist in achieving high performance (Nissen, 2006b; Nonaka, 1995).

Nissen and Levitt (2004) and Nissen (2006a) stated that, while knowledge creation and transfer (for instance, learning) are considered as the key dynamic aspects of knowledge, in an organizational context knowledge must also be applied (for example, put into action to achieve goals). In short, knowledge is a powerful resource that firms can utilize to create a positive influence on performance.

Wenger (1986) asserted that there is a strong relationship between permanence and knowledge flows. Transitive memory theory suggests that the level of interdependence should inform managers about how best to organize (i.e. arrange the organization's meta-knowledge, or who knows what knowledge). Therefore, knowledge is a contingency factor in organizational design, especially as it relates to coordination mechanisms and their impact on knowledge flows, leading to high levels of

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performance. Grimpe and Hussinger (2013) examined a comprehensive dataset of more than 2,000 German manufacturing firms and confirmed a complementary relationship between formal and informal knowledge: using both transfer channels contribute to higher performance. The management of the firm should therefore strive to maintain close informal relationships with universities to realize the full potential of formal knowledge.

SMEs lack the necessary skills and resources to perform accounting functions in-house; access to expertise and specialized knowledge is obviously considered as most important (Everaert, Sarens & Rommel, 2006). However, many researchers claim that SME managers are not aware of the range of support and advisory services available to them (Ismail & King, 2007; Ismail &Abidin, 2009; Liddicoat & Stringer, 2005), due to the unavailability of adequate evidence of the benefits of such services (Watson, 2003), or lack of support in seeking relevant information (Devi & Samujh, 2010).

From the above discussion, it can be said that there is a potential relationship between the manager's knowledge and AIS sophistication in SMEs. Thus, it is included in this research's theoretical framework. Table 2.3 summarizes studies on managers' knowledge.

Table 2.3
Summary of Research on Owners or Managers' Knowledge

Authors	Key Variables/ Constructs	Findings
Nissen and Levitt (2004)	Knowledge creation and transfer (for instance learning), and performance.	Knowledge is a powerful resource that firms can utilize to create a positive influence on performance.
Wenger (1986)	Knowledge flows as a	There is a strong

Table 2.3 (Continued)

Authors	Key Variables/ Constructs	Findings
	contingency factor, and performance.	relationship between knowledge flows and performance. Knowledge is a contingency factor in organizational design, especially as it relates to coordination mechanisms and their impact on knowledge flows that lead to high levels of performance.
Grimpe and Hussinger (2013)	Formal knowledge, informal knowledge, and performance.	A comprehensive dataset of 2,000 German manufacturing firms and confirmed a complementary relationship between formal and informal knowledge: using both transfer channels contributes to higher performance. Management should strive to maintain close informal relationships with universities to realize the full potential of formal knowledge.
Ismail (2009)	AIS sophistication, manager participation in AIS implementation, manager accounting system knowledge, manager accounting knowledge, effectiveness of consultants, vendors, government agencies, accounting firms and AIS.	Manager is accounting knowledge and effectiveness of vendors and accounting firms significantly enhanced AIS effectiveness. SMEs need to acquire adequate accounting knowledge to better comprehend business information requirements.
Ismail and King (2007)	IT sophistication of manager's knowledge, manager's external expertise, internal expertise and firm size, and AIS alignment.	AIS alignment in manufacturing SMEs in Malaysia was linked to the level of IT maturity, level of manager's accounting and IT knowledge, use of

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Table 2.3 (Continued)

Authors	Key Variables/ Constructs	Findings
		expertise from government agencies and accounting firms, and existence of internal IT staff. Future research should employ sophisticated techniques such as structural equation modeling and include external variables such as external business and technological environment and trading partner support.
Davila and Foster (2005)	Accounting knowledge, different levels of managerial activity such as strategic, management and operational. AIS characteristics rely on the format, form, focus, orientation, time horizon, frequency and characteristics of information	The characteristics of information are related to accounting knowledge and the different levels of managerial activity. AIS characteristics rely on format, form, focus, orientation, time horizon, and frequency.
Sallem, Nasir, Nori, and Kassim (2017)	Accounting is generally to recognized as playing a crucial role in the daily basis of the company's transactions.	To ensure the smooth flow of the organizational activities, managers must have an adequate level of accounting knowledge, and be familiar with the different tasks of accounting.

2.4.1.3 Owner or Manager's Education

Greater knowledge of the manager tends to increase the level of AIS sophistication in SMEs. Hence, managers who have undergone business-oriented courses in accounting or other related business topics during their college education should be better able to understand the importance of using AIS to improve performance in their organizations.

A study in Tanzania by Mmari (2014) concluded that SMEs play a major role in generating jobs and creating income in the country. Nevertheless, little concerns have been shown in assessing the impact of managers' education on the success of SMEs. His study examining the effect that the education of the owners of SMEs in Tanzania on their success, indicated that the higher the level of education of the owners, the greater the success and growth of the SMEs.

Ng and Feldman (2009) found that managers' educational level had a positive effect on core task performance, and on creativity and citizenship behavior. Otherwise, it had negative impacts on a job's substance use and absenteeism. Concerning the moderating effect between education and job performance, a significant association was found with gender, race, and job level and job complexity. In the same vein, Kasseeah (2012) investigated the impact of the manager's educational level on the performance of SMEs in Mauritius. The findings determined that the better-educated managers, particularly those with tertiary education, contributed significantly more to the performance of their firm.

Sophistication is associated with accounting practices and planning in SMEs, and many researchers have shown that education raises the level of sophistication (Holmes & Nicholls, 1988; Jones, 1982). In a study of business planning among small business organizations, Jones (1982) found that businesses with more sophisticated planning had older managers. Greater age and more education provide better insight into the value of planning and understanding of the ability of the firm to make and implement plans.

The findings of Holmes and Nicholls (1988) also reveal that managers with a university degree or college education qualifications appear to have more reports of their firms accountable and proactively prepared than those with trade qualifications only. In addition, managers who had undergone training on management courses were able to produce more information in their accounts than those that had less education or training.

Dennis (2000) reported that managers without formal education believed there was no benefit to be gained from using AIS. It was emphasized that during the process of establishing small businesses, many managers did not succeed in setting up a formal accounting system. Those with formal business training were more willing to utilize AIS. Future research may determine if the type of education influenced the sophistication of accounting practices in a firm.

On the other hand, the objective of the study conducted by Gathenya, Bwisa and Kihoro (2011) was to examine the association between the effects of both age and education for women entrepreneurs on the locus of planning. The authors used a survey targeting 1,760 SMEs from Pamoja Women Development (PAWDEP) and identified 128 female entrepreneurs in Kenya. They implemented three basic methods to collect data: survey, interview guide and content analysis. Their findings determined that the respondents' age and education were critical factors in making decisions on the depth of planning and had a significant impact on return on assets (ROA). The findings of Langowitz and Minniti (2007) also revealed that age played crucial role in indicating the attitudes of entrepreneurs towards both ROA and return on equity (ROE). In particular, these

authors recognized that as the women entrepreneurs grew older and more mature, the variety in the performance of their enterprises narrowed down and equaled out, irrespective of their educational background; this agreed with the studies of Manolova, Brush and Edelman (2008) and Gathenya, Bwisa & Kihoro (2011).

Johnson and Elder (2002) assumed that change and stability in work values were related to the type of education by considering the period of adulthood in their study sample. In order to examine this assumption, they examined whether the level of changes in working values in the eight years after high school were associated with post-secondary education, using panel data. They compared people who finished their education with high school and those who obtained post-secondary degrees, with the latter indicating larger change on average. Their results emphasize that stated work values are anticipated by more investment in education, implying that the more education the employers have, the more changes they will have in their work values.

Research shows that training and education can positively affect the performance of small businesses. Research using a questionnaire to collect data on small service organizations clearly revealed that the education and training of managers had a positive impact on the performance of the firm (Collins-Dodd, Gordon, & Smart, 2004; Simpson *et al.,* 2004). Kasseeah and Thoplan, (2012) measured managers' educational level by categories such as primary, secondary and tertiary levels, and so on.

Collins *et al.* (2004) in their study carried on sole-proprietor accounting practices reported that education was one of the variables in the process of measuring the impact

of gender on financial performance. One would expect initially that accounting practitioners would have an educational background similar to the nature of their career, meaning most businesses would prefer college or university graduates. However, because of the difference in age many had obtained their certification before university degree was required. The same study was unable to find any significant differences in the degree of education between females and males (Collins *et al.,* 2004).

Chiliya and Roberts-Lombard (2012) discovered a positive relationship between education and the performance of grocery shops in South Africa. Similarly, Huck and McEwen (1991) and Stokes and Blackburn (2002) claimed that the participation of the manager in training sponsored or organized by a university or similar organizations may also have a positive influence on the increase in entrepreneurship and the overall performance of SMEs. Although the research did not centre on a particular type of education, it did study organizational financial performance with no focus on the sophistication of the accounting practices.

Huck and McEwen's (1991) study on SMEs in Jamaica assumed that government policy caused the growth in entrepreneurship, as it enforced the implementation of an entrepreneurship curriculum in high schools, and the incorporation of entrepreneur programs in the College of Arts, Science, and Technology. In Fairlie's (2004) study, analysis of available data from the census and the Survey of Minority-Owned Business Enterprises (SMOBE) claimed that education has a positive influence on the probability of self-employment.

Fairlie (2002) also investigated business ownership trends and their causes during the period 1979 to 1998 among a variety of racial and ethnic groups in the United States, using Current Population Survey (CPS) micro data. The results revealed rapid growth rates in the number of the self-employed categories of blacks, Hispanics, Asians and Native Americans compared to whites, essentially because of expansion in the labor force for these groups. However, if females excluded, trends in business ownership rates did not rise significantly. Fairlie (2002), then used a dynamic decomposition method to discover the causes of racial differentiation in trends in self-employment rates, and a number of fascinating patterns appeared. For instance, increasing levels of education among black men compared to white men has contributed to a reduction in the white/black self-employment rate gap from 1979–81 to 1996–98. On the other hand, the white Hispanic gap increased over the past two decades partially because Hispanic men did not experience the benefit of education compared with white men. The different age trends in the workforce across racial groups may also have contributed to the relative trends in self-employment rates. Moreover, for all minority groups, the workforce age was less than for the whites group, reducing the self-employment rate of the former compared to latter. It concluded that as levels of education increase and relative ages decline in the workforce for some minority groups, so would racial gaps in self-employment increase.

SME managers who do not possess business training or education may not see the advantages of setting up and utilizing AIS sophistication. In establishing small businesses, many managers do not set up a formal accounting system (Dennis, 2000),

for lack of time or resources or the manager's attitude. As the economy evolves, managers might replace because of their lack of accounting practices (Dennis, 2000).

In turbulent times and a challenging period for business, the management of small firm will battle with financial and human resources that are limited in response to the constraints of the environment, in order to make ends meet (Shrader, Mulford & Blackburn, 1989). Beaver (2003b) proposed that new businesses are vulnerable when the key players do not have adequate training about the business and its modes of operation. Bracker *et al.,* (1988) pointed to an interesting implication arising in small firms of the electronics industry. Of the majority of owners had advanced technical degrees, but few had business education. This may be relevant to operations on a daily basis. A major downturn expressed in the economy, lack of business education and managerial focus on strategic management tools would adversely affect the average firm (Bracker *et al.,* 1988).

From the above discussion, it can be said that there is a potential relationship between the owner or manager's education and AIS sophistication in SMEs. Thus, it is included in this research framework. Table 2.4 summarizes studies in owner or managers' education.

Table 2.4
Summary of Research on Owner or Manager's Education

Authors	Key Variables/ Constructs	Findings
Collins *et al.,* (2004)	Educational background, accounting participation, career nature, age of owner or manager, and financial performance.	Study on sole-proprietor accounting practices where education was one of the variables in the process of measuring the impact of gender on

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Table 2.4 (Continued)

Authors	Key Variables/ Constructs	Findings
		financial performance. The results indicated no significant differences in the degree of education between males and females.
Ng and Feldman (2009)	Gender, race, educational level, task performance, creativity and citizenship behavior, job substance, job level, job complexity and job performance.	A positive effect on core task performance. Educational level also has a positive impact on creativity and citizenship behavior.
		A moderating effect between education and job performance.
Kasseeah (2012)	Education level of owner-managers, and performance of SMEs in Mauritius	The better-educated owners or managers, particularly those with tertiary education, contribute significantly more to the performance of their firm.
Chiliya and Roberts-Lombard (2012)	Experience level, education, and profitability of small grocery shops.	A positive relationship between experience, education and performance of grocery shops in South Africa.
Jones (1982)	Owner or Manager's age and education, and usefulness of sophisticated planning,	In businesses with more sophisticated planning, managers were discovered to be a little older and to have more formal education than those with no plans. Increased age and more education provide better insight into the usefulness of planning and greater reliability in the ability of the firm to make and implement plans.
Dennis (2000)	Lack of time, resources, attitude of managers, economy of a small business,	During the process of setting up a small business, many managers

Table 2.4 (Continued)

Authors	Key Variables/ Constructs	Findings
	lack of accounting practices and a formal accounting system	have no formal accounting system, because of lack of time or resources or the attitude of the manager. Evolution of the economy of a small business may remove managers who lack accounting experience.
Mmari (2014)	Examines the effect of SME managers' education in Tanzania on success.	The higher the level of education, the greater the success and growth of the SME.

2.4.1.4 Owner or Manager Experience

There is a significant relationship between SME manager's previous work experience and AIS sophistication, according to the findings of a number of studies (Ugrin, 2009; Christopher, 1998; Harada, 2003; Huck & McEwen, 1991; Stokes & Blackburn, 2002). Moreover, Jaruwachirathanakul and Fink (2005) studied attitudinal factors such as experience and Internet banking experience, but not age, among those appear to encourage the adoption of Internet banking in Thailand. Ugrin (2009) found a link between institutional factors (experience) and systems adoption (ERP system choice).

According to Woldie, Leighton and Adesua (2008) managers' characteristics include age, the education and previous experience, all of which have an impact on SME growth.

Other researchers have linked previous experience to other factors. For example, Nikoomaram, Roodposhti, Ashlagh, Lotfi and Taghipourian (2013) examined a modified Multidimensional Ethics Scale (MES) to measure the ethics of accountants and financial managers in order to specify the impact of gender, educational level, age and work experience on ethics. A survey was distributed in ten Spanish-speaking countries. The results of their study revealed no differences in terms of individual ethics standards based on gender, age, level of education or work experience, although males were more extreme than females in making ethical decisions depending on relativism and egoism standards. However, the influence of work experience on ethics was not statistically significant; nor did the ethical level of accountants with different levels of experience differ significantly from one to another.

An empirical study by Sarowoko and Frisdiantara (2016) examined three determinants of the growth of SMEs: individual, organizational and environmental factors. Individual factors were found to have a direct impact on growth, and are indeed determinants of SMEs' growth. This means the factors reflecting the business experience and the motivation of managers, who are able to organize tasks more effectively and competitively, resulting in business growth.

Stokes and Blackburn's (2002) unique survey of the business experience of owners and managers revealed that those whose small businesses had once failed traced the cause of the failure to bankruptcy or discounting on the business. They applied to the opening and operating of new small businesses and showed that 62% of the total respondents

continued to own or manage another small business, in the same or an entirely new business line.

Huck and McEwen (1991) stated that managers with experience of business had a significantly different opinion about which skills were required for competence in their business performance. The expected areas of business competence include starting up a new business, sales promotion and advertising, and business purchasing. Aldrich and Martinez (2001) agreed that an element of initial knowledge was also needed, either through training or formal education. Harada (2003) provided evidence of a positive connection between experience and turnover.

Harada (2003) had previously conducted a study in Japan to investigate whether or not the probability of entrepreneurial success was associated with the entrepreneur's human capital and gender, and the initial size of the company. Three types of economy were targeted: (1) whether the new company reported a surplus, (2) whether definite sales after startup exceeded the entrepreneur's expectations, and (3) whether the entrepreneur's annual income exceeded his or her annual income preceding the start-up. The author used a dataset of 5,911 new Japanese companies, and his findings indicated related business experience had a significant association with the probability of success. This illustrates the importance and advantage of experience in the business before start-up. Although previous experience as an executive had a significant and positive relationship with profitability, it had a significant but negative relationship with income. This denotes that experience tends to be beneficial in organizing new companies, even though the income of entrepreneurs who were executives tends to decline after start-up.

Based on grounded theory, Simpson *et al.* (2004) interviewed many managers who believed that their previous experience in business and industry was directly related to the performance or outcome of the business; factually, the findings showed that many organizations do rely on previous experience or knowledge instead of training or formal education.

Christopher (1998) showed that both the previous years of work experience and the nature of the collected experience in terms as manager, executive or supervisor was positively related to the firm's survival as carried out on minority- versus non-minority-owned small businesses.

Stokes and Blackburn (2002) stated that there is a propensity to link business "closure" with business "failure" which creates confusion for owners who close a business with "unsuccessful" entrepreneurs. Therefore, the authors focused on the experiences of business owners who have stopped their businesses. Their study consisted of three phases of data collection: interviews with advisors, a postal questionnaire of owner-managers, and telephone or face-to-face interviews with a subset of owner-managers. The unit analysis in this study was the business owner. The study objective was to discover what really happened for the owners to have closed their businesses, in order to build a better understanding of business owners' attitudes and their intentions for new business ventures in the future, and to know what the owners had learned from the experience. The findings indicated that more than half of the respondents said that closing their business was not only due to financial decline but also for other reasons, which clearly means that business closure is not financial difficulties. Concerning

continuing a business venture after the closure their business, the majority of owners indicated that they were still keep up a business. The results suggest that previous experience of business motivates owners to continue in business, benefitting from the learning experience.

Chiliya and Roberts-Lombard (2012) discovered a positive relationship between experience and the performance of grocery shops in South Africa. Bracker *et al.* (1988), in their study on small electronics businesses, surveyed owners who had left highly technical positions in SMEs to start their own business; the lack of business experience affected performance. This lack of previous experience was considered as a challenge after the early stage of growth, during which the organization would require practical experience and business management tools to maintain consistent growth.

Similarly, 70% of owners with the experience of business closure, failure or its forfeiture still looked at operating a small business in a positive manner. It is also interesting that Stokes and Blackburn (2002) found that only 16% of the respondents considered seeking knowledge about financial management were useful, while 26% stated that this same financial management was what they wanted to avoid business failure.

From the above discussion, it can be said that there is a potential relationship between SME owner or manager experience and AIS sophistication. Thus, it is included in this research theoretical framework. Table 2.5 summarizes studies on owner or manager experience.

Table 2.5
Summary of Research on Owner or Manager Experience

Authors	Key Variables/ Constructs	Findings
Simpson *et al.,* 2004	Education, training, and success of the business	Four substantive categories were developed, but only one showed clear evidence that education and training had a positive effect on the success of the business in UK.
Roodposhti, Ashlagh, Lotfi and Taghipourian (2013)	Ethics of accountants, ethics of financial managers, gender, educational level, age, work experience, and ethical decision-making.	The ethical level of accountants at different levels of experience is significant for ethical decision-making. Males are rather more extreme than females in ethical decision making, which affects the performance of the firm.
Huck and McEwen (1991)	Prior experience, and business performance	Managers with experience of business had a significantly different opinion about which skills small business owners needed for competent business performance.
Chiliya and Roberts-Lombard (2012)	Experience level, education, and profitability of small grocery shops in South Africa.	A positive relationship between experience, education and performance.
Harada (2003)	Entrepreneur's human capital, entrepreneur's gender, initial size of the company, and entrepreneur's success.	Related business experience is significantly associated with the probability of success. This indicates the importance of experience related to the business before start-up. Such experience provides a substantial advantage to the entrepreneur.
Jaruwachirathanakul and	Experience, Internet banking	Experience in an

Table 2.5 (Continued)

Authors	Key Variables/ Constructs	Findings
Fink (2005)	experience, features of the website, perceived usefulness, gender, educational level, income, age, and adoption of Internet banking (IS).	executive has a significant and positive relationship on profitability.
Ugrin (2009)	Mimicry of peers, compliance with industry norms, coercion from powerful entities, and experience influence ERP adoption decisions.	Attitudinal factors such as experience and Internet banking experience, but not age, appear to encourage the adoption of Internet banking in Thailand. Institutional factors (experience) and systems adoption (ERP system choice) are linked.
Woldie , Leighton, and Adesua (2008)	Manager's characteristics and SME growth.	Characteristics, including age, education, and previous experience, have an impact on SMEs' growth.
Sarowoko and Frisdiantara (2016)	Empirically examined three determinants of the growth of SMEs: individual, organizational and environmental factors.	Individual factors have a direct impact on the growth of business. Business experience and motivation mean that managers can organize the tasks effectively and competitively, encouraging business growth.

2.4.2 IT Investment

IT investment refers to an organization's investment in employing or producing IT or IT-related assets; each investment is associated with certain costs, expected benefits, deadlines and risks (Badescu & Garces-Ayerbe, 2009).

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Recently, the relationship between the general IT infrastructure and organizational performance in terms of productivity and profitability has been examined by several authors: Consoli (2012); Tarute and Gatautis (2014); Lim and Trim (2014)). Their findings show that IT investment can enhance overall, financial and operational performance of SMEs, if it is used effectively. A further study (Liviu, 2015) indicated that the perfect performance of the firms can be achieved when the IT investment is aligned with the internal capabilities and organizational processes within the company strategy.

Sriram and Stump (2004) stated that IT has changed the way that companies operate and the way of running a business with their exchange partners. In upstream relationships, these technologies fundamentally alter both the means and the patterns of contact between companies and their suppliers. They developed an integrated model of the antecedents and outcomes of investment on IT in the context of organizational purchasing. They indicated that their model was actually driven from previous research in IT, marketing, purchasing and organizations, to investigate how the role of IT investment in collaborative communication strategies, fostering improvements in inter/ firm relationships, and supporting purchasing performance. These factors contain elements of the conceptual model that characterized the motivations for investment in IT and underlined the process by which IT affects purchasing performance. Hence, their model is regarded as the extension of previous work in marketing communications, integrating two complementary views of how IT may affect performance. The first view is relevant to the prevailing perspective, which shows this technology as the locomotive that leads to performance and productivity. The second called the emerging view that

recommends that this type of technology also can be used to improve inter-firm relationships. The empirical findings of their study revealed that IT indirectly influences performance and its impact is fully mediated by the quality relationship.

IT researchers have argued that investment in IT is not an essential condition, although it is sufficient to improve performance, but they raised the possibility that it amounts to wasted investment. Instead, IS investment was proposed to be converted into assets of IS (i.e. IS infrastructure and applications) and, therefore, used to create value that is suitable. The appropriate use of IT is expected to have an intermediate impact. For example, when IT is being used in production, services, the business processes are streamlined, and decisions improved, which are expected to influence business performance (Ravichandran & Lertwongsatien, 2005).

Pursuing this further, IT investment has shown a positive effect on cost efficiency as investigated in the impact of IT investment on companies' financial performance in the insurance industries in South Korea, which has brought about an increase in the IT investment and organizational growth of South Korea (Kim, Xiang & Lee, 2009). Meanwhile, there is positive relationship between IT investment and cost efficiency in China, although the effect is not shown on organizational growth or the degree of economic development (Kim *et al.,* 2009); thus, there is a significant relationship between IT investment and organizational performance in China. Shin (2001) argues that the interaction in terms of IT and strategic direction contributes to financial performance as measured by gross margin.

According to Lin and Shao (2006), IT is one the major drivers of economic change which has helped to restructure the landscape of many business organizations. In recent times, investment in IT has increased beyond all expectation. For instance, Japan and the United States in 2001 respectively spent $188,012 and $546,681 (in millions of US dollars, source Digital Planet 2002: The Global Information Economy. 29). IT is crucial in a company and the business value of IT investment has become an important issue. In this regard, the appreciation of IT by business is very important, but there are some controversial issues, which have motivated a great field of research over the last two decades. Strongly relevant to this issue are the productivity paradox of IS and substitute IT stock for both traditional and human capital.

From this point of view, Lin and Shao (2006) attempted to simultaneously study the business value issue, the paradox, and the potential of substitution between IT capital and ordinary capital and human capital, by evaluating the IT business value related to the effect of IT on technical efficiency. This depends on the Constant Elasticity of Substitution (CES) stochastic production frontier model, in three dimensions: firm, industry and sector. Their main results revealed that the relationship between technical efficiency and IT investment is not powerful with reference to specific production frontiers; the productivity paradox still exists, inconsistent with conventional wisdom; and IT has substantial influences on the five parameters associated with CES production processes, including IT stock and traditional capital. However, it is not applicable to use IT stock to replace the role of human capital entirely; reducing returns to scale occurs, irrespective of the three dimensions of IT investment (firm, industry and sector). In this sense, technical efficiency tends to decrease as IT investment increases. Thus, the

analysis of the industry suggests that IT capital is more significant for the services industries than for the manufacturing sector, and that the service sector is slightly less technically efficient than the manufacturing sector.

Hu and Quan (2005) have struggled over the last two decades to quantify the contribution related to IT investment to the company's performance, both theoretically and empirically. Their motivation concerns by the lack of explicit causality inquiries into the relationship between IT investment and productivity or other performance previously measured. They assumed that, there is a missing link that contributed directly to the contradictory results and the on-going IT productivity paradox debate. They also depended on Porter and Millar's (1985) idea, that the effect of IT was moderated by the intensity of the information about products and the value chain of a company.

Hu and Quan (2005) verified that many studies have expressed a positive and significant relationship between IT investment and a firm's productivity or performance: the question of causality was whether higher IT investments contribute to better performance, or vice versa. They investigated the IT investment effect on productivity using Granger's causality model with the industrial sector over a 30-year period, and found that a causal relationship does exist. They also assumed that the influence of IT investment on productivity was moderated by the interaction of product information intensity and value-chain information intensity.

Badescu and Garces-Ayerbe (2009) stated that IT plays an important role in the resurgence of economic growth experienced in several industrial countries in the middle

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of the 1990s, highlighted by academics and policy-makers. They investigated the effect of IT investment on labor productivity in Spanish firms, using a panel data model to analyze 341 medium-sized and large companies by applying flexible activity systems during the period 1994 to 1998. They also used a Cobb-Douglas function to measure the contribution of IT capital to labor productivity. The importance of their study is that few studies were conducted to provide empirical evidence in the Spanish context, concerning the influence of IT on industry and individual companies. The findings from their research suggest that the sensitivity of labor productivity to changes in capital technology intensity is positive and significant, not only firm specific, but also when period-specific impacts were corrected. They concluded that despite the companies in the samples experiencing some improvement in productivity in the mentioned period that which derived from IT investment was not significant. They justified their conclusion by indicating that a large lag can be found in the learning process and the application of new technologies, which implies that the positive impacts of IT on companies only appear completely after a long period of time.

Yao, Liu and Chan (2010) stated that increasing the number of competitors and the massive size of IT investment have led managerial concern with regard to the business value of IT. Although there is a high perceived value of IT, practical studies have normally came out with mixed results when investigating the relationship between the amounts spent on IT and the firm's productivity. Hence, these researchers examined whether and how spending on IT influenced labor and administrative productivity in manufacturing companies with diverse industry characteristics and vertical integration levels. They used a contingency approach and hypothesized that IT business value is

affected by the firm-specific context. They focused on manufacturing companies that experienced essential changes in technology at the end of the 1990s, taking into consideration the adoption of factory automation, enterprise resource planning and advanced production scheduling systems. The empirical assessment of more than 3,000 firm-years over 1998-2000 from US manufacturing industries revealed that durable products-industry companies and companies with a higher level of vertical integration realized higher IT business value in enhanced labor and administrative productivity. Their findings determined a significant positive relationship between IT spending and labor or administrative productivity. Thus, the results of their study support the theoretical argument that IT spending does matter strategically in the right setting.

Lee, Xiang and Kim (2011) emphasized that the speedy development of IT combined with the decreasing cost of its deployment has enhanced its diffusion in China, as in the United States. Nowadays, China is considered the largest IT market in Asia, at US $217 billion with an annual growth rate of 5.9% despite the global financial crisis. In this regard, the increase in IT investment has encouraged Chinese researchers, company managers and government policy makers to ask whether IT investment increases an organization's productivity and profitability.

IT has been increasing in developing countries, as well as developed countries, over the last three decades, although most of the findings on IT productivity are based on data from developed countries. Lee, Xiang and Kim (2011) examined the impact of IT investment on company-level productivity in the Chinese electronics industry, using a production function model. Their results indicated that the direction and size of the

effect of IT investment on productivity in China are generally similar to those from the United States. Therefore, Chinese firms should invest more in IT. For example, several Chinese companies are enjoying the benefits of IT investment. Lenovo, the world's third largest PC manufacturer, is considered a real example of how productivity is increased throughout IT in the competitive global market.

Wang (2012) compared business practices and performance within China's companies between foreign invested companies and local Internet companies, highlighting the crucial factors, which multinational companies should address to obtain a competitive advantage in China's e-commerce industry. The technology involved in e-commerce has two components: technical characteristics and non-technical characteristics. In particular, Wang compares eBay with Taobao in the customer-to-customer market; Expedia with Ctrip and Joyo (Amazon) with Dangdang in the business-to-customer market; and the online search engine Google China and Baidu, concluding that local knowledge is important for company performance and success. Chinese companies that obtain the new version of technologies get latecomer advantages, and foreign companies should improve their understanding and adjust to local cultural, social, economic and political environments.

This study aims to evaluate the relationship between e-commerce adoption and long-term profitability in SMEs. In this regard, it identified the industry context and organizational-specific SME e-commerce adoption issues related to an adapted version of Porter's model (2001). This model stated that long-term profitability was directly influenced by an organization's structure and its ability to produce sustainable

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competitive advantage (Bunker, Deborah, Yin, & Lawrence, 2005). These authors also emphasized SMEs e-commerce adoption issues involving the following: the benefit that is generated from SMEs e-commerce adoption, challenges faced by SMEs in e-commerce adoption, the implementation of factors that may enhance the adoption of e-commerce by SMEs, and the impact of e-commerce adoption on SMEs' structure and competitiveness. Their findings revealed that differences in the relationship between e-commerce adoption by SMEs and the estimation of their long-term profitability, with the nature of the industry and organizational context considered as major determinants. They proposed that government emphasize minimal impact in the process of SMEs' e-commerce adoption. In turn, this establishes that SMEs are either unaware of or do not optimize about the potential of government to provide beneficial assistance in e-commerce adoption.

Shaukat and Zafarullah (2009) indicated that IT is essential for the world development nowadays, and that companies in Pakistan are using this type of technology encourage growth through investment. They investigated the effect of IT on organizational performance, taking into consideration the increase or decrease in income, the number of employees and the expense of IT within the manufacturing and banking sectors in Pakistan over the period 1994-2005. Their findings provided strong evidence that in manufacturing companies there is much more investment on IT, and they concluded that IT investment has a positive influence on the organization's performance.

Zehir, Muceldili, Akyuz and Celep (2010) investigated the association between IT investment level, IT usage, IT perception, IT in the decision-making process, future

orientation, technology orientation and firms' performance in a comprehensive competitive environment. Their findings corresponded with those of previous studies, that IT investment is a vital component of organizational performance. If companies manage IT investments successfully, in turn their performance enhanced.

IT investment has been shown to have a positive effect on cost efficiency in the insurance business in South Korea, encouraging organizational growth (Kim, Xiang & Lee, 2009). There is a similar positive relationship between IT investment and cost efficiency in China, although this does not show in organizational growth or the degree of economic development (Kim *et al.,* 2009). Thus, the study found that there is a significant relationship between IT investment and performance in China.

Shaukat and Zafarullah (2009)'s study in Pakistan addressed the factors that affect the uses of IT and its impact on organizational performance. Some of these factors are top management and company-wide support, IT systems, IT investment, training and user involvement. They also concluded that IT has been implemented in the manufacturing and service sectors and its role has grown and changed constantly in both sectors. The development of both hardware and software has opened many opportunities to companies using IT in their functional areas to increase their performance. If companies apply IT appropriately, it will accomplish a range of activities with a greater degree of efficiency by consuming less time, associated with a lower cost and less effort. The performance of the banking industry is regarded as being much better than that of manufacturing industry, but local firms are forward looking. Sufficient training and involvement of the user in IT projects, top management commitment and the latest

systems of IT all have a greater influence on IT success for increasing management performance.

From the above discussion, it can be said that the concerning IT investment and organizational performance are inconsistent. Therefore, there is still a need to investigate the relationship between IT investment and AIS sophistication and their effect on SMEs' organizational performance. Table 2.6 summarizes studies of IT investment.

Table 2.6
Summary of Past Research on IT Investment

Authors	Key Variables/ Constructs	Findings
Hu and Quan (2005)	IT investment and performance.	Many studies found a positive and a significant relationship between IT investment and company productivity or performance.
Yao, Liu and Chan (2010)	Value of IT investment, and productivity of firms' administration.	A significant positive relationship between IT spending and labor or administrative productivity; companies in the durable products industry and companies with greater vertical integration recognized the value of IT spending in enhanced labor and administrative productivity.
Lee, Xiang and Kim (2011)	Direction, size, IT investment, and productivity	A significant positive relationship between the direction and size of the effect of IT investment on productivity in China.
Shaukat and Zafarullah (2009)	Top management and company-wide support, IT systems, IT investment,	Sufficient training and involvement of users in IT projects, top management

Table 2.6 (Continued)

Authors	Key Variables/ Constructs	Findings
	training and user involvement.	commitment and the latest systems of IT have a greater influence on IT success.
Al-Eqab and Adel (2013)	Technological, informational, functional and managerial sophistication (IT investment), and perceived usefulness of accounting information characteristics.	A significant positive relationship between all these variables.
Lin and Shao (2006)	IT investment and technical efficiency	The relationship between technical efficiency and IT investment is not powerful with reference to specific production frontiers
Lim and Trim (2014), and Tarute and Gatautis (2014)	General IT infrastructure and firms' performance in terms of productivity and profitability.	IT investment can enhance the overall financial and operational performance of SMEs, if used effectively.
Zehir, Muceldili, Akyuz, and Celep (2010)	The association between IT investment level, IT usage, IT perception, IT in the decision-making process, future orientation, technology orientation and firm's performance in a comprehensive competitive environment	Corresponding with previous studies, the IT investment is a vital component of performance. If companies manage IT investments successfully, their performance will be enhanced.

2.4.3 Environmental Conditions

Al-Eqab and Ismail (2011) investigated the relationships between three of environmental conditions: IT, AIS design and business sophistication, and discovered the absence of a significant relationship between environmental conditions and AIS sophistication.

The findings of Agbejule and Burrowes (2007) on the correlation among the use of scope of information characteristics, supplier development and perception about environmental uncertainty showed that AIS usage and supplier development are determined by the degree of perceived environmental uncertainty. Therefore, supplier development is considered as a mediator between the scope of information features and perceived environmental uncertainty.

A contingency approach proposed that effective IS should consider both internal and external factors, matching the characteristics of the IS to various factors affecting the organization, witnessing effectiveness at different levels.

Otley (1980) and Waterhouse and Tiessen (1978) in their respective accounting research concentrated on the effect of the environment and technology on organizational structure. Similarly, Chenhall (2007) considered the role of strategy incorporated in the traditional organizational model, which suggests important links with the environment, technology, organizational structure and management control system.

According to Abdel-Kader and Luther (2008), new techniques have influenced the process of management accounting; most prominent amongst these being planning, controlling, decision making and communication with a shift in concentration from what is seen as a simple role of cost determination and financial control, to a more sophisticated role of creating value through the deployment of resources. New accounting procedures are also important in seeking a competitive advantage to meet the challenges of global competition (Gerdin, 2005). Abdel-Kader and Luther discovered

that few organizations have adopted this new technique. They focused on how to use these advanced techniques in an appropriate way that is driven by the purposes of engineering the techniques, and the procedures needed for the application of contingency theory. Many researchers reported that suitable AIS are based on organizational contextual variables (Gordon & Miller, 1976; Otley, 1980; Waterhouse & Tiessen, 1978).

Therefore, the complex relationship between IS, its contextual variables such as the environment and its effect on the performance of the organization have attracted the interest of many researchers, and the need to further explore this issue (Baines &Langfield-Smith, 2003; Jermias & Gani, 2002; Laitinen, 2006).

Macy and Arunachalam (1995) described the environment as phenomena that are external to the organization and with either a potential or an actual influence on the organization. Therefore, the external environment can be related to technology, law, politics, economics, culture and demographics. Chenhall (2006) characterized environment as particular attributes such as intense price competition from existing or potential competitors, and submitted that an uncertain environment is influenced by strong competition, and an important contextual variable in the contingency-based approach.

Abdel-Kader and Luther (2008), Haldma and Laats (2002) and Macy and Arunachalam (1995) commented that the trend to globalization has changed these external

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environmental factors in developing countries, and has subsequently influenced the internal operations of organizations as well as their management accounting practices.

Luther and Longden (2001) examined the relationship between the adoption and alignment of management accounting practices with organizational structure and strategy within a competitive environment, using advanced technology that influences performance. This creates an increasing thread in economic uncertainty as an important cause of changes in management accounting practices. In addition, Mia and Clarke (1999) stated that there is a positive relationship between the intensity of market competition and the usefulness of management accounting information. According to the pressure of the management team, the force of management accounting and organizational change could come from the environmental boundaries of the firm with the most evident environmental factor being market competition (Hoque, Mia, & Alam, 2001; Libby & Waterhouse 1996; Mia & Clarke, 1999).

Organizations that operate in a competitive environment tend to change their organizational structures, accounting practices, and other strategies in order to succeed (Baines &Langfield- Smith, 2003; Luther &Longden, 2001; Pratt, 2004; Waweru, Hoque, & Uliana, 2004). Luther and Longden (2001) argued that any organization that can sell abroad and compete against imports could change and adapt to managerial and business practices, thereby forcing a change in accounting.

Nevertheless, it seems that the features of the environment that are commonly used are dynamism, uncertainty, complexity, homogeneity and munificence (Miller, 1987).

Based on this, it is clear that there are inconsistent and contrary results as regards environmental conditions and AIS. It is therefore essential to consider what role the environment may play in the broader context of small companies as opposed to larger companies, because of small firms' higher susceptibility to environmental impacts. Conversely, an environment, which could be regarded as a threat, may also be seen as an opportunity to provide the resources that the organization requires.

Other researchers conducted their studies through examining the impact of the interaction of contextual and design factors of information on the performance of the organization. For instance, Gordon and Narayanan (1984) and Chenhall and Morris (1986) studied the relationship between organizational structure, environmental uncertainty and design of information, concluding that the organizational structure and uncertainty in the business environment affected the features of information.

Mak (1989) researched the relationships between the sophistication of control systems, perceived environmental uncertainties, and financial performance by using the interaction method. Chong and Chong (1997) investigated the mediating function of design characteristics of information through correlation between environmental uncertainty and strategy on the performance of an organization. They proposed that environmental uncertainty and organizational strategy are significant antecedents in the design of features of information.

Shank and Govindarajan (1993) investigated the relationship between style of performance evaluation, environmental uncertainty and the performance of business

units and discovered that when there is uncertainty in the business environment, long-term planning is more important than in a stable environment (Chong, 1996; Mia, 1993). Gul (1991) and Gul and Chia (1994) stated, however, that in an environment that is relatively stable, if managers make extensive use of a broad scope of information characteristics, there is a tendency to information overload which may even influence performance.

Mia and Chenhall (1994) studied the intervening role of IT use by managers in a management accounting firm in the association between market competition and the performance of business units. Increasingly intense market competition leads to an association with the use of accounting information, at the same time suggesting that improved performance of the business unit is associated with the adoption of IS.

Granlund and Taipaleenmak (2005) examined the impact of MAS on company performance in eight new financial firms. The outcome shows that the uniqueness and the influence of the environment, such as the belief of CEOs in the value of adopting MAS, led to essential differences in how these systems were used.

Bourgeois (1980) discussed the environment in conceptual terms and then included examples in an empirical study. Smith and Kunz (1995) considered cultural, ecological, economic, political, regulatory, social, and technological environments, which increased or limited the behavior of garment manufacturers; the environment has complex conditions that affect the nature of a firm's operation of a firm and include the above factors.

Based on the definition given by Duncan (1972), the environment consists of social and physical components, which are directly considered, in the behavioral decision-making of individual organizations. West (1990) stated that, the business environment is the flow of information as an appropriate setting, achieving objectives, and the effect on the process of decision from the perspective of management and the business structure; while the marketing environment is a set of forces that directly or indirectly affect the input of a business's acquisitions or output generation (Harmaakorpi & Niukkanen, 2007; Zuperkiene & Zilinskas, 2008).

However, Kotler (1991) defined the marketing environment to be the actors and forces affecting the company in making successful transactions maintaining relationships including those with targeted customers. It is made up of 'non-controllable' actors and forces that affect the company's market and the practices of that market. Implicitly, there is an interaction between a company and its environment, with the different levels of the environment, each of which has several components. Hence, the company's environment is made up of several environments.

Koskinen (1996) posited that, on a general note, environment refers to all those arenas in which the organization is operating and to which is attached. Dess and Beard (1984) and Aldrich (1979) highlighted many dimensions of the environment discussed in the previous studies mainly to describe those qualities of environments of an organization.

However, dynamism is said to be related to turbulence that is stability has dimensions of instability. Small, dynamic companies tend to grow faster than others (Wiklund, 1998).

Environmental complexity also shows that there are several sections of the market with varied characteristics and needs, to be met by the company. Hence, the company sees the heterogeneous environment as complex (Wiklund, 1998).

Covin and Slevin (1989) indicated that the environment could be hostile or benign. Hostile environments have unsteady industrial settings, competition that is intense and cruel, a huge business climate and a relative lack of opportunity for exploitation. Benign environments provide a safe setting for business operations because of their overall bounty and richness at the investment level and in marketing opportunities. However, the most comprehensive typology of the environment is that by Jurkovich (1974), who proposes the following dimensions: complex or non-complex, routine or non-routine, organized or unorganized, direct or indirect, low-change or high-change, and stable or unstable.

Other dimensions of the environment commonly used include dynamism, uncertainty, homogeneity, complexity and munificence (Miller, 1987). Environmental factors may play a bigger role for small companies than for larger ones because of their greater susceptibility to environmental impacts; the environment may be seen as a threat.

Dut (2015) explored how SMEs' local business environment affects their performance. His study was based on theoretical arguments of the association between the business environment and the SMEs' performance, and he found conflicting results in previous studies. Some provided empirical evidence that the specific local business environment in which a company is embedded can have a significant association with its performance

(Neneh & Vanzyle, 2014; Ng & Kee, 2012; Tu, 2012). Others, however, found that the local business environment has an inverse association with SMEs' performance (De Jong, Phan & VanEes, 2012; Luo, 1999). He concluded that these mixed findings suggest that the impact of the business environment on performance differs according to the national or regional economic context (Ng & Kee, 2012; Alexandrova, 2004). Finally, using fixed- and random-effects models, Dut found that empirical findings showed that local government policies which favored private firms and the labor force, have positive influences on SMEs' performance. The main implication of Dut's (2015) study is providing a better understanding for SMEs in addressing their influential local environmental factors.

Ibrahim and Primiana (2015) in a theoretical review, sought solutions to problems relevant to the organizational performance, associated with the business environment. They found that the business environment has implications for organizational performance, with theoretical evidence to settle problems in the business environment and organizational performance; in turn, organizational performance can be enhanced through an improved business environment (Ibrahim and Primiana, 2015).

Previous studies in general support the proposition of a fit between contingency factors and the suitability of IS in contributing to superior performance. From the above discussion, it can be concluded that there is a potential relationship between environmental conditions and AIS sophistication, and this is included in this research theoretical framework. Table 2.7 summarizes studies on environmental conditions.

Table 2.7

Summary of Research on Environmental Conditions

Authors	Key Variables/ Constructs	Findings
Chong and Chong (1997)	Strategy, uncertainty of environment, sophistication of MAS design, and organizational performance.	The intervening role of MAS on the relationship between strategy and environmental uncertainty on organizational performance, leading to The sophistication of MAS design for better performance.
Zuperkiene and Zilinskas (2008)	Environmental conditions, organization performance.	Only motivated employees who can realize their goals and expectations in the organization, and environmental conditions can successfully strive for results in organizational performance.
Chenhall (2006)	Environment, technology, size, structure, strategy, national culture, and effectiveness of Management Control System (MCS).	All variables (environment, technology, size, structure, strategy, national culture) have an influence on the effectiveness of MCS.
Al-Eqab and Ismail (2011)	IT sophistication, environmental conditions, business strategy, and AIS design sophistication	All variables were significant for AIS design sophistication, except for environmental conditions.
Agbejule and Burrowes (2007)	Perceived environmental uncertainty, supplier development, and AIS usage	Perceived environmental uncertainty is a determining factor of supplier development and a determinant of AIS usage.
		Supplier development is considered to play a mediating role in the relationship between perceived environmental uncertainty and AIS usage.
Baines and Langfield-Smith (2003)	Competitive environment, organizational design,	An increasingly competitive environment

Table 2.7 (Continued)

Authors	Key Variables/ Constructs	Findings
	advanced manufacturing technology, and advanced accounting practices.	results in an increased focus on differentiation strategies. This in turn influences changes in organizational design, advanced manufacturing technology and advanced management accounting practices.
Dut (2015)	How SMEs' local business environment affects their performance.	Using fixed- and random-effects models, found that local government policies favoring private firms and labor force have positive influences on SMEs performance. Provides better understanding for SMEs in addressing the local environment factors.
Ibrahim and Primiana (2015)	Organizational performance and business environment.	The business environment has implications for organizational performance. The theoretical evidence can settle problems concerning the business environment and organizational. The latter can be enhanced through a better business environment

2.5 Organizational Performance

Organizational performance is considered as the main construct in management studies (Anthony, 2006). Many researchers have used the contingency theory approach in considering the value of AIS sophistication in enhancing the performance of small firms, especially in the field of management accounting (Jones, 1985; Moores & Yuen,

2001; Pizzini, 2006; Reid & Smith, 2002). The trust of many firms is more concentrated on formal management accounting tools than in other life-cycle stages (Moores & Yuen, 2001). The relationship between AIS and the firm's improved performance indicator and productivity was examined, finding a lack of compatibility between them (Grande *et al.,* 2011). Other investigations of the relationship between AIS and organizational strategy and its impact on performance show that they do not influence performance (Gil, 2004).

AIS is the most official source of information in an organization, so the system has been designed to present rationally accurate and timely information to different levels of the management in order to assist them in decision making and raising the performance of management, which eventually results in attaining greater organizational performance. IT researchers have argued that investment in IT is not an essential condition, but is sufficient to improve performance, raising the possibility of wasted investment. Instead, IS investment should be converted into IS assets (i.e. IS infrastructure and applications) and, therefore, used to create suitable value. The appropriate use of IT expected to have an intermediate impact, for example, when IT is used in production and services, the streamlined business processes and improved decision making are expected to influence business performance (Ravichandran & Lertwongsatien, 2005).

Wilson, Iravo, Tirimba and Ombui (2015) implied that the new technology should fit into existing policies, practices and people if used to the full. From this point of view, the theme of IT is its contribution to the firm's performance. This has been at the centre

of research for more than three decades, in order to understand and estimate the link between IT investment and organizational performance.

A study of the relationship between the IT budget and contingent factors, such as technology, the environment and the organization, established the bond between the two issues as a positive relationship (Kobelsky *et al.,* 2008). However, this study called for more research in order to gain a better understanding between IT and performance. In the same vein, a weakness was discovered between business performance and contingency factors like IT, organizational and environmental factors (Boulianne, 2009). The effect of contingency factors is also felt in the form of central government policies, information and communication technology (ICT) and size (Woods, 2009). In other words, there is possibility that organizational performance may be preferable to internal consistency among organizational sub-systems, because of the relationship between perceived environmental uncertainty, sophistication of control systems and financial performance, using the interaction approach to fit.

Farhanghi, Abbaspour and Ghassemi (2012) investigated the impact of IT on the organizational structure and performance. Their study used a causal and descriptive research design to specify the cause and the impact of relationships among IT, organizational structure and firm's performance, based on the literature. A model incorporating these three constructs was investigated, using structural equation modeling (SEM). A 14-question self-administrated questionnaire covering these three sections was applied. The final findings show that IT has a direct and indirect influence

on a firm's performance, that organizational structure has a direct impact on performance, and that IT has a direct influence on the organizational structure.

Hunton and Flowers (1997) emphasized that the effect on the performance of an organization of IT sophistication and AIS determinants has not been given a clear focus and calls for further explanation of the phenomenon. Thus, there is need to investigate the relationship among strategy, the extent of IT applications to planning and control functions, and firms' performance. The research also showed the need to investigate the impact of the moderating effect of technical, human and organizational hindrance on IT implementation. This resulted in the discovery of the significant influence of strategy on the extent of IT applications for planning and control, meaning that IT applications influenced the firm's performance. It has also been claimed that the relationship between IT sophistication and performance resulted from activity-based techniques to achieve higher performance (Chenhall & Langfield-Smith, 1998; Ismail, 2007). In other words, IT sophistication is an indication of MAS, which represents company performance. Chenhall and Langfield-Smith (1998) and Ismail (2007) emphasize that MAS sometimes has a mediating role between IT sophistication and company performance.

Previous studies investigating the effect of management accounting and organizational factors on performance include Granlund (2001) and Laitinen (2006), who conclude that there is a relationship between performance and organizational factors. Poor financial performance is considered as one of the reasons for the company to use management accounting and internal organizational factors to enhance performance. Kaplan and

Norton (1996) evaluated progress towards the firm's goals, to ensure achievement of performance. The indication of this is supported by Baines and Langfield-Smith (2003), who determined that organizational performance is significantly related to reliable non-financial management accounting. Indeed, some researchers have determined an indirect relationship between management accounting and performance (Baines & Langfield-Smith, 2003; Choe, 2004; Hoque, 2004; Sisaye, 2003; Waclawski, 1996). Hoque (2005) stated that the use of non-financial performance is a measurement for evaluating organizational performance operating in an uncertain environment.

According to Baines and Langfield-Smith (2003), there is strong practical evidence for the interaction between management accounting practice and performance, with an increased use of non-financial information; a demonstration of greater reliance on non-financial accounting information resulted in enhanced organizational performance. Chenhall and Langfield-Smith (1998b) established that greater use of advanced management accounting practices, such as quality improvement programs, benchmarking and activity-based management, in firms that placed a strong emphasis on product differentiation strategies, ultimately resulted in high performance. In a related development, there is a positive relationship between the emphasis placed on various forms of management accounting practices in an environment of manufacturing flexibility, and a significant positive interaction between TQM practices, management accounting information and performance (Ittner & Larcker, 1995). Mia and Clarke (1999) determined that there is an indirect association between the intensity of market competition and business unit performance with management accounting information.

Soudani (2012) examined the usefulness of AIS for effective organizational performance. He specified that AIS is the whole of the interrelated components that work jointly to collect, store and circulate data for the purpose of planning, control, coordination, analysis and decision-making. He examined the effect of AIS on the elements of organizational performance, for example performance management and financial performance. His findings demonstrated that AIS is very useful and has an impact on organizational performance.

The contingency approach also combines situational and structural variables, finding more association with organizational performance than any of these variables acting alone (Dalton, Todor, Spendolini, Fielding & Porter, 1980). Pennings (1976) found no relationship between technology structure and performance. Conversely, Baines and Langfield-Smith (2003) examined organizational design, especially using team-based structures, and improved organizational performance with a great dependence on non-financial management accounting information. Therefore, there is an increased need for easily accessible and relevant information at all levels, as well as relevant information for top management to evaluate the operation of the firm. This is why Scott and Tiessen (1999) suggested that non-financial performance could form an integral part of the information base necessary for team success (Pratt, 2004).

Mia and Chenhall (1994) assessed managers' use of management accounting information as a mediator on the relationship between business unit performance and the intensity of market competition. It was discovered that a high degree of market competition was related to the use of the AIS. The authors therefore suggested that

increasing the use of information brings about improvement in the business unit performance. They also studied the role of formal and informal management control systems as mechanisms, which acted as mediating the effect of ERP systems on performance. This suggests that determination of the significant correlation between ERPS and non-financial performance perfectly mediated by formal controls. Others agree that informal controls seem not to have a mediating effect (Kallunki, Laitinen, & Silvola, 2011; McMahon, 2001). Chenhall (2003) studied the use and orientation of financial accounting practices in relation to growth and further effect on firms' performance.

Pursuing this further, the evidence shows that business performance will fluctuate greatly between company, actors and contexts. Entrepreneurs and managers determine success, unlike shareholders of a company (Beaver, 2003b). According to Rogoff *et al.,* (2004), there is no single agreed definition regarding performance failure, as failure is said to be the opposite of performance. Some researches into planning and the control aspect of performance, in both large and small businesses, investigated operational and the strategic planning (Bracker *et al.,* 1988; Bracker & Pearson, 1986; Ibrahim *et al.,* 2004; Joyce & Woods, 2003; Robinson & Pearce, 1984; Robinson, Pearce, Vozikis & Mescon, 1984; Rue & Ibrahim, 1998; Shrader *et al.,* 1989; Stewart, 2004; Wijewardena, Zoysa, Fonseka & Perera, 2004), highlighting the need to ascertain whether there is an association between growth or business performance and planning.

Rauch *et al.,* (2000) examined the relationship between planning and performance within the context of culture. Hite (1998), McMahon (2001) and McMahon and Davies

(1994) empirically investigated various aspects of small business, focusing on their operational and strategic tools. Other studies have examined factors that affect the sophistication of financial reporting of small businesses and hence performance (Hite, 1998; McMahon, 2001; McMahon & Davies, 1994). This is supported by studies on the relationship between sophisticated operational planning and strategic planning and the performance of SMEs (Berman *et al.,* 1997; Bracker *et al.,* 1988; Bracker & Pearson, 1986; Ibrahim *et al.,* 2004; Joyce & Woods, 2003; Rauch *et al.,* 2000; Rue & Ibrahim, 1998; Stewart, 2004; Wijewardena *et al.,* 2004). However, the results of a link between the sophistication of financial reporting and its impact on growth are mixed (Jones, 1985; Moores &Yuen, 2001; Nicolaou & Reck, 2004; Pizzini, 2006; Reid & Smith, 2002; McMahon, 2001; McMahon & Davies, 1994).

The findings of previous researchers failed to provide adequate support for a significant relationship between comprehensive historical financial reporting and the use of financial ratio analysis and achievement rate of growth and financial performance (McMahon & Davies, 1994). Other researchers revealed a significant relationship between the extent and frequency of financial reporting and the indicators of SME growth and performance (McMahon, 2001). For instance, Hite (1998) and McMahon (2001) examined the influence of internal and external factors of management on the financial reporting practices, with mixed results. However, there is still a research gap in this relationship, so further work is needed on the link between sophisticated financial reporting and performance in small firms. Previous researchers found insufficient skilled staff and time for strategic planning in small firms; therefore, it is generally believed

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that there is no strategic planning in small firms (Berman *et al.,* 1997; Robinson *et al.,* 1984).

Regarding the implementation of AIS to improve organizational performance, a study by Vitez and Baligh (2011) indicated that AIS considered as the crucial function in internal control in order to generate financial information for the organization. They added that the main responsibility of managers is identifying the financial risk of processes, and developing, executing and monitoring internal control systems. The internal controls interact with AIS, as the major function of internal control is to produce financial information for the organization. Vitez and Baligh concluded that managers could utilize internal control in measuring and monitoring effective accounting operations to improve performance.

On a similar note, Ibrahim *et al*. (2004) affirmed that the planning practices of smaller businesses tend to be greater than perceived. Wijewardena *et al*. (2004) examined the controlling impact of sophistication (analysis of variance) on the performance of SMEs by categorizing their level of planning sophistication and process as: no written budgets, simple budgets and detailed budgets. As a result, companies were further divided in relation to their degree of control process, or the use of analysis of variance. Planning sophistication was found to be related to changes in sales or sales growth, which implies a significant relationship between the research variables (Wijewardena *et al.,* 2004). There is a positive relationship between functionality or sophistication of eco-system design and financial performance among US hospitals (Pizzini, 2006).

McIvor (2009) examined the relationship between external sources and performance, raising concern about how a company can achieve competition and performance (Doving & Gooderham, 2008). Consequently, many studies indicated that SMEs' performance does not benefit from sophisticated planning techniques (Berman *et al.,* 1997; Bracker *et al.,* 1988; Bracker & Pearson, 1986; Jones, 1982; Joyce & Woods, 2003; Rue & Ibrahim, 1998; Stewart, 2004). However, research has revealed that many small businesses run either very rudimentary planning or no planning at all (Berman *et al.,* 1997; Holmes & Nicholls, 1988; Robinson *et al.,* 1984; Rue & Ibrahim, 1998). Therefore, continued research that searches for a positive correlation between sophisticated planning and organizational performance will add to the success and strategies of SMEs.

Uncertainty in the business environment and organizational strategy are important precursors of MAS. This assumption was emphasized by Chong and Chong (1997), who investigated MAS as an intervening role between uncertainty and strategy and organizational performance, leading to the sophistication of MAS design for better performance. Thus, business units' effectiveness depends on a fit between strategic choice and MAS (Abernethy & Guthrie, 1994). Moreover, all transactions after the adoption of MAS adoption were found to be more efficiently managed, because of increased market competition with use of the accounting information and bringing about improved business unit performance (Mia &Chenhall, 1994). Accounting knowledge and its significance for business strategy were emphasized as the two main factors that affect adoption of MAS (Davila & Foster, 2005; Granlund &Taipaleenmak, 2005).

Increased use of MAS information under high task uncertainty was found to be a guide to effective managerial decisions, enhancing managerial performance in order to measure the extent of use of broad scope MAS information (Chong, 1996).

Researchers have shown that managerial performance is expected to be low when broad-scope information is used in low-task and uncertain situations. The impact of organizational structure on the decentralization of MAS design in terms of perceived usefulness of MAS information characteristics was investigated; it found that information characteristics are wide scope, timeliness, aggregation and integration (Chenhall & Morris, 1986). In other words, the interaction effects of perceived environmental uncertainty (PEU), decentralization and MAS design and managerial performance show that decentralization and MAS information characteristics are associated with better managerial performance under conditions of high PEU (Gul & Chia, 1994).

In addition, perceived uncertainty, MAS and the performance of SME managers have a positive impact on managers' performance when they found their environment to be highly uncertain (Gul, 1991). Therefore, any misfit between levels of PEU and MAS may have a negative effect on performance. Ajibolade, Arowomole and Ojikutu (2010) offered empirical evidence of the moderating effect of the level of PEU in Nigeria, concluding that more sophisticated MAS designs will improve the performance of manufacturing in Nigeria irrespective of the level of environmental uncertainty facing the companies. This shows that companies facing a high level of environmental uncertainty will perform better with more sophisticated MAS (Granlund &

Taipaleenmak, 2005). There is complete disparity between managers' attitudes and the use of management control tools on different continents, because of their cultural background (Tsui, 2001). Thus, the connection between business unit performance, performance evaluation style, and environmental uncertainty shows that uncertainty of the environment is more significant stability (Shank & Govindarajan, 1993; Chong & Chong, 1997).

A related development provides evidence that a good match among organization's environment, strategy and internal factors, organizational structure, and MAS leads to a high level of performance (Langfield-Smith, 1997). Thus, the fit of the relationship between the use of MAS, organizational factors and technological factors is expected to have an impact on organizational performance (Libby & Waterhouse, 1996; Baines & Langfield-Smith, 2003). This shows the need for a systematic empirical assessment with regard to an alignment of MAS with organizational factors in uncertain business environments, in order to improve performance. Conversely, there is relationship between using MAS and good financial performance applying new MAS in anticipation of improving decision making or performance (Laitinen, 2006). Supplier development was found to be a mediator in the relationship, between PEU and adopting wide-scope MAS information.

Some studies reveal that managers are obliged to process considerably more MAS information in order to reduce the level of uncertainty in a competitive environment (Chong, 1996; Mia, 1993). Gul and Chia (1994) and Gul (1991)) stress that managers often concentrate on making broad use of MAS information in the relevant stable

environment, leading to information overload and affecting performance negatively. Other studies adopted a different approach by separating firms based either on the level of MAS complexity or on its relationship with performance. This shows that conformity of MAS and its output affects performance in the post-acquisition phase of firms (Jones, 1985). Therefore, it can be seen that, the greater the application of sophisticated management accounting practices, the greater the growth of the firm over other firms (Reid & Smith, 2002).

There are inconsistent results of the impact of AIS on business performance, and empirical studies are required to fill the theoretical and practical gap on this phenomenon (Al-Eqab & Ismail, 2011; Boulianne, 2009; Hammad & Jusoh, 2010; Berisha-Namani, 2009).

There are also other variables in the present study having a relationship with the organizational performance of SMEs such as the importance of IT, manager's education, and manager's experience. These relationships are addressed in the following studies.

Ng and Feldman (2009) investigated the relationship between education level and job performance on two occasions, first time using a meta-analysis method and second investigating the association between the moderating impacts of sample and research design characteristics on the association between education and job performance. The meta-analysis was based on a review of research undertaken in or before 2007 that related to the association between educational levels and job performance (core task performance, citizenship performance and counterproductive performance). Educational

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level was considered as a continuous variable, whereas job performance contained nine groups of behavior: core task performance, training programs, citizenship behavior, creativity, counter-productive work behaviors, workplace aggression, substance use, tardiness and absenteeism. The findings show a positive effect of core task performance; educational level also has a positive impact on creativity and citizenship behaviors, otherwise a negative impact on substance use and absenteeism. With regard to the moderating effects on education and job performance, there was a significant association with gender, race, job level and job complexity.

Kasseeah (2012) investigated the impact of the education level of SME managers on performance in Mauritius, in terms of primary, secondary and tertiary education. The quantitative survey used World Business Enterprise Survey data available from the World Bank, which targeted micro and SMEs across different developing and developed countries. The Enterprise Survey was answered by, business owners and top managers, company accountants and human resource managers. Kasseeah's sample comprised 398 SMEs in both the manufacturing and services sectors in Mauritius in 2009. The findings showed that the better-educated managers, particularly those with tertiary education, contributed significantly more to the performance of their firms. Consequently, entrepreneurs must be motivated to improve their education levels. Those individuals who are highly educated should be encouraged to set up companies as they are expected to perform better and create more employment.

The study of (Manolova, Brush & Edelman, 2008; Gathenya, Bwisa & Kihoro, 2011) examined the correlation between the impact of both age and education for women

entrepreneurs on the locus of planning. They sent a questionnaire to 1,760 SMEs and the Pamoja Women Development (PAWDEP) identified 128 SMEs run by women in Kenya. In addition to the questionnaires, guided interviews and content analysis were employed. The respondents' age and education were considered as vital factors in determining the depth locus of planning, with a significant effect on ROA. Corresponding with the findings of Langowitz and Minniti (2007), their results revealed that age played an essential part in determining the attitudes of the entrepreneurs towards both ROA and ROE. As the women entrepreneurs grew older and more mature, the diversity in the performance of their enterprises narrowed irrespective of their educational background. Other researchers agreed (Manolova, Brush & Edelman, 2008; Gathenya, Bwisa & Kihoro, 2011).

Uppal (2014) proposed a model to examine the moderating influences of job characteristics on the association between neuroticism and job performance. His study focused on the moderating impact of different types of job characteristics, motivational, social and contextual, to identify the relationship between neuroticism and job performance. 1,450 questionnaires were distributed to individuals with 13 job profiles and in seven departments (marketing, legal, operations, customer service, fund management, training and development, and accounts) in 22 various private banks operating in India. Data was collected in a two-wave longitudinal study with a 13-month time interval. 802 (a response rate of 55%) and 760 questionnaires (51%) were returned respectively. The results suggest that taking into consideration not only individual traits but also job characteristics offer further insight into the nature of human performance. However, at the philosophical level, it was easy to conclude that it is not only the

individual but also the job itself that contributes to job performance. There was a full moderating effect between motivational job characteristics and job performance, and between social job characteristics and job performance. On the other hand, there was only a partial moderating effect between contextual job characteristics and job performance.

Harada (2003) used a database of 5,911 new Japanese firms to investigate the probability of an entrepreneur's success being linked to human capital and gender, and the initial size of the firm. The empirical analysis used data from the survey on Business Start-ups I Japan (Shinki Kaigyou Jittai Chousa', in Japanese) from 1992 to 1996. This is a questionnaire-based survey, implemented annually by the National Life Finance Corporation (NLFC) of Japan of government financial institutions, which provide loans primarily to small businesses. The findings indicated a negative influence of entrepreneur's age on the probability of success, implying that as the younger the entrepreneur, the more likely is he or she to succeed. However, the results disagree with Gressy's (1996) hypothesis of human capital, which recommends that the age of an entrepreneur is a contrasting measure for human capital. In addition, the empirical evidence indicated a positive association between entrepreneur's business-related experience before starting up a business with and the probability of success; there was also as a positive relationship between the initial size of the firm and the probability of success.

Chiliya and Roberts-Lombard (2012) examined the influence of the level of experience and education on the profitability of small grocery shops from a sample in the Mdtsane

area of East London in South Africa. The final sample in the survey consisted of 36 respondents, who either must be the owner of the grocery shop, or involved in the day-to-day running of the business. The main target was whether the owner's experience influenced the performance of the business, with secondary targets to indicate whether the owner's age, education, and the age of the business were significant influences on financial performance. The study found a positive relationship between experience and performance, denoting that the potential owners of grocery shops could benefit from previous experience, the experience could be gained from starting another small business or projects at university or technical college where students can practice business management. The results determined that previous work experience, educational level, the age of the owner and the length of the business operation has a significant influence on profitability.

According to Dokko, Wilk and Rothbard (2009), previous work experience might involve not only related knowledge and skills, but also routines and habits which might not fit in the new organizational context, limiting the positive influence of previous experience on performance. That is, when individuals shift across company boundaries, their previous experience may not be wholly beneficial. The authors studied this using career history data from a number of types of archival records, from all applicants to the call centers of a major US property and casualty insurance firm. They examined the specific relationships, such as those between previous related experience and job performance through its impact on task-relevant knowledge and skills. As well as, the relationship between related experience and performance when task-relevant knowledge and skill were controlled for; interaction between related experience and the firm's

experience on task-relevant knowledge and skills; and the interaction between related experience and the firm's experience on performance. The majority of the independent variables, together with previous work experience, came from the easily accessible résumés and application forms of all applicants since the call centers opened. The total across two centers was 1, 371 applicants. The sample of 771 observations for all applicants and 197 observations for those hired was analyzed. Data for dependent and independent variables pertaining to employment in the insurance company were obtained from human resources (HR) records of annual performance reviews and competency assessments for all current and former employees. They found, first, an indicator for a strong positive indirect relationship through knowledge and skills such that individuals do bring valuable human capital across the company boundary. Secondly, there was a direct negative association between performance and experience once the positive influence of knowledge and skills was considered in the model. Overall, their findings implied a conflict in the impact of experience on performance.

Arora and Rangnekar (2015) investigated the joint impact of personality (convenience and conscience) and perceived supervisory career mentoring (SCM) on occupational commitment (OC). They used a quantitative method based on cross-sectional survey-based research. They distributed 300 questionnaires to mentored employees in public and private sector companies in North India, and analyzed 121. Their findings indicated that the association between perceived SCM and OC appeared to be stronger for employees performing higher levels of personality convenience than those employees do with low levels. They also proposed that in order to maintain the occupational

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commitment of the workforce, supervisory mentors must understand how to deal with employees with diverse personality traits.

Miller (2014) developed a simple planning-performance model from an encompassing contingency model that probably explained the inconsistent planning-performance results generated in prior studies. The model was tested empirically using meta-analytic data imported from 26 published studies. Exact data was obtained from a database of published studies on planning-performance, with relevant data taken from key journals' tables of the contents, and the Social Science Citation Index. Based on the simple planning-performance model, two assumptions were formulated: strategic planning positively influences performance; and the amount of strategic planning a company employs will positively influence financial performance proportionately. Two types of variable are therefore substantive contingency variables and methodological contingency variables. The results indicated that planning strategically has a positive influence on a firm's performance, and the methodological factors are considered fundamentally responsible for contrary findings in previous research. On the other hand, the substantive contingency factors work did not have a significant influence.

Regarding the measurement of organizational performance, a study by Khan, Khalique and Nor (2014) indicated that this is considered as a vital issue in the recent research scenario. Researchers use different techniques and measures in order to evaluate organizational performance, and there is no consensus on which measurements to use. They noted that earlier work used both subjective and objective measurements, and adopted both in their own study. The current study based on the measurement used by

Jusoh, Ibrahim and Zainuddin (2008) to measure organizational performance; instrument has six variables, three of which represent performance at the business level and three performances at the operational level.

From the above discussion, it is clear that there is a potential relationship between AIS sophistication and SMEs' performance. In turn, there is also a relationship between the determinants of AIS sophistication (importance of IT, manager's knowledge, education, experience, IT investment, and environmental conditions) and SMEs' performance. Implicit in this is that AIS sophistication is a mediating variable between the independent variables and the dependent variable, SMEs' performance. Table 2.8 summarizes these past studies on organizational performance.

Table 2.8
Summary of Past Research on Organizational Performance

Authors	Key Variables/ Constructs	Findings
Boulianne (2007)	Strategic choice, AIS design and business-unit performance.	Analysis of 88 Canadian business units suggests that for prospector strategic-types, and to a lesser extent for defender strategic-types, broad-scope AIS is associated with higher performance.
Hunton and Flowers (1997)	Strategy, IT applications, planning and control, and firm's performance.	Significant influence of strategy on the extent of IT applications for planning and control, meaning that IT applications affected performance.
Kim *et al.,* (2009)	IT investment, cost efficiency, and organizational growth.	There is positive relationship between IT investment and cost efficiency in China, shown in organizational growth and the degree of

Table 2.8 (Continued)

Authors	Key Variables/ Constructs	Findings
		economic development such as in South Korea.
Chiliya and Roberts-Lombard (2012)	Experience level, education, and profitability of small grocery shops.	A positive relationship between experience, education, and performance of grocery shops in South Africa.
Ajibolade, Arowomole and Ojikutu (2010)	Level of environmental uncertainty, MAS designs, and manufacturing performance.	Empirical evidence for the moderating effect of the level of environmental uncertainty in Nigeria; proposal that more sophisticated MAS designs will improve the performance of the manufacturing in Nigeria.
Kobelsky *et al.,* 2008	Sales growth, unrelated diversification, size, IT investment, and volatility of future earnings.	IT investment increases the volatility of future earnings although this impact is highly contingent upon three firm-level contextual factors: sales growth, unrelated diversification, and size, leading to conditions in which IT increases or reduces earnings volatility.
Wilson, Iravo, Tirimba and Ombui (2015)	The new technology must fit into existing policies, practices and people.	IT contributes to performance, as indicated by studies over three decades.
Farhanghi, Abbaspour and Ghassemi (2012),	The impact of IT on organizational structure and company performance.	IT has a direct and indirect influence on performance. Organizational structure has a direct impact on the performance. IT has a direct influence on organizational structure.
Soudani (2012)	Usefulness of AIS for effective organizational	AI is very useful and has an impact on

Table 2.8 (Continued)

Authors	Key Variables/ Constructs	Findings
	performance.	organizational performance.

2.6 Underpinning Theories

2.6.1 Technology-Organization-Environment Theory

The main thrust of Tornatzky and Fleischer's (1990) Technology-Organization-Environment Theory (TOE) is that three factors are essential in the adoption and implementation of technology: the technological, organizational and environmental contexts. The first refers to technology-based resources, which a particular organization deploys in the course of its day-to-day activities; the second to features of the organization including resources such as the quality of human resources; and the third to environmental factors that can impede or enhance the activities of the firm. A number of scholars in different fields of IT have used the TOE model. Thong (1999) developed a concept based on TOE in the field of e-commerce predictors. Lippert and Govindarajulu (2006) adopted the TOE theory to examine the key determinants of the adoption of Web services at firm level; and the process by which an organization adopts and accepts new technology. Following Tornatzky and Fleischer's theory, they understood the technological context to reflect the availability and importance of both internal technologies and external technologies to the firm that might be useful in improving organizational productivity. The organizational context is defined in terms of the availability of resources to support the acceptance of the innovation. These criteria involve the firm's size and scope, centralization, formalization, complexity of the managerial structure and the quality and availability of the firm's human resources. The environmental context is the setting in which the firm carries out its business, influenced

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by the industry itself, its competitors, the firm's ability to access resources supplied by others, and interactions (Lippert and Govindarajulu, 2006).

Since TOE theory is closely related to organizational performance, this study has adopted it as it is evident that inclusion of organizational, IT sophistication and environmental constructs in the research theoretical framework will help in explaining the concept of this research comprehensively.

2.6.2 Contingency Theory

The purpose of contingency theory is to elucidate the possible influence of contingent factors on AIS sophistication. The theory has been widely used in the fields of IS and accounting (Chenhall, 2003). This study therefore relies on contingency theory as one of its underpinning theories since it can be used to determine those factors that affect organizational performance of AIS sophistication, as well as in analyzing situations and determining which variable really influences the target variable.

The adoption of contingency theory in this study is anchored on the premise built by Burns and Stalker (1961) that an organization can be managed in different ways. This in essence implies that the designer of an organization and its sub-systems must take into consideration the contingent factors in the environment (Otley, 1980). Previous empirical studies that assessed accounting and contingency factors indicate the importance and strength of this theory. Its thrust is that the structure of an organization is determined by contextual factors such as environmental conditions and organizational structure (Abernethy & Lillis, 1995; Gerdin & Greve, 2003).

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Szilagyi and Wallace (1980) explained that contingency theory affirmed the relationships between one sub-system and another within an organization as a single entity surrounded by environments. One of the universal features of the contingency approach is that it sees an organization as a structure operated as an open system and interacts with other agents in the environment. This implies that the organization exists not only for the provision of products and services to the environment, but also that its activities are influenced by environmental factors. It is therefore essential that the organization and its sub-systems taking into consideration relevant environmental factors.

The environmental congruence is anchored on three approaches: interaction, selection and the system approach. The selection approach refers to the relationship between the organizational and environmental variables. The interaction approach assesses the relationship between the environment and organizational variables, while the system approach considers the influence of these interactions on the performance of the organization (Van de Ven & Drazin, 1985).

Selto, Renner and Young (1995) discovered that a better fit between AIS or IT and contingency variables would bring about greater AIS sophistication and consequently lead to better organizational performance (Fisher, 1998; Weill & Olson, 1989). In essence, contingency theory is applicable to this research. This is evident from the inclusion of organizational, technological and environmental constructs and AIS sophistication in the conceptual framework.

2.6.3 Resource-Based-View

Penrose (1959) developed the Resource-Based-View (RBV), as a scholar regarding an organization as a collection of human and physical resources that is bounded together in a structure. Hafeez, Malak and Zhang (2007) categorize resources as intellectual and physical assets. Physical assets such as plant and equipment can be easily distinguished for their tangibility, while intellectual capital is seen as an intangible part of human resources, such as knowledge, skill and individual competencies. The thrust of RBV is through two key issues. First, RBV maintains that a resource must be currently scarce, should be capable of providing economic value, should not be easily copied or imitated, should be non-substitutable, and must not be readily accessible in markets for creating competitive advantage (McIvor, 2009). Second, a firm's performance is determined by its resource (Gottschalk & Solli-Saether, 2005; McIvor, 2009). In the accounting context, resources mainly refer to knowledge, skill and competence (Everaert *et al.,* 2006; Jayabalan, Raman, Dorasamy & Ching, 2009). For example, explicit knowledge in accounting is knowledge of generally accepted accounting rules (Everaert *et al.,* 2006).

RBV thus defines resources from a wide and inclusive perspective. The resources of a company can be considered as all its assets, including competencies, capabilities, organizational processes, company attributes, technology, information and knowledge, all of which must be controlled by the company and assist it in visualizing and applying strategies that can be used to improve its efficiency and effectiveness (Baney, 2002).

Black and Boal (1994) argued that the resources of a company may include brand and patent names, coordination skills and creative talents. This position was corroborated by Barney, Wright and Ketchen (2001), when they affirmed that the resources of an organization also include organizational routines and processes, management skills, and information and knowledge.

Generally, therefore, management scholars have categorized company resources into four to six broad groups, which help the organization to conceive of and apply their strategies. These include physical, financial, organizational and human capital (Barney, 2002; Barney & Arikan, 2001); technological capabilities (Hofer & Schendel, 1978; Lichtenstein & Brush, 2001); and, more recently, social capital (Brush, Greene & Hart, 2001; Ireland, Hitt & Sirmon, 2003; Ireland, Webb, & Coombs, 2005).

Modern RBV researchers are also concentrating on the competitive advantage which the resources confer on the organization, which must be valuable, rare, inimitable and organizational (Barney, 2002).

To recapitulate, RBV is relevant to this study from the point of view of intellectual capital, which can be seen in the form of manager's knowledge, education and experience, which can help an organization to improve its performance.

2.7 Summary

This chapter was a detailed review of relevant literature. It discussed the essence of the studies, their justification and contribution. Based on this, relevant factors that affect the

performance of SMEs in Saudi Arabia summarized in a framework and explained along with the development of the research hypotheses in the following chapter.

CHAPTER THREE

RESEARCH FRAMEWORK AND HYPOTHESES

3.1 Introduction

This chapter discusses the research framework and development of hypotheses.

3.2 Research Framework

The development of a theoretical framework is considered an important step in the research methodology since it clearly defines the direction of the study. It is an epistemology of constructivism that assumes a pluralist and relativist view of reality (Guba & Lincoln, 1994). Sekaran and Bougie (2010) and Cooper and Schindler (2008) defined the theoretical framework as a logically developed framework represented by a detailed network of associations between the variables already identified through interviews, observations and the literature review as relevant to the topic.

Cavana, Delahaye and Sekaran (2001) added that the framework defines the logical relationships among these factors, which flow logically from the documentation of previous research in the problem area. This forms the basis for the construction of the research framework.

The variables are summarized in Table 3.1.

Table 3.1
Description of Research Variables

Independent Variables	Mediating Variable	Dependent Variable

Organizational factors
  • Importance of IT
  • Owner or manager's knowledge
  • Owner or manager's education
  • Owner or manager's experience
IT investment
Environmental conditions
	AIS sophistication	Organizational performance of SMEs

The literature review failed to find a comprehensive model that links organizational factors, IT investment, environmental conditions and AIS sophistication, to performance of SMEs, concentrating on different relationships (see page 77). Furthermore, most of these studies were carried out in developed countries, and few considered the relationship between the IT adopted and the sophistication of AIS in developing countries. To the researcher's knowledge, this kind of study is almost non-existent in the Middle East, hence the current study.

The research framework was developed using TOE (see section 6.2.1) and contingency theory (section 2.6.2). The TOE model was developed to examine organizational, technological, and environmental factors affecting the implementation or adoption of IT. Contingency theory has been used in accounting research since the 1970s (Ismail, 2004). Rather than focusing on organizational structures, accounting research focused on the sophistication of AIS, with most studies designed to determine which contingencies best explained observed AIS design sophistication (Jones, 1985). Nevertheless, organizational structure was considered as one of the many contingency

variables influencing AIS design sophistication (Mitchell *et al.,* 2000). Application of the theory is based on the argument that, there is no universally appropriate AIS sophistication that applies equally to all organizations in all circumstances. This implies that contingency theory must identify specific aspects of AIS, which are associated with certain defined circumstances and clarify an appropriate match (Otley, 1980).

The research framework also draws on the Research-Based View (RBV) described in section 6.2.3, whose major concern is how a company's resources, such as employees' skills, IS and knowledge, develop and affect its performance (McIvor, 2009). Early studies on accounting have suggested that organizational structure, environmental conditions, management style and production technology are the important contingent variables (e.g. Gordon & Miller, 1976; Gordon & Narayanan, 1984; Gul, 1991; Gul & Chia, 1994; Mia, 1993). Others, such as the Gartner Group (2007), also argued that organizations should continue to define users' requirements and changes in the business environment before making any significant investment in AIS. However, Chang (2001) used factors such as environmental uncertainty, rate of competition and organizational features in the performance of AIS (Mitchell et al., 2000). Eventually, the appropriate match between AIS sophistication and contingent factors can enhance organizational performance (Otley, 1980). General IS researchers also recognize organizational structure, size, environmental condition, technology, and recently business strategy as contingent variables (e.g. Abernethy & Lillis, 1995; Chan *et al.,* 1997; Gerdin & Greve, 2003; Selto *et al.,* 1995; Weill & Olson, 1989).

The main objective of the present study is to examine the relationship between the organizational context that is related to the characteristics of the SME manager, IT investment and AIS sophistication, and the impact on organizational performance. The mediation effect in relationships is a further technique that has taken its place with researchers. For instance, Khalil and Zainuddin (2015) examined intrinsic motivation as a mediating factor in the relationship between CEO characteristics and accounting information system adoption in SMEs in Libya. The present study therefore examines AIS sophistication as mediating between all the independent variables and the dependent variable as shown in Figure 3.1, which illustrates the research framework.
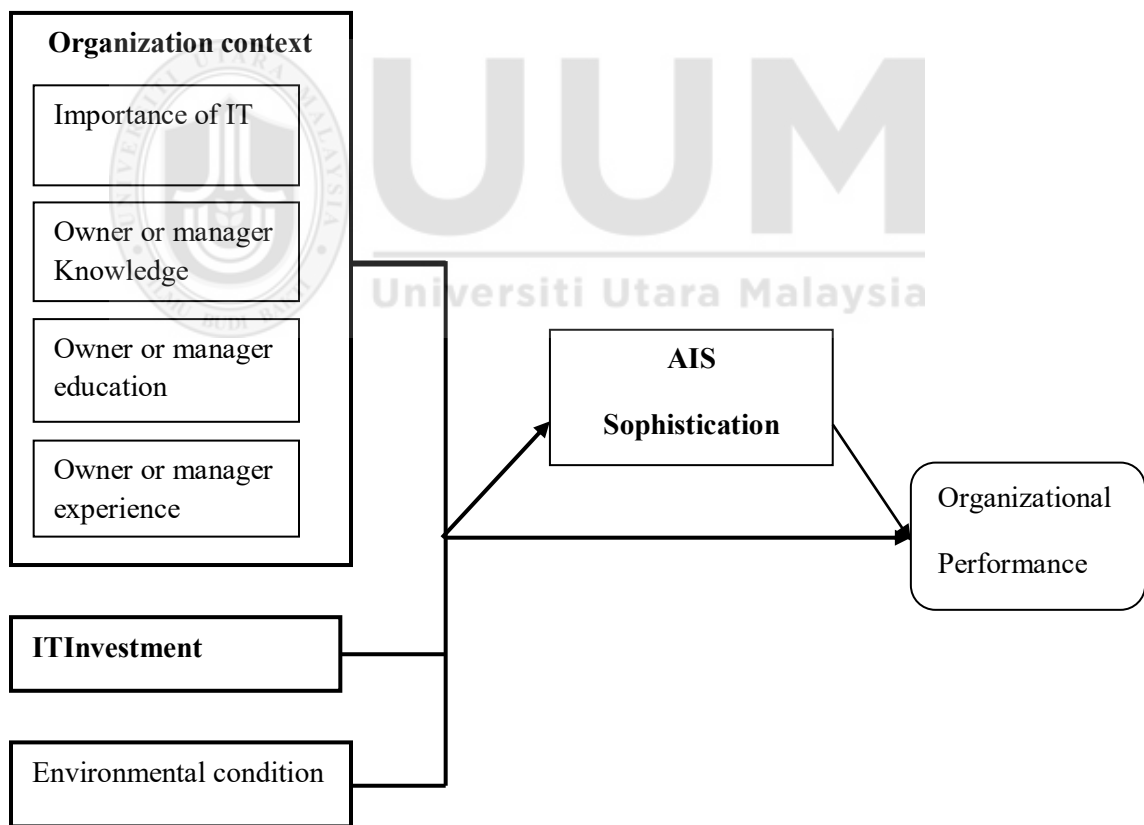
Figure 3.1
The Research framework of the stud

The framework is subject to a validation process to ensure that this survey approach is the most appropriate one. Its justification and rationale are offered in Chapter 4.

3.3 Hypothesis Development

The hypotheses are derived from the theoretical framework illustrated in Figure 3.1. As discussed in section 2.3.2 and shown in Figure 3.1, there are seven variables, including the mediating variable. Their roles in the hypotheses are described below.

3.3.1 Determinants of Organizational Performance

This section discusses development of the hypotheses whose factors are expected to influence organizational performance.

3.3.1.1 Importance of IT

The importance and advantages of the AIS to the SMEs manager affect AIS sophistication. Previous studies have revealed that the perceived importance of IT and operational and strategic business tools for small businesses will influence performance (Bracker *et al.,* 1988; Bracker & Pearson, 1986; Holmes & Nicholls, 1988; Huck & McEwen, 1991; Jones, 1992; Lee & Runge, 2001; Pineda *et al.,* 1998; Pizzini, 2006; Reid & Smith, 2000; Rogoff *et al.,* 2004; Stephens *et al.,* 2005; Thong, 1999). The importance of IT and its influence on organizational performance is therefore of interest (Jones, 1992).

More particularly, Al-Nuaimi, Mohamed and Alekam (2017) investigated the direct and the indirect association between IT, ABC implementation and organizational performance of banks sector. They distributed 150 surveys among chief accountants of banks sector. Their study exposed that there is a significant association between IT, ABC implementation and organizational performance. Besides, the results of their study confirmed that, ABC implementation has a partial mediating role on the association between IT and organization performance. The implication of these results is that, ABC implementation partially mediates the impact of IT in enhancing the organizational performance.

Shaukat and Zafarullah (2009) mentioned that IT is a powerful energy in today global community. The advancement trends of IT have a significant effect on the radical changes of the twentieth century. Comparable to other developing countries, this technology was implemented forcefully in all the organizations of Pakistan. So that, their study investigated the influence of IT on organizational performance with admiration to diverse performance indicators of Pakistani manufacturing and banking sectors over period of 1994-2005. The primary data was gathered through in-depth interviews and field questionnaires of 48 companies, 24 in manufacturing sector (12 local and 12 foreign) and 24 in banking sector (12 local and 12 foreign). Besides, the data was examined by implementing different statistical methods. The findings of the study have led to the conclusion that IT has positive influence on the organizational performance of all the organizations but the banking sector performance exceeds the performance of manufacturing sector. On the other hand, a study implemented by

Farhanghi, Abbaspour, and Ghassemi (2013), examined the impact of IT on the organizational structure and the firm performance. The findings of their study exposed that, IT has a direct and indirect effect on the performance; meanwhile the organizational structure has a direct impact on the firm performance. Following this, the final findings of their study revealed a direct relationship between IT and organizational structure. Based on this, the following hypothesis is formulated:

H1: There is a relationship between importance of IT and SMEs' performance.

3.3.1.2 Owner or Manager's Knowledge

Wenger (1986) mentioned that to support a contingency approach perspective with respect of interdependence, and their relationship to knowledge flows and performance. Thereby, transitive memory theory suggests that the level of interdependence should inform managers about how best to organize (i.e., arrange the organization's meta-knowledge or who knows what knowledge). Therefore, knowledge is a contingency factor in organization design especially as it relates to coordination mechanisms and their impact on knowledge flows that lead to high levels of performance.

According to Nissen (2006a), while knowledge creation and transfer (for instant, learning) are considered as the key dynamic aspects of knowledge in an organizational context, knowledge must also be applied (for example, put into action to achieve goals). It is theorized that knowledge is a powerful resource that firms utilize and create a positive influence on the performance. Following this, Kamyabi and Devi (2011),

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examine the influence of the factors such as owner or manager knowledge, technical competition, competitive intensity, and complexity of marketing decisions on the managers' decisions of the manufacturing sector of SMEs in Iran context that use the external accountants' advisory services. Then, the study investigates the impact of these advisory services on SMEs performance adopting the Resource-based-view as the theoretical approach of the firm. The findings of their research revealed that, the usage of the external accountants' advisory services has a positive association with the owner or manager knowledge, technical competence, competitive intensity, and complexity of marketing decisions. Their study concluded that, the usage of advisory services has a positive influence on SMEs performance. Thereby, the researchers explain that owners' or managers' knowledge influence the organizational performance. Thus, the following hypothesis is proposed:

H2: There is a relationship between owner or manger knowledge and SMEs performance.

3.3.1.3 Owner or Manager Education

According to Huck and McEwen (1991) and Stokes and Blackburn (2002) when owners or managers participate in entrepreneurial training classes sponsored by a university or other similar organization it will have desirable effects on the growth of entrepreneurship and performance of the SMEs. However, the focus of their study was not on the type of education (business or non-business) and sophistication of accounting practices but on financial performance of the business.

Other studies stated that training and education have been revealed to have a positive impact on the performance of small businesses (Aldrich & Martinez, 2001; Collins-Doddet al, 2004; Simpson *et al.,* 2004).

The findings of Chiliya and Roberts-Lombard (2012) discovered a positive relationship between education and performance of grocery shops in South Africa. A questionnaire of small service firms indicated clear evidence that training and education had a positive influence on success (Simpson *et al.,* 2004). In a study conducted on the practices of sole-proprietor accounting, education was found to be one of the important variables considered when measuring the influence of gender on financial performance (Collins-Dodd *et al.,* 2004). Additionally, an empirical study conducted by Zannah, Mahat, Ariffin, and Ali (2017) examined the impact of the age owners and managers, the business age, and the education of owners and managers on the SMEs performance in Nigeria context. Their study relied on the quantitative method with a descriptive questionnaire of 110 samples by using Cochran Sampling technique. The results of their study determined that all the independent variables have a positive and significant relationship with SMEs performance. Sitharam and Hoque (2016) indicated that, SMEs' owners who are highly educated are capable to achieve and improve skills and positively affect on SMEs performance.

The researcher is interested to examine the relationship between education of owner or manager and the organizational performance. Thus, the formulation of the hypothesis will be as the following:

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H3: There is a relationship between owner or manger education and SMEs performance.

3.3.1.4 Owner or Manager Experience

Huck and McEwen (1991) stated that owners or managers with prior business experience had significant different views of which skills small business owners needed to be competent in for the business performance. These areas of competency are starting a new business, advertising and sales promotion, and purchasing. Others such as Aldrich and Martinez (2001) agree that some pervious knowledge is needed, through training, experience or formal education. Harada (2003) provided evidence of a connection with previous experience in the industry or related business experience, and their results indicated that experience positively related to turnover.

According to Bracker *et al.,* (1988), a lack of previous business experience does affect the business performance. In their study of small electronic businesses, they recognized that most of small and medium industry owners who have been surveyed had left technical positions in large electronic technology firms to start their own business.

Chiliya and Roberts-Lombard (2012) discovered a positive relationship between experience and performance of grocery shops in South Africa. This could be considered as a problem after the initial growth stage when the business would need the benefits of business management tools and practices. Moreover, Zannah, *et.al.* (2017) examined the influence of owners or managers experience, owners or managers age, and owners or

managers education on the performance of SMEs. Their research used a questionnaire as a quantitative method, which relay on distributing those questionnaires among owners or managers of SMEs in Nigeria context. The findings of the study indicated that, there is a positive and significant association between the independent variables, which are owners or managers experience, owners or managers age, and owners or managers education on the performance of SMEs. In turn, this study attempts to investigate the role of experience of owners or managers on the organizational performance in SMEs within Saudi Arabia context. This leads to the formulation of the following hypothesis:

H4: There is a relationship between owner or manger experience and SMEs performance.

3.3.1.5 IT investment

Researchers of IT have argued that investment of IT is not an essential condition, thus sufficient to improve performance of the firm, and raised a possibility of amounting to wasted investment. Instead, IS investment was proposed to be converted into assets of IS (i.e. IS infrastructure and applications) and, therefore, used to create values that are suitable. The use of IT appropriately is expected to create impact, which is considered as intermediate, for example, when IT is being used in production and services, at the same time as, the business processes, which are streamlined, and decisions improvement, which are expected to influence business performance (Ravichandran &Lertwongsatien, 2005).

Hu and Quan (2005) theoretically and empirically quantify the contribution related to IT investment to the company performance in the last two decades. They mentioned that the motivation of their study concerns on the lack of explicit causality inquiries into the relationship between IT investment and productivity or other performance that has been measured in the prior researches. They believed that, there is such missing linkage involved in a contribution directly to the contradictory results of IT' studies and the on-going IT productivity paradox debate. They also depend on Porter and Millar's idea (1985) that stated that effect of IT has been moderated by the intensity of the information of products and value chain of a company.

In the same vein, Hu and Quan (2005), determined that the many studies have expressed a positive and a significant relationship as well between IT investment and firm productivity or performance. The question of causality indicated that: do higher IT investments contribute to better performance or does better performance lead to higher IT investment. Thus, Hu and Quan (2005) investigated the issue of IT investment affect on productivity by using Granger causality model with industry sector over a 30 years period. The findings propose that a causal relationship has been existed between IT investment and productivity at the industry sector.

Lee, Xiang, and Kim (2011), examined the impact of IT investment on company-level productivity in the Chinese electronics industry sector by using a production function model. The results indicated that the direction and size of the affect of IT investment on the productivity in China is similar to the general findings of the studies conducted in

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the United States. Therefore, Chinese firms should invest more on IT. For example, several Chinese companies are enjoying the benefits of IT investment. Lenovo, the world's third largest PC manufacture, is considered a real example of how productivity is increased throughout IT in the competitive global market.

Lee, Choi, Lee, Min, and Lee (2016) indicated that, it is very essential to comprehend how the investment on IT is contributing to the achievement of business objectives. In this regard, IT investment has been classified into five categories, which are basic infrastructure, security, wireless, collaboration, and datacenter. They build an empirical model for the purpose to analyze how IT investment regarding the mentioned categories affects on the business growth. Their findings implied that, IT paradox and IT pay-off can be realized together. They added that, IT investment in wireless technology have a significant association to the business growth in the multiple years. Besides, datacenter technology investment influences the business growth after two years, whereas collaboration has been recognized IT paradox in two years. They concluded that, companies require organizing a set of priority of consideration to what IT investment and needing to figure out a way how they could drive business outcome faster overcoming IT paradox.

Shaukat and Zafarullah (2009) indicated that IT is essential for the world development nowadays. In this sense, companies in Pakistan are also using this type of technology to make the extension to those companies by doing many investments. Thus, Shaukat and Zafarullah (2009) investigated the effect of IT on organizational performance with

taking into a consideration an increase or decrease in income and increase or decrease in number of employees versus the expenses of IT within manufacturing and banking sectors in Pakistan over period of 1994-2005. The findings provided a strong evidence in manufacturing companies which is stated that, there is much more investment on IT have been taken a place and they concluded that investments of IT have a positive influence on organization's performance.

Al-Saraireh (2013) aims to identify the role of investment in IT on the performance of industrial listed companies in Jordan financial market particularly on the capital city of this country. In this regard, a sample of twenty Jordanian industrial stock exchange companies were selected. After that, the data of this study was based on the surveys approach, which was distributed among the mentioned companies. The findings of this paper revealed that, there is a significant impact of the investment in IT on the ability to improve the decision-making process in order to enhance administrative, financial and operational processes and enhance the financial performance. Contrary, the study expressed that the investment in IT in industrial companies of Jordon is not effective for the purpose to create and develop the competitive advantage and sustain the institutional innovation and the strategy of excellence for those companies. Furthermore, Farouk and Dandago (2015) used the data panel regression method among banks in Nigeria context, to analysis their data obtained from banks in Nigeria, which was relied on the secondary data approach. Their study investigated the impact of IT investment in terms of (IT hardware, IT software and Automated Teller Machine (ATM), Total earnings (TR), and total cost (cost) on the financial performance among Nigerian banks. The measurement

of the dependent variable, which is financial performance are the following measurement which are Return on assists (ROA), Return on Equity (ROE), Net profit margin (NPM) and Earning Per Share (EPS). The findings of their study revealed that, there was a significant association between the IT investment and financial performance of banks in Nigeria when the financial performance measured by ROA, ROE, and EPS. Whereas, there was no significant association between the IT investment and the financial performance of banks, when the financial performance measured by NPM. Therefore, the interpretation of the negative relations between the IT investment and the financial performance of banks in Nigeria context can be explained by the productivity of IT paradox exists in the banks system, although the huge efforts of IT investment made, the premium price has yet not paid provided the higher quality of their outputs. Based on the above discussion the following hypothesis is formulated:

H5*: There is a relationship between IT investment and SMEs performance.*

3.3.1.6 Environmental conditions

Other researchers examined the influence of the interaction between management accounting and contextual factors on organizational performance. In this regard one of the contextual factors is the environmental condition and its influence on the performance of organization. For instance, Gordon and Narayanan (1984) and Chenhall and Morris (1986) examined the relationship between management accounting practices, organizational structure and environmental uncertainty. The results of the study reveal that that structure of an organization and environmental uncertainty

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affected the features of information. Mak (1989) also examined the correlations between sophistication of control system and perceived environmental uncertainties, and financial performance using the interaction method to fit. Additionally, the researchers Muchlish and Bastian (2012) examined the association of perceived environment uncertainty, business strategy on the performance measurement system (PMS) and the organizational performance. In their research, they used Partial Least Square (PLS) to analysis data, which were the managers of manufacturing sector in West Java and Banten. Their findings indicated that, perceived environment uncertainty, business strategy and organizational performance have significant and positive relationship. As well as the findings of their study revealed that, the non-financial performance measurement systems (PMS) have significant association with the organizational performance. However, the findings of the association between financial performance and organizational performance indicated there is no significant relationship occurred.

Furthermore, a study conducted by Rizal, Suhadak and Kholid (2017) struggle to analysis and clarify the impact of external environmental factors, along with the impact of external and internal environmental factors on the business performance. The study was conducted based on the explanatory research by using survey as a primary data and targeting the owners or managers of the enterprises as the sample of their research. The findings of their study determined that, a significant and positive association occurred on the relationship between the external environmental factors and the internal environmental factors. Similarly, the findings of their study revealed that, the impact of

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internal environmental factors on the business performance of Micro Small and Medium

Enterprises (SMES) have also significant and positive relationships.

This leads to the formulation of the following hypothesis:

H6: There is a relationship between environmental condition and SMEs performance.

3.3.2 Determinants of AIS Sophistication

In this section, the hypothesis development of the determinants of AIS sophistication is

discussed. The discussion for each determinant is provided in the next subsections.

3.3.2.1 Importance of IT

Lee and Runge (2001) stated that owners' characteristics did influence the extent of

adoption of IT SMEs. The owners or managers' knowledge of the relative advantages or

perceived importance of IT in the business was related to IT adoption levels (Lee &

Runge, 2001). Owners or managers demonstrated a self-serving bias in their perception

of factors that would contribute or hinder performance (Rogoff *et al.,* 2004). The most

assigned internal factors, such as work ethic, knowledge, and dedication, as contributing

to success.

Stephens *et al.,* (2005) explored the importance implementation gap in the area of

Baldrige criteria for performance excellence (CPE) practices in small businesses. Their

findings indicate that generally higher levels of importance are mirrored by higher levels

of implementation (Stephens *et al.,* 2005). This therefore indicates that it is an issue of

interest in organizational performance with respect to importance of IT influence AIS sophistication. Thus, the owners or managers' knowledge of the relative advantages, or perceived importance, of IT in the business was related to IT adoption levels (Lee &Runge, 2001). Owners or managers demonstrated a self-serving bias in their perception of factors that would contribute to performance (Rogoff *et al.,* 2004).

Sacer and Oluic (2013) indicated that, the accounting information system is considered as a great significant matter for a preparation of quality accounting information for a broad range of users. Their study clarifies that, the influence of IT on accounting process and as consequence on accounting information systems quality. They concluded that, IT affects how AIS operating, contributing to a preparation of information, processing, and presenting accounting information. They confirm that, IT has a significant contribution on the AIS characteristics such as, the accuracy and timeliness of accounting information and the quality of AIS. Therefore, the researcher is interested to assess the relationship between importance of IT and AIS sophistication. Based on the above discussion the following hypothesis is formulated:

H7: There is a relationship between importance of IT and AIS sophistication.

3.3.2.2 Owner or Manager Knowledge

RBV argues that if SMEs are to grow, they need to get adequate knowledge and then embed the knowledge into their firms (Worrall, 2007). Moreover, RBV demonstrates that, SMEs are unable to carry out the accounting functions internally because of

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insufficient knowledge and unqualified employees (Everaert *et al.,* 2006; Jayabalan *et al.,* 2009).

For instant, it has been established that SMEs owners and managers lack the necessary skills and resources to perform accounting functions in house and this was evidently the most important reason to get a sufficient knowledge that enable firms to work in a proper way (Everaert *et al.,* 2006). However, many claimed that SME managers are not aware of the range of support and advisory services available to them (Ismail & King, 2007; Ismail & Abidin, 2009; Liddicoat & Stringer, 2005), due to the unavailability of adequate evidence of the benefits of such services (Watson, 2003), or lack of support in seeking relevant information (Devi & Samujh, 2010).

Sophisticated SMEs owners or managers may be conscious of the benefits of compensating their own insufficient knowledge or skills by utilizing external service provider (Ismail & King, 2007; Watson, 2003). Audet and St-Jean (2007) exposed that SMEs owners or managers who have knowledge can interact with systems more than SMEs owners or managers who did not have adequate knowledge about these systems. Consequently, the owners or managers who are knowledgeable are considered valuable resources for a company and this can enhance the organizational performance. However, less sophisticated and incapable SMEs owners or managers might be unconscious of their own weaknesses to ask for support and advice, believing they can do it all themselves (Watson, 2003). Regarding the accounting knowledge that managers have to acquire it, a research conducted by Sallem and Nasir (2017) mentioned that, for the

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purpose to confirm the smooth flow of activates within the organization, managers have to have an expectation to have a straight level of accounting knowledge. Besides, managers are expected to be familiar with the diverse function of accounting. Unfortunately, the majority of managers do not have adequate accounting knowledge and they often delegate the accounting function to other departments.

More particularly Komala (2012) indicated that the influence of Accounting Information System (AIS) to the quality of accounting information by considering the accounting's knowledge of managers and support top management. The findings of the study revealed that accounting's knowledge of managers and top management support have a significant impact to AIS. As well as, the quality of AIS has an effect on the quality of accounting information. Following from this, the researchers explain that owner or manager's knowledge is influenced by AIS sophistication. Thus, the following hypothesis is proposed:

H8: There is a relationship between owner or manger knowledge and AIS sophistication.

3.3.2.3 Owner or Manager Education

Extant studies of SMEs owners have associated education to raise the sophistication of accounting practices, including planning, in the small business (Holmes & Nicholls, 1988; Jones, 1982). In the past study of planning in small businesses, Jones (1982) found that businesses with more sophisticated planning had owners or managers who

tended to be a little older and had a little more formal education than non-planners had. This denotes that increasing age and more education lead to a greater appreciation of the usefulness of planning and greater confidence in the firm's ability to make and implement plans (Jones, 1982).

According to Holmes and Nicholls (1988), owners or managers who had a degree of university or college education seem to be prepare a more accounting reports than those with only trade qualifications. While, owners or managers who had attended management training courses have ability to produce more accounting information than those with less education or training (Holmes & Nicholls, 1988). However, they did not find a difference in the sophistication of information prepared based on the type of tertiary education.

Owners and managers without education will recognize that there is no such a benefit for them to utilize the AIS. In the course of setting up small business, many owners or managers do not succeed in instituting a formal system of accounting (Dennis, 2000). Usually the reason behind a failure is lack of time, resources and an attitude of the expression "I will get to it later". Moreover, during the economic growth in a small business, sometimes the owners or managers have insufficient skills on accounting practices, or they are busy to be worried about following accounting practices (Dennis, 2000). Furthermore, a study implemented by Esmeray (2016) aims to provide empirical evidence regarding the measuring of the association between the usage of accounting information systems (AIS) by SMEs in Turkey and companies' enhanced performance

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indicators. The results of the study revealed a positive and significant relationship between the usage of AIS and the education status of managers. As well as, the number of employees increase, and the usage of AIS also increase. The final findings of the study indicated that, a positive relationship between the usage of AIS and the growth of sales and the growth of customer and revenue occurred.

The researcher is interested to examine the relationship between education of owner or manger and AIS sophistication. Based on the above discussion the following hypothesis will be formulated:

H9*: There is a relationship between owner or manger education and AIS sophistication.*

3.3.2.4 Owner or Manager Experience

Prior work experience of the manager or owner will affect the small business' AIS sophistication. Several studies of small business owners and managers attempted to investigate whether previous experience has any correlation with the performance of the business (Ugrin, 2009; Aldrich & Martinez, 2001; Bracker *et al.,* 1988; Christopher, 1998; Harada, 2003; Huck & McEwen, 1991; Simpson *et al.,* 2004; Stokes & Blackburn, 2002). Furthermore, Jaruwachirathanakul and Fink(2005) provided that, the attitudinal factors such as experience and internet banking experience, but not age appear to encourage the adoption of internet banking in Thailand. Ugrin (2009) equally found a linkage between institutional factors (experience) and systems adoption (ERP system choice).

Stokes and Blackburn (2002) took a unique angle on business experience of owners or managers. Owners or managers of small businesses that had failed either by discontinuing the business or by formally filing bankruptcy were surveyed. The focus of their study was to explore the relevance of previous experience on the opening and operations of new small businesses. Out of the respondents, 62% continued in some manner as a small business owner, whether in another business interest, the same line of business, or in a new line of business (Stokes & Blackburn, 2002). Even with the experience of a business closing, or failure, the majority (70%) still viewed operating a small business in a positive manner. An interesting finding in their study was only a small percentage of these respondents (16%) found the learning about financial management experiences could be useful, while 26% stated these same financial management experiences were the ones they most wanted to be avoid (Stokes & Blackburn, 2002).

Additionally, a study conducted by Ramli (2013) concentrated on the external factors of training, experience, and internal expertise of the usage of AIS in three, four, and five-star hotels in Malaysia. In this regard, the data implemented based on the questionnaires approach in which were being collected through a postal questionnaire that sent to the senior accounting managers in three, four, and five start relevant hotels. Then, the data analyzed by the usage of Partial Least Squares (PLS) statistics program. The results of the study verified that, experience of managers and internal expertise affected the usage of AIS, while training did not have a significant relationship to AIS users in the hotel industry in Malaysia. The study concluded that, the using of AIS requires the users to

have a good basic knowledge in accounting together with the knowledge of basic computer works. Ramli (2013) added that, the training program would provide users with great potential information by systems that enable the users of such accounting systems to deal with accounting maters. In turn, the present study attempts to investigate the role of experience of owners or managers on the AIS sophistication in SMEs within Saudi Arabia. This leads to the formulation of the following hypothesis:

H10: There is a relationship between owner or manger experience and AIS sophistication.

3.3.2.5 IT investment

Previous studies have employed the managerial sophistication in different ways by taking into considerations factors such as IT investment, top management support, control of IT, IT adoption process, and evaluation of IT (Raymond & Pare, 1992). In their study, top management commitment was found to be the most prevalent managerial dimension with strong influence on IT implementation. Giving the sizeable of resources, which expended on IT project, it is essential for top management to give their strong commitment for the successful implementation of IT such as AIS. The failure or success of computerization projects can largely have determined by top management since they play strong role on IS planning such as HR planning, financial resource planning, information requirement planning, pre and post implementation planning (Lin*et al.,* 2007).

IT investment shown a positive effect on cost efficiency as previous studies was investigated the impact of IT investment on companies' financial performance in the insurance industries in South Korea, which has brought about increase in IT investment and organizational growth of South Korea (Kim, Xiang & Lee, 2009). Meanwhile, there is positive relationship between IT investment and cost efficiency in China, while the effect is not shown on organizational growth and the degree of economic development (Kim *et al.,* 2009).

Shaukat and Zafarullah (2009) revealed that IT investment has greater influence on IT success in Pakistani banks. In addition, Feller, Finnegan, and Nilsson (2011) found a positive and significant effect of investment IT at the levels of organizational productivity essentially with information system and AIS particularly. Similarly, with respect of investigating the influence of investment in IT on the organizational productivity of SMEs' performance. The results of analysis revealed that, the investment in IT have a positive and significant effect on the organizational productivity of performance of SMEs, especially with using Information System (IS) and Accounting Information System (AIS) in particular. (Medina-Quintero, 2015; Feller *et al.,* 2011). Hence, the researcher tries to investigate the relationship between IT investment and AIS sophistication. Thus, the following hypothesis is proposed:

H 11: There is a relationship between IT investment and AIS sophistication.

3.3.2.6 Environmental Conditions

In line with the changing needs and taste of consumers, it is highly essential that organizations in the contemporary obtain more of non-financial information in order to be competitive. According to Gordon and Miller (1976), organizations must obtain information on matters such as actions of competitors, increase and change in tastes of consumers, as all these mentioned requirements will help them to prepare a quick reporting and make fast forecasting. Chong and Chong (1997) reechoed the significance of non-financial, future-oriented, and external data in a turbulent and uncertain environment.

However, Mia (1993) argued that sophisticated accounting information could only be effective with respect to performance during high level of uncertainty in the business environment. Conversely, when the level of uncertainty in the business environment is low less sophisticated information is required by the management to make relevant and accurate decisions (Gul & Chia, 1994). Harash (2015) investigates the effect of the environmental uncertainty as a moderation factor on the association between AIS and the performance of SMEs. The findings of the study emphasis that, the environmental uncertainty has full moderation influence the performance of SMEs. The study concluded that, the dimensions of the environmental uncertainty are major moderators on the association exist between AIS and the performance. Finally, the study asserts that, the performance of SMEs differ with the alternatives of the AIS they have adopted. Thus, the researcher tries to examine the influence of environmental condition on the AIS sophistication. Based on the above discussion; the following hypothesis formulated:

H12: *There is a relationship between environmental condition and AIS sophistication.*

3.3.3 AIS Sophistication as Mediating Variable

The review of the literature for AIS sophistication as a mediating variable has been discussed in the previous subsections. According to McKinonn, Warsi and Dwyer (1995) and Baron and Kenny (1986) for mediation to take place, the following four conditions must be observed:

1. The independent variable (IV) must influence the dependent variable (DV) significantly.

2. The IV must influence the mediating variable (MV) significantly.

3. The MV must influence DV significantly.

4. To establish that the mediating variable fully mediates the relationships between independent variable and dependent variable, the impact of independent variable on dependent variable should be zero or β value must not be significant; whereas, partial mediator exists when β is significant but at a reduced level.

To give more understanding about the mediating variable, David P, Mackinnon, Coxe, Amanda N, and Baraldi (2012) mentioned that, Business theories regularly specify the mediation mechanisms by which a predictor variable influence on outcome variable. In this way, they stated that, the understanding of the potential relationship of the mediation analysis considered as an appropriate and important approach in this area. The mediation relationship

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occurs, when we are considering the relationship of an independent variable (X) and a dependent variable (Y), an additional variable (Z) may fill one of a number of roles. Every role for the third variable illustrates both of a different theories model of the relationship between X Y, and Z, as well as a different method to the statistical analysis. So that, the third variable that is both unrelated to the predictor X and have little to no impact on the association between X and Y is called a covariate; a covariate is not often of essential theoretical interest but it used to account for the additional variation in the outcome Y. Besides that, a third variable Z can be related to both X and Y in a particular way, that, the inclusion of Z changes the association between X and Y.

Regarding the issue of the current study is to address AIS sophistication as a mediating variable on the relationship between organizational factors, technological factors, and environmental factors and the organizational performance of SMEs in Saudi Arabia context. Therefore, the following arguments of the previous studies are provided.

Firstly, Christina (2013), examined the mediating impact of Management Accounting Information System (MAIS) on the association between knowledge of accounting function, perception environmental uncertainty, and managerial performance. The study was based on a survey approach, which distributed among managers of industrial manufacturing listed in Indonesian Stock

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Exchange. The findings of the study indicated that Management Accounting Information System (MAIS) mediates the association between knowledge of accounting function, and the perception of environmental uncertainty on managerial performance.

Secondly, Ahemed, Smith, Ismail, and Roni (2014) affirmed that, Accounting Information System (AIS) is a central for a company and it provides valuable data for decision makers. In this regard, the study of Ahemed, *et.al,* (2014) examined how the component of AIS, executive vision and IT skills influence the firm performance. They used a resource-based-view (RBV) framework and the data collected from 366 of SMEs in Malaysia context. Their findings of the study implied that, the impact of AIS on the firm performance had a partial mediation by information transparency, a component of corporate governance, whereas a full mediation impact had been occurred for executive vision and IT skills on the firm performance. The findings, therefore, clarify the importance of transparency on AIS to greater depth, promoting SMEs to rearrange their policies on AIS, staff training, and largely transparency to better enhancement for firm performance.

Thirdly, more importantly a study a conducted by Al-Shbiei and Al-Olimat (2016) examined the effectiveness of AIS as a mediator variable on the relationship between IT and the competitive advantage. The study come out with interesting results, firstly the study's findings express that there is an effect

of IT on the competitive advantage, and there is an influence of AIS effectiveness on the competitive advantage. Secondly, the study's findings also revealed that, there is a significant effect for AIS effectiveness as a mediator variable on the association between IT and the competitive advantage.

Regarding the importance of AIS in Saudi Arabia's SMEs context, a study investigated by Trabulsi (2018) indicated that, AIS considered as a vital organizational mechanism in which is critical for the effectiveness of decision-making and control in organization. In this regard, Trabulsi (2018) examine the effect of AIS on the organizational performance's dimensions, which are (cost reduction, improving quality, and effective decision-making) in SMEs of Saudi Arabia context. The findings of this study express that using an AIS has a significant influence on the organizational performance normally and on all its dimensions particularly involving cost reduction, improving quality and effective decision-making. They conclude that more attention should be made towards AIS as an improvement tool for the better organizational performance.

In addition, a study implemented by Al-dmour, Al-Fawaz, Al-dmour, and Allozi (2017) stated that there are some studies did not find a direct association between AIS and a firm's business performance, While, there are other studies found a direct association occurred between AIS and firm's businesses performance. In this regard, it is confirmed that, the implementation of an appropriate Accounting Information System (AIS) is considered as an enabler

to the competitive advantage. Absolutely, causal links have been recognized on the relationship between AIS and firm performance.

Regarding AIS sophistication factor, it was use as proxy for the growth stage of small businesses by the authors Durler and Luehlfing (2015). In this regard, Durler and Luehlfing (2015), struggles to provide insights that relevant of owner or manager awareness of Electronic Data Interchange (EDI) benefits, the owner or manager perception of Electronic Data Interchange benefits when the implementation of EDI has been forced (mandated) by a trading partner in small business. Besides, the independent variables of this study are owner or manager perception of EDI forced and owner or manager awareness of EDI benefits. Meanwhile, the dependent variable of this research is the growth stage of business, which considered as the proxy for the level of AIS or IS sophistication. The findings of their research implied that, the ANOVA analysis determines that the level of AIS or IS sophistication has an association with the owner or manager awareness of EDI benefits although the findings of the factor analysis propose that owner or managers may not be as aware of EDI risks (versus EDI benefits).

Based on the above arguments of previous studies, the following hypotheses demonstrate the relationship between independent variables of this research and AIS sophistication as a mediating variable:

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H13: *The relationship between importance of IT and SMEs performance is mediated by AIS sophistication.*

H14: *The relationship between owner or manager knowledge and SMEs performance is mediated by AIS sophistication.*

H15: *The relationship between owner or manager education and SMEs performance is mediated by AIS sophistication.*

H16: *The relationship between owner or manager experience and SMEs performance is mediated by AIS sophistication.*

H17: *The relationship between IT investment and SMEs performance is mediated by AIS sophistication.*

H18: *The relationship between environmental condition and SMEs performance is mediated by AIS sophistication.*

3.3.4 AIS Sophistication and Performance

The management accounting can assist managers to enhance their organization performance through two ways. Firstly, by using such information in which helps businesses to manage short-term problems in areas, such as, costing, expenditure, and cash flow, by proper monitoring and control. Secondly, by using management accounting information in which can also help businesses to integrate operational considerations within long-term strategic plans (Mitchell *et al.,* 2000). Besides that, Gande *et al.,* (2011) provided empirical evidence that there is a positive relationship between AIS and performance among the SMEs in Spain. Recently, Al-Dalaien and Khan (2018) express that, the regression analysis of their research on the relationship

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between accounting information system (AIS) and the financial performance has a significant association.

Furthermore, a study implemented by Trabulsi (2018) examined the effect of AIS on the dimensions of organizational performance in SMEs of Saudi Arabia context. The dimensions of organizational performance are cost reduction, improving quality and effective decision-making. The data of this paper was gathered throughout surveys that targeted the SMEs sector in Saudi Arabia. Then, the data analyzed by using a certain statistics package program, which called Smart Partial Least Squares (SPLS). The findings of this paper emphasis that, AIS has a significant relation with the organizational performance generally and on its all dimensions particularly involving cost reduction, improving quality and effective decision-making. Trabulsi (2018) concluded that, the using of AIS could improve the effectiveness of decision making, which is on the same direction of the study's findings of (Onaolapo and Odetayo, 2012).

Additionally, Arisman, Rohman, and Chariri (2015) examined the relationship between accounting information system integration and the organizational performance that has been tested throughout accounting system control as intervening variable. The sample of their study was the companies listed in Indonesia Stock Exchange. The data analysis conducted based on the usage of Structural Equation Model (SEM) by using Warp PLS 3.0, and theory of their study was the theory of Resource Based View (RBV). The findings of their study expressed that, the impact of accounting information systems integration and the organizational performance were not significant and expressed

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positive association. The findings of the impact of accounting information system integration on accounting system control revealed a significant and positive association. The companies used AIS integration to increase accounting systems control process. Besides, the effect of accounting systems control on the organizational performance showed a positive and significant relationship. The results of their study provided evidence that the usage of accounting information system integration for companies have indirect capability for increasing the organizational performance through accounting systems.

In addition, the study of Al-dmour, AL-Fawaz, Al-dmour, and Allozi (2017) indicated that, the review of their literature review regarding the relationship between AIS and firm performance, determined that some studies' results provide a direct relationship between AIS and firm performance, while the other studies' results expressed indirect relationship between AIS and firm performance. This leads to the formulation of the following hypothesis:

H19: There is a relationship between AIS sophistication and SMEs performance.

Table 3.2 below illustrates all the relations discussed above.

Table 3.2
List of Research Hypotheses

No.	Hypothesis
(H1-H6): The effect of IVs ⟶ Performance	
H1	There is a relationship between importance of IT and SMEs performance.
H2	There is a relationship between owner or manager knowledge and SMEs performance.
H3	There is a relationship between owner or manager education and SMEs performance.
H4	There is a relationship between owner or manger experience and SMEs performance.
H5	There is a relationship between IT investment and SMEs performance.
H6	There is a relationship between environmental condition and SMEs performance.
(H7-H12): The effect of IVs ⟶ AIS sophistication	
H7	There is a relationship between importance of IT and AIS sophistication.
H8	There is a relationship between owner or manger knowledge and AIS sophistication.
H9	There is a relationship between owner or manager education and AIS sophistication.
H10	There is a relationship between owner or manager experience and AIS sophistication.
H11	There is a relationship between IT investment and AIS sophistication.
H12	There is a relationship between environmental condition and AIS sophistication.
(H13-H19): The mediating hypothesis	
H13	The relationship between importance of IT and SMEs performance is mediated by AIS sophistication.
H14	The relationship between owner or manager knowledge and SMEs performance is mediated by AIS sophistication.
H15	The relationship between owner or manger education and SMEs performance is mediated by AIS sophistication.
H16	The relationship between owner or manger experience and SMEs performance is mediated by AIS sophistication.
H17	The relationship between IT investment and SMEs performance is mediated by AIS sophistication.
H18	The relationship between environmental condition and SMEs performance is mediated by AIS sophistication.
H19	There is a relationship between AIS sophistication and SMEs performance.

3.5 Summary

In this chapter, the research theoretical framework is presented and followed by the formulation of hypotheses. The framework contains the factors that are related to AIS sophistication and its impact on the organizational performance in SMEs in Saudi Arabia. It is examined by a questionnaire method. This is approach is discussed in chapter four.

CHAPTER FOUR

RESEACH METHODOLOGY

4.1 Introduction

Having reviewed the relevant literature and discussed the model for this study, the next step is research methodology. This chapter is concerned with design the research in the way that the requisite data could be gathered and analyzed to answer research questions and achieve objectives of research. Specifically, this chapter will discuss the research design, sampling procedures, instrumentation, validity and reliability of the study instrument, data collection, and the data analysis methods that used to test hypothesis.

4.2 Research Design

Research design helps the researcher to provide general plan of how to go about answering research question (Saunders, Lewis, & Thornhill, 2009). It also provides the glue that holds the research project together (Trochim & Donnelly, 2006).

It has believed that, the best research method than can be used in study depends mainly on study's research purpose and associated objectives (Yin, 2003). In another perspective, Leedy and Ormrod (2005) stated that the best method to learn about the relationship among measurable variables with the intention of explaining, predicting and managing phenomenon is quantitative research method.

The quantitative approach is very useful to analyze and prove theories, discover important variables for future research and related variables posed by questions or hypothesis, using standards of validity and reliability and statistical procedures (Creswell, 2009). In addition, the use of quantitative methods is more appropriate when the developed conceptual model needed to be tested across a wider sample of the population (Deshpande, 1983).

Therefore, the current study used a survey method to investigate the factors that influence AIS sophistication and its impact on the organizational performance, as well as, it examine the influence of importance of IT, owner or manager knowledge, owner or manager education, owner or manager experience, IT investment, environmental condition and AIS sophistication (within mediating that explain independent variables) on the organizational performance in SMEs in Saudi Arabia.

In other words, this study will utilize quantitative approach and will employ a cross sectional survey method. The cross-sectional survey method has chosen because it is an approach allows for collection of a large amount of data from a sizeable population in a highly economical way. It is also possible through the survey strategy to generate findings that are representative of whole population.

4.3 Research Equations

Hypothesis 1 through 19 was tested using the liner and multiple regression techniques. To investigate the influence of independent variables (i.e., importance of IT, owner or

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manager knowledge, owner or manager education, owner or manager experience, IT investment, environmental condition) on organizational performance of SMEs. Mediated regression was used to evaluate the impact of AIS sophistication on the relationships between independent variables and organizational performance of SMEs.

The multiple regression equations established in this study are:-

1- OP = f (IT, OMK, OME, OMX, IN, EC)

2- AIS = f (IT, OMK, OME, OMX, IN, EC)

3- OP = f (IT, OMK, OME, OMX, IN, EC)

4- OP = f (AIS)

In the above equations, OP is the dependent variable organizational performance; IT, OMK, OME, OMX, IN, and EC are the independent variables (i.e., importance of IT, owner or manager knowledge, owner or manager education, owner or manager experience, IT investment, environmental condition); AIS (AIS Sophistication) is the mediator variable (i.e., AIS sophistication).

The regression of this research conducted based on the following three steps:
The first step of equation is to examine the relationship between IVs and Organizational performance. Meanwhile, the multiple regression of the current research denotes that, IT=importance of IT, OMK=owner or manager knowledge, OME=owner or manager education, OMX=owner or manager experience, IN=IT investment, and EC=environmental conditions is regarded as the independent variables (IVs) against

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OP=Organizational Performance which is the dependent variable of this research. The second step of the equation of the equation is to test the relationship between IVs and AIS sophistication of the current research. In this regard, the regression analysis of this research signifies that IT, OMK, OME, OMX, IN, and EC, as the independent variables influence the AIS sophistication (AIS). Therefore, the impact of IVs against the AIS sophistication (AIS) in this research is explaining how these independent variables will affect the AIS sophistication variable (AIS). The third step of the current research equation is to investigate the relationship between IT, OMK, OME, OMX, IN, and EC, as the independent variables and the AIS sophistication as a mediating variable of this research. The final step of the current research equation is to investigate the relationship AIS sophistication (AIS) and the Organizational Performance (OP).

To sum up, the regression of equations analysis of the current research framework was implemented based on the mechanism of mediation investigation in which was followed, the scientific mediation mechanism as conducted previously by David P, Mackinnon, Coxe, Amanda N, and Baraldi (2012).

4.4 Research Sampling

The total population of this study is 78,488 SMEs. Besides that, the population consists of all SMEs in Riyadh, Eastern Saudi Arabia, and Mecca. In details, the table 4.1 demonstrates the population technique that has been applied in this research. The details of the population of this study have been extracted from the General Organization for Social Insurance (GOSI) publishes modern statistical lists and information. The

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population of this study has been chosen based on Sekaran and Bougie (2010) technique as the following table:

Table 4.1
The Research Population

Region	Population
Riyadh	34,357
Western	25,624
Mecca	18,507
Total	78,488

According to Sekaran and Bougie (2010) sample is a subset of the population, which the authors defined as the "entire group of people, events, or things of interest that the researcher wishes to investigate". However, studying the research sample will enable the researcher to point out the conclusions that are generalization to the population of interest.

In the previous AIS studies, some of the researchers mentioned that the sample in their research included the recruiters and the senior students (Lee & Fang, 2008). Others mentioned that their samples included the managers or owners within SMEs (Theuri &Gunn, 1998). The sample for this study is drawn from one type of respondents who are interested with the organizational performance within SMEs in Saudi Arabia, which they are owners or managers of SMEs since the aim of this study is determine the factors that influence on the AIS sophistication and its impact on the organizational performance in SMEs in Saudi Arabia. Moreover, this study is choosing the factors, which are most important, that influence on AIS sophistication and its impact on the organizational performance in SMEs in Saudi Arabia. Besides, the researcher selects

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owners or managers as respondents because the owners or managers considered as the more important element that are familiar with the information that relevant to the factors regarding to this research. Moreover, in this study the researcher defines SME as an enterprise with a number of employees lesser than 250 as was defined in EU in general, and in Saudi Arabia in particular (Almoawi & Mahmood, 2012; Bitzenis & Nito, 2005).

According to Saudi Arabia Monetary Agency (2010), the Saudi Arabia member states use the following classification:

a) Small enterprises: 1-49 employees; and.

b) Medium-sized enterprises: 50-250 employees.

In doing so, this study will depend on simple random sampling technique to distribute the questionnaires to the targeted respondents. The sampling technique of this study has been selected referring to the General Organization for Social Insurance (GOSI) publishes modern statistical lists and information. In details, the following Table 4.2 gives the sampling technique, which called the sample random sampling that will apply in this research. According to Sekaran (2006) the classification of sampling will be as the following table:

Table 4.2
The Research Sample

Region	Population	Classified Sample
Riyadh	34,357	168
Western	25,624	125
Mecca	18,507	91
Total	78,488	384

According to Sekaran (2010) the sampling technique by based on the table classification as illustrated by Seharan (2010) of the quantity population and what is the appropriate sample for every classification of quantity population, this classification indicated that the quantity population of 100,000 and less the maximum sample of 100,000 population is equal to the maximum of 400. In this case, the current study contains a population of 78488 1meaning that the sample of 384 is more appropriate for such quantity like 78488. Regarding the classification of every classified sample, it divided based overall total quantity of 78488 and then used a percentage amount for every classified sample based on the total number of sample 384. Here an example: the region Riyadh contains of 34357. So that, the calculation will be as the following:

The Riyadh Region Sample = 78488- 34357=44 x 384=16896÷100=168.6

4.5 Data Collection

The questionnaires will be collected using off-line survey method where the researchers gave the questionnaire to the respondents' hand to hand. This method was considered more suitable for collecting primary data in quantitative study since the researcher will have the opportunity to explain the instrument (Sekaran, & Bougie, 2010; Ismail, 2004). The following benefits are expected to be gained: (1) it allows the researcher to explain the concept to the respondents in a clearer way; (2) it gives high response rate since the researcher waits to collect the administered questionnaire; and (3) it encourages more effective responses (Sekaran, & Bougie, 2010; Zikmund, 2003). In tandem with Sudman

and Bradburn (1982), the researcher decided to use booklet type of questionnaire. The merits of using booklet questionnaire are as the following:

(1) It prevents pages of the questionnaire from being misplaced or lost; (2) it makes the respondents easily to navigate the pages of the questionnaire; (3) questionnaire in a booklet form appears professional, as it is easier to read; and (4) using of double page format for questions on multiple events or persons is possible.

4.6 Research Instrument Development

For collecting data phase, this study has adopted a questionnaire as a research instrument. The questionnaire is considered as common tools in survey research that is used for collecting data in the IS research (Ismail, 2004). In this study, a questionnaire is fit to be appropriate within SMEs in Saudi Arabia. Specifically, the questionnaire divided in to four parts. The questionnaire is shown in Appendix 1. Part one will be contained items regarding personal and SMEs demographic information. Part 2 involves independent variables, which classified in six sections. Independent variables contain items related to the independent variables, which are; importance of IT, owner or manager knowledge, owner or manager education, owner or manager experience, IT investment, environmental condition. Part 3 investigates the mediating role of AIS sophistication. Part four measures organizational performance and contains items related to the organizational performance of SMEs. See table 4.3 below.

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Table 4.3
Summary of the Questionnaire Organizing (Appendix A)

Part	Section	Contents
1		Demographic and personal information of SMEs
2		independent variables contain six sections
	A	importance of IT
	B	Owner or manager knowledge
	C	Owner or manager education
		C1: Owner or manager experience
		C2: IT investment
		C3: Environmental condition
3		Mediator variable AIS sophistication
4		Organizational performance of SMEs

4.7 Measurement of the Variables

The dependent variable is organization performance, the mediating variables is AIS, and the independent variable are (i.e. importance of IT, owner or manager knowledge, owner or manager education, owner or manager experience, IT investment, environmental condition). Specifically, the variables for the study are discussed as follows:

In term of scale design, the researcher has structured all constructs in the measuring instrument to use 5point Likert type of scale, including the independent, mediating and the dependent variables with the exception of the variable of IT investment and the mediating variable which is AIS sophistication which is measured by the accounting applications see the questionnaire appendix. According to Cavana *et al.* (2001); Cooper and Schindler (2008) the Likert scale has many advantages better than other scales such as it is easy and quickly to construct, probably more reliable and provide a greater volume of data than other scales, and it produce interval data. Besides all of

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these advantageous of likert scales, it is the one most frequently used to measures attitudes and behavior in organization (Sekaran & Bougie, 2010). Therefore, the researcher prefers to use 5-Likert scale since it is revealed to be the best understood way of communicating with the respondents (Olakunle, 2003). McKelvie (1978) stated that cross-sectional reliability was greater for 5 points scales than 7points scales. Specifically, the variables for the study are discussed in the following sub-sections.

4.7.1 Importance of IT

Importance of IT was measured using a 5-point scale (1= not imoprtant; 5= very important) develped by (Ismail& Abidin, 2009). Based on this measuremnt, respondents will be asked to identify relevant of importance of IT by asking 35 items to the respondents. Table 4.4 illustrates the sources and number of items related to Importance of IT.

Table 4.4
The Items Related to the Importance of IT

IV	Variables	Number of Items	Source of Items
Importance of IT		35	Ismail and Abidin(2009)

4.7.2 Owner or Manager Knowledge

Owner or manager knowledge was measured and developed by Ismail and King (2007). Based on this measurement, respondents were asked to indicate their knowledge level relating to financial and managerial accounting techniques, word processing, spreadsheet, database, accounting, e-mail, Internet and computer-assisted production

management applications. Table 4.5 shows the sources and number of items related to Owner or Manager Knowledge. Furthermore, this study follows the study of Ismail and Zin (2009) that used a 5-point scale (1 = no knowledge; 5 extensive knowledge).

Table 4.5
The Items Related to the Owner or Manager Knowledge

IV	Variables	Number of Items	Source of Items
Owner or manager knowledge		9	Ismail and King, (2007)

4.7.3 Owner or Manager Education

Background information on the small business, such   as owner or manager education, were also collected using questions from previous studies (Kasseeah 2012). Table 4.6 at the page 171 displays the sources and number of items related to owner or manger education. Kasseeah & Thoplan, (2012), measured the owner or manager educational level by the order category such as the primary level, secondary level, tertiary level, and so on.

4.7.4 Owner or Manger Experience

Background information on the small business owners or managers, such as experience, were also collected using questions from previous studies (Chiliya & Roberts-Lombard, 2012). Table 4.6 on the page 162 illustrates the sources and number of items related to owner or manager Experience.

4.7.5 IT Investment

Teo, Wong and Chia (2000) classified IT investment into four types of managemnt objetives which are: transactional, strategic, informational and threshold. The association between these management objective and the role of the company in terms of traditional, evolving and strategic have been investigated by a questionnair survey of managers in the service sector. They indicated that, companies that have adopted a traditional role of tend to use favor investment in transactional IT. They use four items to measure the IT investment. The Table 4.6 at the page 171 demonstrates the number of items and the sources related to the IT investment.

4.7.6 Environmental condition

Duncan (1972) argues that external environment comprises of different factors such as suppliers, customers, competitors, technological and socio-political factors. In this research, perceived environmental uncertainty measurement is developed in order to measure the responses of companies with respect to their relationship with external environment. In order to measure this construct, the questions were adopted from Khandwalla (1977), who operational zed it in terms of the perceptions of managers' about the level of change and unpredictability in the organization's competitors, markets, and production technology. Miller and Droge (1986) and Chow, Heaver and Henriksson (1995) importantly adapted and validated the original instrument. Using similar questions, the respondents were asked to assess the level of change and unpredictability in terms of the action of their competitors, demand for their products, change of their marketing practices, and rate of technological change in their industry.

Table 4.6 at the page 171 illustrates the sources and number of items related to Environmental condition.

4.7.7 AIS Sophistication

The instrument was tested initially with a small sample size of manufacturing companies in Canada, and was later adapted by some other researchers such as Raymond *et al.,* (1995) and Gragget al. (2002). Despite that, the instrument developed originally for SMEs; it could be equally used for big companies, as it is reasonable to speculate that these big companies have already employed technologies and computer applications for their operations. Raymond and Pare (1992) additionally recommended the usage of these instruments for large business organizations.

In addition, Ismail and King (2007) have developed and validated the original measurement, which was implemented in the context of SMEs. Whereby the respondents were being asked to determine whether they are able to adopt or not eighteen AIS applications. In order to measure the level of AIS sophistication the respondents have to indicate the numbers of application have been adopted by their firms. Therefore, 18 items measure AIS sophistication. Furthermore, Ismail (2009) used the same measurement to measure AIS sophistication. Table 4.6 on the page 171 displays the number of items and the source of the measurement related to AIS sophistication

4.7.8 Organizational Performance

The unavailability of objective data on performance from SMEs forced the questionnaire to request subjective, self-reported measures of performance to gauge the level of performance of firms. Respondents were asked to indicate the changes in the performance in the last three years using a self-rating scale. The data collected in this section will act as a proxy for recent improvements in actual firm performance and will give information for empirical testing of the research hypothesis. The constructs used are based on studies by Hoque (2004), Jusoh, and Parnell (2008). Table 4.6 on the page 161 illustrates the sources and number of items related to organizational performance. The current study measures the organizational performance by Hoque (2004) and Josoh and Parnell (2008) measurement, which implies that in SMEs context the measurement, have to be conducted by six items. Those six items have been classified into two main groups; the first group represents the performance at business level, which contains of three items, which are sales growth, operating profit, and cash flow growth rate. While, the second group represents the performance at operational level, which contains product quality, number of delivery on time, and level of productivity. On the other hand, the study conducted by Josh and Parnell (2008) the measurement involved twelve items because their study was implemented on small and large companies in Malaysia context. However, the presented study applied in SMEs in Saudi Arabia. Therefore, the reduction to six items in SMEs context is required, more appropriate, and more accurate because, the six items in SMEs context is embraced the two major levels of the firms, which, are the operational level, and the productivity level and the twelve items measurement as Josh and Parnell (2008) indicated is appropriate for the large

companies. According to Chandler and Hanks (1993), in their study questionnaires were returned by primary respondents in 120 companies; as well as, complete matching firm performance data from secondary respondents were returned for 45 of the firms.

Based on the objectives of this study, the researcher forced the questionnaires to request subjective to be a suitable way to measure organizational performance of SMEs. Regarding the measurement of the organizational performance a study conducted by Khan, Khalique, and Nor (2014) indicated that, measuring of the organizational performance is considered as a vital issue in the recent research scenario. They mentioned that, the researchers use different techniques and measures in order to evaluate the organizational performance. They added that, the researchers do not have consensus or an agreement on the measurements to be used for the purpose to measure the organizational performance. They also, determine that, the prior studies express that both subjective and objective measurements can be used to evaluate the organizational performance. So, they concluded that, their study is depend on the measurement that have been used previously by the prior literature, and their study recommended those measures which have been used by pervious researches to be used for the organizational performance. Therefore, as Khan, Khalique, and Nor (2014) stated that, the researchers do not have consensus on the measures of organizational performance. The current study is based on the measurement of Jusoh, Ibrahim, and Zainuddin (2008) which is measuring the organizational performance in which this instrument base on the choice of six variables provides in which is contain the three variables that represent performance at a business level and another three variables that represent performance at an operational level.

Table 4.6 illustrates The Items Related to the following independent variables which are owner or manager education, owner or manager experience, IT investment, and Environmental condition. In addition, the items related to the mediating variable AIS sophistication. And the items related to the dependent variable Organizational performance.

Table 4.6
The Items of the Rest of IVs, Mediating Variable and Dependent Variable

DV	Variables	Number of Items	Source of Items
	Owner or manager education	2	Kasseeah 2012
	Owner or manager experience	2	Chiliya and Roberts-Lombard (2012)
	IT investment	4	Teo, Wong and Chia (2000)
	Environmental Condition	6	Chow *et al.* (1995); Khandwalla (1997); Miller & Droge, (1986)
	AIS sophistication	18	Ismail and King (2007)
Organizational Performance		6	Ahmad and Zabri, 2013; Hoque, 2004; Jusohand Parnell, 2008.

4.8 Reliability and Validity of Instrument

Generally, reliability evaluates the stability of the scale based on an evaluation of the internal constancy of the items measuring the construct while validity evaluates the degree to which the items measure the theoretical construct.

4.8.1 Reliability

Reliability refers to the consistency of measures of concept (Bryman & Bell, 2011). In this case, to forecast scale reliability for each factor, the recommended measure of the internal consistency of a set of items is Cronbach's alpha coefficient must be counted for each indicated factor (Churchill, 1979). More consistent in answering among items for each factor, means its cronbach's alpha coefficient is higher.

According Nunnally & Berstein (1994) and Sekaran & Bougie (2010) value of alpha coefficient of 0.70 is considered good, but if value is more that 0.60 is acceptable. On the other hand, there is a flexibility of the value of alpha coefficient as the authors (Hair *et al.,* 2010) indicated that, the value of alpha coefficient in which is greater than 0.7 is preferable in many occasions, whereas the value that ranges between the value of 0.4 and the value of 0.5 is acceptable. In other words, the value of alpha increases with increase in correlation among items and the number of items, thus a high alpha indicates that the items correlate well with the true scores while a low alpha indicates that the items perform poorly on the construct of interest (Nunnally & Bernstein, 1994).

4.8.2 Validity

Validity refers to whether or not indicator that is devising to gauge a concept really measures that concept (Bryman & Bell, 2011). Validity of the scores in a survey helps to identify whether instrument might be a good one to use in survey research (Creswell, 2009). That is mean a measure is valid when it actually measures what it is intended to measure.

During the pilot test, experts such as academicians were assessed the content validity. Modification be made on the feedback that be received from them. Besides, to this, the study comprehensively used relevant literature in the process of designing the instrument.

For the Purpose of this study, the measurement scales selected along with its items were tested beforehand by eight experts, all of them PhD holders in accounting area in accounting departments of Malaysian, Yemeni, and Qatari universities, because the questionnaire was translated to Arabic version and have been validated by professional group in accounting area. Certain modifications were made in the questionnaire in light of the recommendations and constructive comments given by the professionals related to (some questions about the demographic profile and a number of questions related to measurement of the variable). It can be said that the content validity of the research is strengthened through a comprehensive and extensive review of the literature.

4.9 Data Analysis

Data analysis focuses on testing and interpreting influence relationships between independent variables (importance of IT, owner or manager knowledge, owner or manager education, owner or manager experience, IT sophistication, environmental condition), AIS on organizational performance of SMEs.

This study used several statistics tools from statistical package for social science (SPSS) version 19. In this study, five major statistical techniques will be undertaken, which are factor analysis, descriptive statistics, correlation analysis, and regression analysis.

4.10 Descriptive Statistics

The collected data analyzed with SPSS. Researcher analyzed data of demographic profile which are in part 1 in questionnaire, and descriptive statistics, like frequency, mean, minimum, maximum, standard deviation, range and percentage used to present demographic data.

4.11 Goodness of Measures

Even though this study used the instruments that are already tested by other studies, factor analysis performed for the purpose of determining the set of common underlying dimensions or known as factors of the construct (Hair, Black, Babin, Anderson, & Tatham,2010).

The study has used factor analysis is also to check whether each theoretical construct cluster together from the respondents 'eyes: thus, the main application of factor analysis is to reduce the number of variables to meaningful, interpretable, and manageable set of factors (Cavana*et al.,* 2001).

4.12 Correlation Analysis

The correlation analysis is conducted to examine the liner relationship between continuous variable basically between the independent variable and dependent variable (Coakes &Steed, 2003). This analysis has been used in this study to examine whether there is correlation between variables in the study or not.

4.13 Regression Analysis

Multiple regression analysis utilized in many steps to test hypothesis for the study. This technique is utilized to analyze the relationship between single dependent variable and several dependent variables (Field, 2005; Hair *et al.,* 2010). It is also used due it is capability to make prediction on the dependent variable based on the available predictor variables (independent variables). Thus, multiple regressions provide the relative contribution for each variable and show which variable between set of variables the best predictor of an outcome. However, the literature recommended that there are some assumptions of regression must be met in order to avoid the interpretation of a regression analysis. Specifically, the data should be checked for a number of important assumptions: the normality of the data, the linearity of the phenomenon, constant error variances (homoscedasticity) and multicollinearity.

In addition, to test the mediator relationship is also performed according to the methods and steps suggested by McKinonn, Warsi and Dwyer (1995) and Baron & Kenny (1986).

The four steps that recommended by authors as follow:

1. The independent variable (IV) must influence the dependent variable (DV) significantly ($\beta1$ must be significant)

2. The IV must influence the mediating variable (MV) significantly ($\beta2$ must be significant)

3. The MV must influence DV significantly ($\beta3$ must be significant)

4. To establish that the mediating variable fully mediates the relationships between independent variable and dependent variable, the impact of independent variable on dependent variable should be zero or $\beta4$, which is not significant; whereas, partial mediator exists when $\beta4$ is significant but reduced.

4.14 Operational Definitions

Cavana et al. (2001) said that the operational definition is a concept to render what each question is trying to measure by looking at the behavioral variables, facets or properties denoted by the concept. This refers to the elements or observed measurable elements in order to form an index of measurement of the concept. In other words, operational definition goes on the details of how the researcher will measure the variable in a deeper way. On the other hand, Zikmund, Babin, Carr and Griffin (2010) defined the operation-alizarin as the process of identifying scales that correspond to variance in concept to be involved in a research process. Therefore, the researcher discusses the operational definitions that are utilized in this research.

4.14.1 Importance of IT

Perception of owner or manager knowledge toward the importance of technologies in the context of their organizations (Ismail& Abidin, 2009).

4.14.2 Owner or Manager Knowledge

Owner or manager knowledge refers to knowledge level relating to financial and managerial accounting techniques, word processing, spreadsheet, database, accounting, e-mail, Internet and computer-assisted production management applications (Ismail&King, 2007).

4.14.3 Owner or Manager Education

Owner or manager education refers to owners or managers who took business courses in accounting or related business topics (Nicholls, 1988).

4.14.4 Owner or Manager Experience

Owner or manager experience refers to the previous experience in the industry or related business experience (Simpson*et al.,* 2004).

4.14.5 IT Investment

IT investment defined as an organizational investment that employing or producing IT or IT related assets. Each investment has or will acquire costs for the investment, has expected benefits arising from the investment, and deadlines, and has or will require risks associated with engaging in the investment (Badescu & Garces-Ayerbe,2009).

4.14.6 Environmental Condition

The environmental condition, which includes factors outside the boundaries of the organization that consist of customers, suppliers, competitors, socio-political, and technological (Chong & Chong, 1997; Kettelhut, 1992).

4.14.7 AIS Sophistication

Ismail and King (2007) described AIS sophistication as the extent of adoption or extent of use of AIS in the business of the firm. In addition, AIS sophistication represents AIS applications portfolio that have been adopted by the firms and AIS are measured by the level of AIS application.

4.14.8 Organizational Performance

Organization performance is considered as the evaluation provides information for managers to support the achievement of their organization's strategic objectives (Jusoh & Parnell, 2008).

4.15 Summary

This chapter discusses how the research objectives are going to be achieved by following of a number of research steps together with their justification. The discussion includes the research approach, data collection procedure and operational definition as well as the approach of the questionnaire development, and the instrument development.

CHAPTER FIVE

DATA ANALYSIS AND DISCUSSION

5.0 Introduction

The purpose of this chapter is to investigate the relationship between technological, environmental and organizational factors and their impact on AIS sophistication and organizational performance of SMEs. In doing this, the findings of the study are presented by this chapter taking into consideration the data that were collected from SMEs respondents in Saudi Arabia specific cities such as Riyadh, Western and Mecca context. SPSS was first used to analyze the data for descriptive purpose in order to understand specific features of the managers or owners of SMEs who are the respondents of this study. In order to establish the influence of independent variables on AIS sophistication and organizational performance of SMEs, a multiple-regression analysis was conducted.

5.1 Response Rate

As discussed in chapter three, the respondents of this study are the owners or managers of SMEs in Saudi Arabia. From the sample frame, we currently have 78, 488 owners or managers of SMEs in Saudi Arabia (GOSI, 2010). Based on this population, the sample determined for this study is 384 managers or owners of SMEs (GOSI, 2010). The researcher of the current study travel to Saudi Arabia for the purpose to distribute the questionnaires of the current study among the owners or managers of SMEs in Saudi Arabia hand-by-hand and face by face. In this regard, the process of distributing data was very hard and very cost because the researcher targeted as mentioned before three

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areas of classified sample. After having completed the distribution of questionnaires among owners or manager of SMEs in Saudi Arabia, then the searcher collect the data from every firm of SMEs after waiting a long time to get the data back from the respondents of SMEs. Therefore, the response rate of the questionnaires was illustrated on the Table 5.1.

Consequently, 384 questionnaires were distributed to the 384-targeted respondents. Distributing such large amount of questionnaire helps in reducing rate of invalid responses and a rationally acceptable response rate could be achieved. Based on the questionnaires that were distributed however, 253 were returned. Having checked the returned being questionnaire. However, it was discovered that 24 questionnaires were not properly filled. In view of this, the researcher discarded these questionnaires for incompleteness. Consequently, 229 questionnaires were used for data analysis of this study. Table 5.1 summarizes the distribution of the questionnaires for this study.

Table 5.1
Response Rate of the Questionnaires

Response	Frequency/Rate
Distributed questionnaires	384
Returned questionnaires	253
Badly Completed questionnaires	24
Usable questionnaires	229
Not returned questionnaires	131
Response rate	65.8%
Usable response rate	59.6%

As shown in Table 5.1, the rate of response was 65.6%, while 229 questionnaires representing 59.6% were valid for data analysis. Previous studies assert that this rate of return is adequate for analysis (Kosugi, Hamanaka, Hori & Nakajima, 2007; Line &Sneed, 2007). Sekaran and Bougie (2010) recently argue that 30 % response rate is sufficient for the survey studies. Therefore, the sample size for this study was appropriate for analysis.

5.2 Profile of Respondents

This study distributed its questionnaires to owners and managers of SMEs in Saudi Arabia. This process done as these respondents are in the best position to give their opinion about the issue at hand. Apart from this, the respondents equally have significant influence on the AIS sophistication and its effect on the organizational performance of SMEs in Saudi Arabia (Elliot, 1992). Consequently, therefore, series of questions concerning gender, position, age, years of operations / business, number of employees, activities sectors, and annual sales turnover were asked.

5.2.1 Positions of Respondents

Table 5.2 shows that there are two types of positions: owner or manger. However, from the descriptive, it is very clear that the 132 (57.6%) of the respondents occupy position of manager of the business. On the other hand, the other 97 respondents (42.4%) are owners of the business. This result clearly indicates that majority of SMEs in Saudi Arabia depend on employed managers to manage their businesses.

Table 5.2
Positions of Respondents

Position	Frequency	Percentage
Owner	97	42.4
Manager	132	57.6
Total	229	100

5.2.2 Gender of Respondents

As shown in Table 5. 3 below, 96.9% of the respondents are male, while 3.1% of the respondents are female.

Table 5.3
Gender of Respondents

Gender	Frequency	Percentage
Male	222	96.9
Female	7	3.1
Total	229	100

5.2.3 Years of Operations / Business

Table 5.4 depicts that the age of respondents under category 2-10 and the category that is more than 10 years have 42.4 % respectively in which the summation for the both categories is 84.8 % (42.4 + 42.4= 84.8 %). However, other respondents fall within the category of 1-3 years of operations with 15.3 % of the total of the respondents. This therefore indicates that the large percent of the respondents fall under the categories of 4-10 years and more than 10 years.

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Table 5.4
Years of Operations / Business

Years of operations	Frequency	Percentage
1-3 Years	35	15.3
4-10 Years	97	42.4
More than 10 years	97	42.4
Total	229	100

5.2.4 Activities Sectors

Table 5.5 shows the type of sector and activities, which the SMEs belong and engage in respectively. Therefore, it understood from the table that 32.8% engage in other activities, 19.2% engage in furniture activities, 17.5% of the SMEs are into food and beverage related activities while 11.8% engage in rubber and plastic activities. Other 8.3% of the SMEs engage in non-metallic mineral products 7% engage in chemicals & chemical products and 3.5% in basic metals. The majority of the responding SMEs are under furniture activities, food and beverage activities, rubber and plastic, and other activities.

Table 5.5
Manufacturing Activities Sectors

Sector	Frequency	Percentage
Furniture	44	19.2
Rubber and plastic	27	11.8
Food and beverage	40	17.5
Chemicals & chemical products	16	7.0
Non-metallic mineral products	19	8.3
Basic Metals	8	3.5
Others	75	32.8
Total	229	100

5.2.5 Number of Employees

Table 5.6 classifies employees into four categories of less than 5, 5 to 50, 51 to 150, and 151 to 250. From the table, it can be recognized that the bulk of the SMEs respondents employ 5 to 50 employees classification with 46.7%. In addition, other categories are those SMEs that employ 51 to 150 (24.9%), 5 (15.7%), and 151 to 250 (12.7%).

Table 5.6
Number of Employees

Number of Employees	Frequency	Percentage
less than5	36	15.7
5 –50	107	46.7
51 – 150	57	24.9
151 – 250	29	12.7
Total	229	100

5.2.6 Annual Sales Turnover

From Table 5.7, annual sales turnover grouped into different categories. In the Table 5.7 the sales turnover is classified into less than SR250, 000, SR250, 000 to SR1 million, SR1 million to SR5 million, SR5.million to SR10 million, SR10 million to SR25 million, and more than SR 25.0 million. Table 5.8.1 therefore indicates that 13.1% of the SMEs makes sales turnover that is less SR250, 000, 17.5% makes sales turnover of SR250, 000 to SR1 million, 15.7% makes sales turnover of SR1 million to SR5 million, 20.5%, makes sales turnover of SR5 million to SR10 million, 19.7%, makes sales of SR10 million to SR25 million, while 13.5% makes more than SR 25.0 million sales turnover. Therefore, the majority of the respondents' sales turnover is above one million.

Table 5.7
Annual Sales Turnover

Annual sales turnover	Frequency	Percentage
Less than SR 250, 000	30	13.1
SR 250, 000 to SR 1.0 million	40	17.5
SR 1.0 million to SR 5.0 million	36	15.7
SR 5.0 million to SR 10.0 million	47	20.5
SR 10 million to SR 25.0 million	45	19.7
More than SR 25.0 million	31	13.5
Total	229	100

5.2.7 AIS Sophistication of Using the Applications

In the current study, AIS sophistication used as the mediating variable. The AIS contains a number of the applications and the frequency analysis in respect of this was done with the purpose of identifying the percentage, which each application is was used by the respondents of this study.

The result in Table 5.8.1 shows that the average use of basic accounting applications is 56.41%. This percentage demonstrated in the Table 5.8.1 and which expresses the number of the percentage of respondents that are applied the AIs applications.

Table 5.8.1
AIS Sophistication Applications Used by the Companies

No.	Application	Number of Companies	Percentage
1	Account receivable	208	90.80 %
2	Financial accounting	208	90.80 %
3	Inventory	195	85.20%
4	Account payable	190	83.00%
5	Payroll	188	82.10%
6	General ledger	181	79.00 %
7	Personnel management	176	76.90%

Table 5.8.1 (Continued)

No.	Application	Number of Companies	Percentage
8	Billing	150	65.50%
9	Purchasing	144	62.90%
10	Budgeting	119	52.00 %
11	Order entry	113	49.30%
12	Financial analysis	97	42.40 %
13	Cost accounting	86	37.60 %
14	Modeling	64	27.90 %
15	Production planning and control	63	27.50%
16	Project management	52	22.70 %
17	Production variance	48	21.00 %
18	Budget variance	43	18.8 %
Using Percentage of all the 18 applications by the companies			56.41%

Regarding the AIS sophistication application and this divided into two categories of financial accounting applications, which made use of ten applications, and the managerial accounting used eight applications. Table 5.8.2 shows the outputs for every group of the applications (financial accounting applications and managerial accounting applications).

Firstly, Table 5.8.2 shows that ten applications adopted in the financial accounting. The table also shows that the mean for using the financial accounting application is around 0.76 with 77%. The table equally indicated that 75 % of SMEs use accounting financial applications which showed that, the increase in the rate of usage of those applications is associated with improved performance of the organization.

Table 5.8.2

AIS Sophistication for Financial Accounting Applications Used by the Companies

		Sum Muse, det		
	Fuse			
	Percentiles	Smallest		
1 %	.0	0		
5 %	.4	0		
10 %	.5	0	Obs	229
25 %	.6	0	Sum of Wgt.	229
50 %	.8		Mean	.76
		Largest	Std. Dev	.233
75 %	1	1		
90%	1	1	Variance	.059
95 %	1	1	Skewness	-1.18
99 %	1	1	Kurtosis	4.45
Sum Muse, det				

Secondly, Table 5.8.3 depicts that the eight applications used for the managerial accounting. The table shows that the mean of that application is 0.31with approximate of 31%. On the other hand, however, the table 5.8.3 shows that 25% of SMEs in Saudi Arabia do not use the managerial accounting applications. The results of table 5.8.3 show that improved in organizational performance achieved because of increase in the usage accounting managerial applications.

Table 5.8.3

AIS Sophistication for accounting managerial Applications Used by the Companies

		Sum Muse, det		
	Fuse			
	Percentiles	Smallest		
1 %	0	0		
5 %	0	0		
10 %	.0	0	Obs	229
25 %	0	0	Sum of Wgt.	229

Table 5.8.3 (Continued)

50 %	.25		Mean	.31
		Largest	Std. Dev	.29
75 %	.5	1		
90%	.875	1	Variance	.088
95 %	.875	1	Skewness	.68
99 %	1	1	Kurtosis	2.39
Sum Muse, det				

Table 5.8.4
The Regression Analysis for AIS Sophistication's Applications

Source	SS	Df	MS		Number of obs=	229
Model	44.1968	2	22.098		F (2 , 226)=	77.28
Residual	64.6243	226	.28594		Prob > F=	0.000
Total	108.821	228	.47728		R-squared=	0.406
					Adj R-squared=	0.400
					Root MSE=	.5347

OP	Coef.	Std.Err.	T	P > t	95 % Conf.	Interval
Fuse	1.26	.1689	7.47	0.00	.928	1.594
Muse	.744	.132	5.61	0.00	.4830	1.006
_Con	2.475	.1222	20.25	0.00	2.334	2.716

Based on Table 5.8.4 above that, shows R^2 value with respect to usage of AIS sophistication of 0.406 (refer to Table 5.8.4), denotes SMEs deploy eighteen different applications of AIS sophistication. (General ledger, account receivable, accounts payable, billing, order entry, purchasing, inventory, production planning and control, payroll, cost accounting, financial accounting, financial analysis, budgeting, project management, production variance, budget variance, modeling and personnel management). In addition, this deployment improves organizational performance by 40.61. However, testing of the component of AIS sophistication on the performance of organizational generates negative impact on the relationship. This therefore signifies

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that the positive influence of the relationship between the applications of AIS sophistication and the organizational performance appears when the researcher runs regression for AIS sophistication's applications as demonstrated in Table 5.8.4. The multiple regressions for each application of AIS sophistication with the organizational performance used in Table 5.8.5 to examine the significant relationship between AIS sophistication applications and the organizational performance. Consequently, the results of Table 5.8.5 show that the process of testing the applications of AIS sophistication on the organizational performance is correct.

The results for the multiple regressions for the application of AIS sophistication are significant for every application. This implies that the process for testing the statistical mean as revealed in Table 5.8.2 and Table 5.8.3 is correct. Apart from this, the results of Multiple Regression for each application of AIS sophistication have been shown in the following Table 5.8.5.

Table 5.8.5

Results of Multiple Regressions between Using Each Application of AIS Sophistication on the Organizational Performance

	General ledger	Account receivable	Accounts payable	Billing	Order entry	Purchasing	Inventory	Production planning and	Payroll	Cost accounting	Financial accounting	Financial analysis	Budgeting	Project management	Production variance	Budget variance	Modeling	Personnel management
Constant	4.009	4.408	4.323	4.369	4.369	4.319	4.506	4.506	4.233	4.632	4.443	4.315	4.856	4.472	4.631	4.554	4.664	4.747
B	-0.277	-0.672	-0.555	-0.517	-0.517	-0.428	-0.607	-0.607	-0.486	-0.556	-0.653	-0.395	-1.083	-0.506	-0.647	-0.496	-0.553	-0.591
Std. Error	0.111	0.152	0.116	0.090	0.090	0.087	0.086	0.086	0.125	0.096	0.111	0.091	0.141	0.086	0.081	0.104	0.106	0.116
T	-2.500	-4.420	-4.780	-5.750	-5.750	-4.920	-7.080	-7.080	-3.900	-5.810	-5.870	-4.350	-7.660	-5.860	-7.990	-4.770	-5.210	-5.370
Sig.	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R²	0.027	0.079	0.092	0.127	0.127	0.097	0.018	0.018	0.063	0.130	0.132	0.077	0.206	0.132	0.220	0.091	0.107	0.113
Prob> F	0.013	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

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5.3 Goodness of Data

As previously discussed in chapter three, several tests of reliability and validity such as content validity, construct validity, and criterion validity for all variables were conducted.

5.3.1 Content Validity

This is the adequacy or accurateness of scale or measure being sampled (Pallant, 2001). This therefore implies the variables that are involved have met the content validity as unanimously agreed by the judges who determined that the study's instruments contain all the items necessary for all the variables that are being measured (Sekaran, 2003). In ensuring content validity, three steps followed and this includes content domain description, determination of the areas of the content domain and comparison of the structure of the test with the structure of content domain (Murphy & Davidshofer, 1998). Furthermore, Sekaran (2003) also recommend three steps of measuring content validity. These steps include experts' judgment, behavioral domain conceptualization, and high internal consistency reliability. For this study, the measurement scales that were selected with its items, were subjected to test by eight experts. These eight experts are PhD holders in accounting area in accounting departments of Yemeni, Malaysian, and Qatari universities, this is because the questionnaire translated to Arabic version and was validated by professional group in accounting area. Based on, the recommendations and constructive comments of the experts, certain adjustments made in the questionnaire. (Some questions about the demographic profile and a number of questions related to measurement of the variable). It can be said that the content validity

of the research strengthened through a comprehensive and extensive review of the literature.

5.3.2 Reliability

This refers to the stability and consistency with which the instrument has been able to measure what it supposes to measure (Sekaran, 1992). In this study, the researcher employs internal consistency to measure the degree or level of inter-correlation among items (Sekaran, 2003). Importantly, various ways or methods used to measure internal consistency, but the most common way is the Cronbach's alpha coefficients that provide an indication of the average correlation among all items that make up the scale (Pallant, 2001). Consequently, an internal consistency analysis was conducted to test the reliability of the questionnaire instruments. Nunnally (1978) indicated that in exploratory studies the alpha value of 0.6 generally considered sufficient and acceptable, even though value of Cronbach's alpha 0.70 generally considered good. Table 5.9 shows the results of the reliability tests for each variable.

Table 5.9
The Reliability Statistics for All Variables

Variables	Cronbach's Alpha	N of items
Importance of IT	0.973	35
Owner or manager knowledge	0.950	9
Owner or manager education	-0.303	2
Owner or manager experience	0.701	2
IT investment	0.926	12
Environmental conditions	0.784	6
AIS sophistication	0.843	18
Organizational performance	0.849	6

From the above tables therefore, it can be ascertained that all the variables of the study are highly reliable since the Cronbach's alpha value of each variable ranges from .0.701 to .0.973 (Hair *etal*. 2006). This therefore implies that the variables of the study are ok for further analysis.

5.3.3 Construct Validity

In line with Gibbons, Dempster and Moutray (2009) factor analysis used widely for evaluating the construct validity of a scale or a test. Charles Spearman, Karl Pearson, and other researchers of early century (Charles Spearman Johnson and Wichern, 2007) developed factor analysis. Consequently, Zikmond et al. (2010) and Pallant (2007) equally described factor analysis as a technique of data reduction employed to categorize the fundamental variables from the original factors. Summarily, factor analysis] used in reducing and reclassifying a large number of items into a smaller number of items in new variables.

5.3.3.1 Factor Analysis Test on Importance of IT

The KMO, MSA and BTS results for importance of IT is as illustrated in Table 5.10 below.

Table 5.10
KMO, MSA and BTS Value for Importance of IT

Item	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.949
Bartlett/s Test of Sphericity Approx Chi-Square	8921.326
Df	595
Sig,	0.000

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From Table 5.10, it can be said that, the value of KMO, MSA was .949, and which is appropriate in line with the position of Kaiser (1974). Additionally, The BTS value was equally large (8921.326) and significant (0.000). The values of KMO, MSA and BTS therefore signified that the importance of IT was suitable for factor analysis.

Table 5.11
Loading Factor Using Varimax Rotation for Importance of IT

Items	Component				
	1	2	3	4	5
Word processing	0.604				
Electronic spreadsheets	0.546				
Electronic presentations	0.595				
E-Mail	0.636				
Internet search & retrieval	0.646				
Image processing	0.479				
Groupware	0.653				
Small business accounting software		0.646			
Tax return preparation software		0.645			
Time management and billing systems		0.640			
Electronic Working Papers			0.689		
Generalized Accounting Software			0.609		
Embedded Accounting Modules/Real-time audit modules			0.640		
Expert systems			0.644		
Firewall software/hardware				0.798	
External network configurations				0.794	
User authentication systems				0.822	
Internal network configurations				0.794	
Intrusion detection and monitoring				0.770	
Wireless communications				0.798	
Digital communications				0.763	
Encryption software				0.812	
EDI-traditional				0.800	
Agent technologies				0.761	
EDI-web based				0.768	
Cooperative client/server environment					0.815
Test data					0.769

Table 5.11 (Continued)

Items	Component				
	1	2	3	4	5
Database search and retrieval					0.811
Flowcharting/data modeling					0.759
Enterprise resource planning					0.790
Simulation software					0.798
Workflow technology					0.775
Database design and installation					0.779
Application service providers					0.821
Computer- Aided Systems Engineering (CASE) Tools					0.755

The findings in Table 5.11 show that all 35 technologies revealed minimal factor loadings. Importantly, factor loading defined as the relationship between an item and a given factor (Ho, 2006). Additionally, Hair et al. (2010) suggested, "Factor loading in the range of ±.30 to ±.40 is good for the minimum level of interpretation of structure" (Hair *et al.,* 2010, p. 117). Either to be regarded as significant therefore, a smaller loading is considered for a large sample size or a larger quantity of variables is being analyzed. Considering the sample size of this study (i.e. 249), ± 0.035 factor loading is significant for its sample and could be reduced due to the large number of variables that are analyzed (Hair *et al.,* 2010, pp. 117-118). Therefore, the finding illustrates that all factor-loading items had the values that are more than of 0.35 and which implies that the items that make up each of the factors were correlated significantly to the factor itself. This analysis therefore confirms that the 35 technologies can be measured by five factors.

5.3.3.2 Owner or Manager Knowledge

From Table 5.12 it could be ascertained that, the value of KMO, MSA was .92, and this confirmed as suitable for factor loading (Kaiser 1974). Additionally, The BTS value was

very large (1870.78) and significant (.000). Therefore, the values of the KMO, MSA and BTS revealed that the manager or manager knowledge was fit for factor analysis. In this regard, the results of extracted components of owner or manager knowledge variable are revealed in Table 5.12 as generated using the latent root criterion, which has been explained about 71.44 percent of the cumulative variance.

Table 5.12
KMO, MSA and BTS Value for Owner or Manager Knowledge

Item	Value
Kaiser-Meyer-Olkin Measure of Samoling Adequacy	0.92
Bartlett/s Test of Sphericity Approx Chi-Square	1870.78
Df	36
Sig,	0.000

The results of Table 5.13 also depict that all of the nine items of the owner or manager knowledge variable display factor loading that range from 0.80 to 0.87 and which implies that they significantly correlate to the factor. This analysis therefore ensures that the nine items of owner or manager knowledge measured the same variable.

Table 5.13
Results of Component Matrix for Owner or Manager Knowledge Factor

Items	Component 1
Financial accounting techniques	0.85
Management accounting techniques	0.86
Word-processing package	0.86
Spreadsheet package	0.86
Database package	0.88
Accounting-based applications	0.87
Computer-assisted production management	0.81
E-mail	0.75

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Table 5.13 (Continued)

Items	Component 1
Internet searching	0.79

5.4 Environmental Conditions

Table 5.14
KMO, MSA and BTS Value for Environmental Conditions

Item	Value
Kaiser-Meyer-Olkin Measure of Samoling Adequacy	0.80
Bartlett/s Test of Sphericity Approx Chi-Square	353.61
Df	15
Sig,	0.000

Table 5.14 above further shows that, the value of KMO, MSA was.80 and which is Ok in line with the recommendation of Kaiser (1974). Additionally, the value of BTS was large (353.61) and equally significant (.000). The KMO, MSA and BTS values therefore revealed that the environmental conditions were suitable for factor analysis. Consequently, the results of the extracted components for the environmental conditions variable is revealed in Table 5.15 as generated using the latent root criterion, which explained about 48.59 percent of the cumulative variance.

Table 5.15
Results of Component Matrix for Environmental Conditions Factor

Items	Component 1
The actions of your competitors are…	0.78
The demand for your product is…	0.76
To remain competitive, your firm must change its marketing practices…	0.68
The rate of technological evolution in your industry is…	0.62
Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company...	0.67

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Table 5.15 (Continued)

Items	Component 1
The legal, economical, and political constraints surrounding your company have remained about the same…	0.63

Therefore, factor loading for all the six items with respect to environmental conditions variable show a factor loading that range from the value of 0.62 to 0.78 and which explains that the items significantly correlate to the factor itself. This therefore implies that all the six items of the environmental conditions measured a single same variable.

5.5 Organizational Performance

Table 5.16
KMO, MSA and BTS Value for Organizational Performance

Item	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.81
Bartlett/s Test of Sphericity Approx Chi-Square	611.71
Df	15
Sig,	0.000

From Table 5.16, it can be understood that the KMO, MSA value was .81, and is suitable in line with the recommendation of Kaiser (1974). Importantly too, the BTS value was equally large (611.71) and significant (0.000). Therefore, the values of KMO, MSA and BTS revealed that the organizational performance variables are fit for factor analysis. Apart from this, the findings of extracted components with respect to organizational performance variable are equally displayed in Table 5.16. These values were generated using the latent root criterion and this value was explained by 57.51 percent of the cumulative variance.

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Table 5.17
Results of Component Matrix for Organizational Performance Factor

Items	Component 1
Level of the productivity	0.71
Product quality	0.62
Number of deliveries on time	0.66
Sales growth rate	0.85
Operating profit growth rate	0.83
Cash flow growth rate	0.82

Table 5.17 equally expresses that the factor loading for all the six items of the organizational performance exhibit factor loading that ranges from the value of 0.62 up to the value of 0.85 is implying that the items are considerably fit for factor analysis. Thus, this analysis indicates that the six items of the organizational performance measure the same variable.

5.6 Hypotheses Restatement

In this section, the hypotheses were restated in response to the results of the factor analysis as presented in the previous section. Table 5.18 expresses the hypotheses that are tested as following.

Table 5.18(a)
The Restatement for the Hypotheses (IVs $\longrightarrow$ OP)

Code	Hypotheses
H1	There is a relationship between importance of IT and SMEs performance.
H2	There is a relationship between owner or manager knowledge and SMEs performance.
H3	There is a relationship between owner or manager education and SMEs performance.
H4	There is a relationship between owner or manger experience and SMEs performance.
H5	There is a relationship between IT investment and SMEs performance.

Table 5.18 (a) (Continued)

Code	Hypotheses
H6	There is a relationship between environmental condition and SMEs performance.

Table 5.18(b)

The Restatement for the Hypotheses (IVs →AIS sophistication)

Code	Hypotheses
H7	There is a relationship between importance of IT and AIS sophistication.
H8	There is a relationship between owner or manger knowledge and AIS sophistication.
H9	There is a relationship between owner or manager education and AIS sophistication.
H10	There is a relationship between owner or manager experience and AIS sophistication.
H11	There is a relationship between IT investment and AIS sophistication.
H12	There is a relationship between environmental condition and AIS sophistication.

Table 5.18(c)

The Restatement for the Hypotheses (IVs, and Performance are Mediating by AIS Sophistication)

Code	Hypotheses
H13	The relationship between importance of IT and SMEs performance is mediated by AIS sophistication.
H14	The relationship between owner or manager knowledge and SMEs performance is mediated by AIS sophistication.
H15	The relationship between owner or manger education and SMEs performance is mediated by AIS sophistication.
H16	The relationship between owner or manger experience and SMEs performance is mediated by AIS sophistication.
H17	The relationship between IT investment and SMEs performance is mediated by AIS sophistication.
H18	The relationship between environmental condition and SMEs performance is mediated by AIS sophistication.
H19	There is a relationship between AIS sophistication and SMEs performance.

5.7 Descriptive Statistics of Study Variables

Descriptive statistics meant to describe the features of the variables. In this view, standard deviation, mean, maximum and minimum values were computed. The results of these descriptive statistics were presented together. For the clarification of the mean scores, three (3) was used as a benchmark for the mean score for the five point Likert scale. Regarding this, a mean score that is more than three is regarded high (positive), while any score that is less than three is regarded low (negative) (National Institute of Standard and Technology, 2010).

In the Table 5.19 each variable was coded where IIT represents importance of IT, OMK indicates owner or manager knowledge, OME represents owner or manager education, OMX means owner or manager experience, IN indicates IT investment, EC represents environmental conditions, AIS implies AIS sophistication, while OP represents organizational performance. The value of mean for all variables in the current study falls between (3.51) to (3.96) while the standard deviation values ranged between (0.67) to (1.01).

Table 5.19
Descriptive Statistics of Variables

	Minimum	Maximum	Mean	Std Deviation
IIT	1.00	5.00	3.96	0.73
OMK	1.00	5.00	3.89	0.84
OME	1.00	5.00	3.51	0.84
OMX	1.00	5.00	3.54	0.80
IN	1.00	5.00	3.82	0.82
EC	1.00	5.00	3.47	0.67
AIS	1.00	5.00	3.18	1.01
OP	1.00	5.00	3.67	0.69

5.8 Criterion Validity

Criterion validity describes the correlation between scale scores and some particular measurable criterion (Pallant, 2001). In this view, the researcher conducted a criterion-related validity analysis by using the six variables of this study. In the first step, Importance of IT, Owner or manager knowledge, owner or manger education, owner or manger experience, IT investment, and environment conditions treated as independent variables while in the second step, AIS sophistication examined as a dependent variable.

Normally, collineraity or criterion validity could be measured in different or various ways. Previous researchers have used Tolerance Value, Variance Inflation Factors (VIF) and Pearson correlations. In view of this, test of multicollinearity among independent variables is very necessary because the existence of multicollinearity can reduce the results of multiple regressions. Importantly, a Pearson correlation used in illustrating the correlation between two or more independents variables where the correlation is significant at 0.0l level or at 0.05 levels. Based on rule of thumb, Pearson correlation with significant value that is higher than 0.8 signifies presence of multicollinearity between the independent variables (Cooper&Schindler, 2003; Sekaran, 2000).

In this study, multicollinearity was investigated and the result is presented in Table 5.20. Summarily, the table shows the relationships between independent variables and dependent variable. In general, the relationship between importance of IT and the organizational performance is significant with low positive correlation. This is equally applicable to the relationship between owner or manager knowledge, owner or manger experience, owner or manager education, IT investment, AIS sophistication and the

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organizational performance. On the other hand, however, the relationship between environmental conditions and the organizational performance is very weak (0.01) while the relationship between environmental conditions and the organizational performance is not significant.

Table 5.20
Pearson Correlation of the Variables

		IIT	OMK	OMX	OME	IN	EC	AIS	OP
Importance of IT (IIT)	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	229							
Owner or Manager Knowledge (OMK)	Pearson Correlation	.36**	1						
	Sig. (2-tailed)	.000							
	N	229	229						
Owner or Manager Experience (OMX)	Pearson Correlation	.17**	.35**	1					
	Sig. (2-tailed)	.007	.000						
	N	229	229	229					
Owner or Manager Education (OME)	Pearson Correlation	.053	.28**	.33**	1				
	Sig. (2-tailed)	.424	.000	.000					
	N	229	229	229	229				
IT Investment (IN)	Pearson Correlation	.22**	.16*	.18**	.18**	1			
	Sig. (2-tailed)	.001	.012	.005	.006				
	N	229	229	229	229	229			
Environmental Condition (EC)	Pearson Correlation	.127	.073	.006	.058	-.005-	1		
	Sig. (2-tailed)	.056	.273	.924	.381	.934			
	N	229	229	229	229	229	229		
AIS Sophistication	Pearson Correlation	**.28****	**.34****	**.36****	**.32****	**.55****	-.008-	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.902		
	N	229	229	229	229	229	229	229	
Organizational Performance (OP)	Pearson Correlation	**.19****	**.38****	**.51****	**.40****	**.41****	**.01**	**.59****	**1**
	Sig. (2-tailed)	.003	.000	.000	.000	.000	.829	.000	
	N	229	229	229	229	229	229	229	229

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Note: (IIT) = Importance of IT;(OMK) = Owner Or Manger Knowledge; (OMX)= Owner Or Manger Experience; (OME)= Owner Or Manger Education; (IN)= IT investment; (EC)= Environmental Condition; (AIS)= Accounting Information System Sophistication; (OP)= Organizational Performance.

The result in Table 5.20 expresses no multicollinearity between independent variables as the Pearson correlation figures for all independent variables are less than 0.8(Allison, 1999; Cooper, & Schindler, 2003; Kennedy, 1985; Sekaran, 2000).

5.9 Correlation Analysis

Pallant, (2001) describes correlation analysis as a statistical technique that used to describe the direction and strength of the linear relationship between two variables. The degree of correlation is essential to measure the importance and strength of a relationship that exists between the variables. In order to achieving this, the vicariate association applied. This technique helps in calculating the Pearson's correlation coefficient with significance levels. The Pearson correlation coefficients can only be used to pick up one value that ranges from - 1 to +1. The degree of the exact value with avoiding the sign provides an indication of the strength of the relationship between two variables. Additionally, the perfect correlation of 1 or -1 which is used to determine the value of one variable can be equally be used to accurately know the value of other variable. Following from this, the value 0 therefore shows lack of relationship between the identified two variables. Besides that, Cohen (1988) provides a standard to describe the strength of the relationship between two variables (r) as shown in Table 5.21 below.

Table 5.21
Cohen's Guideline of Correlation Strength

r values	Strength of relationship
r= +.10 to .29 or r= .10 to -.29	Small
r=+ .30 to .49 or r= - .30 to - .49	Medium
r= + .50 to 1.0 or r= - .50 to – 1.0	Large

The Table 5.21 shows, that a small relationship exists between importance of IT and the organizational performance (r=0.198, P<0.01), while the association of environmental conditions and the organizational performance is weak (r=0.014, P< 0.01), and the relationship of owner or manager knowledge is medium (r= 0.38, P< 0.01). Whereas that of owner or manager experience and the organizational performance is large (r=0.517, P< 0.01). Concerning relationship between owner or manager education and the organizational performance is medium (r= 0.408, P< 0.01), that of IT investment and the organizational performance is also medium (r=0.418, P< 0.01), AIS sophistication and the organizational performance is strong (r=0.590, P< 0.01).

5.10 Testing the Model Using Regression Analysis

To obtain the desired results based on data collected and hypotheses formulated, the researcher used a multiple regression analysis. Multiple regressions give information about the contribution of every variable and clearly indicate which of the variables can best predict the behavior of dependent variable. For instant, R^2 specifies how well a set of variables (independent variables) are able to predict outputs that effect on the organizational performance.

Table 5.22
Model Summary

Model	R	R Square	Adjusted R square	Std.Error of the Estimate	Durbin Watson
1	.663	.439	.424	.52423	1.857

In this regard therefore, the R^2 value of 1 implies that there is a perfect linear relationship between the independent variables and dependent variable. However, R^2

value that is equal to 0 indicates that there is no linear relationship between the independent and independent variables. In the model of this study, the value of R^2 for the first phase of analysis regression model is 0.439 (refer to Table 5.22) and which implies that independent variables (importance of IT, owner or manager knowledge, owner or manger education, owner or manger experience IT investment, environment condition) explains 43.9 percent of the variance in the organizational performance. In essence, most of the independent variables have magnitude effect on the organizational performance. In addition, the standard multiple regressions also provide an adjusted R^2 value. "The adjusted R^2 statistic 'corrects' R^2 value to give a better evaluation of the true populations value" (Pallant, 2001, p. 145).

ANOVA used to evaluate the statistical significance of the findings. The outputs in Table 5.23 show that R^2 was statistically significant, with F= 28.99 and $p < .001$. This therefore implies that the null hypothesis (in which the multiple R in the population is equal to 0) is rejected but the model of the current study is statistically significant at p=0.000.

Table 5.23
The ANOVA (a) Results

Model	Sum of squares	Df	Mean square	F	Sig.
1Regresssion	47.81	6	7.96	28.99	.000
Residual	61.01	222	.27		
Total	108.82	228			

5.11 Evaluating Each of the Independent Variable

This section   meant to recognize and compare the influence of all the independent variables on the dependent variable. In essence, it tends to know which of the independent variable contributed most to the variance of the dependent variable using Beta value. The findings in Table 5.24 therefore reveal that all variables except environmental conditions and importance of IT significantly contributed to organizational performance. However, the contribution of owner or manger experience on the organizational performance was the highest amongst the independent variables (β = .342). Furthermore, other variables also have positive and significant contribution to the organizational performance in descending order of IT investment, owner or manager education, and owner or manager knowledge.

In all, Table 5.24 shows the level of significance between all the six independent variables and dependent variable. Importantly,   all the six variables were analyzed and the results of the analysis revealed that, owner or manager knowledge (β = .15, P= .010), owner or manager education (β =.19, P= .000), owner or manager experience (β = -.15, P= .001), interpersonal skills (β = .43, P=.001), current technological state (β = .34, P= .000), and IT investment (β= .29, P= .000) were all significant while importance of IT (β = .00, P=.89), and environmental conditions (β = - 0.10, P= .84 were not.

Table 5.24
The Coefficients (a) Value

Model	Unstandardized coefficients		Standardized coefficients	t	Sig
	B	Std. Error	Beta		
1 (constant)	0.66	.30		2.14	.03
IIT	.007	.05	.00	.12	.89
OMK	.12	.04	.15	2.61	.01
OME	.16	.04	.19	3.61	.00
OMX	.29	.04	.34	6.10	.00
IN	.24	.04	.29	5.5	.00
EC	-.01	.05	-.01	-.19	.84

Table 5.25
Results of Multiple Regression Between AIS Sophistication and Organizational Performance

Model	Unstandardized coefficients		Standardized coefficients	t	Sig
	B	Std. Error	Beta		
1 (constant)	2.39	.12		19.62	.000
AIS	.40	.03	.59	11.01	.000

The second step of regression analysis is to test the linear regression between independent variables and AIS sophistication. In the Table 5.26, R^2 value of 0.434 signifies that the independent variables explain 43.4 percent of the total variance in the AIS sophistication with a standard error of estimate of 0.77.

Table 5.26
Model Summary

Model	R	R Square	Adjusted R square	Std.Error of the Estimate	Durbin Watson
1	.659	.434	.419	.77	1.81

Additionally, the value of analysis of variance (ANOVA) was equally used to assess the level of statistical significance of the relationship. As can be seen in Table 5.28, the R^2 value was statistically significant with F =28.39 and p < .001which implies the null hypothesis was rejected.

Table 5.27
The ANOVA (b) Results

Model	Sum of squares	Df	Mean square	F	Sig.
1Regresssion	102.00	6	17.00	28.39	.000
Residual	132.92	222	.59		
Total	234.92	228			

Table 5.28 shows that IT investment has the highest Beta value of 0.45 and which indicates that it is the independent variable that mostly contribute to the variation of AIS sophistication. The majority of the independent variables significant value that is less than 0.05 and which imply that there is a significant and positive relationship between independent variables and AIS sophistication. However, importance of IT and environment condition were not insignificant. As observed, the coefficients of other variables however, were owner or manager knowledge (β =0.13, P=0.02), owner or manager experience (β=0.17, P= 0.00), owner or manager education (β= 0.13, P= 0.01), and environment condition (β=-0.03, P=0.46).

Table 5.28

Results of Multiple Regression between Independent Variables and AIS Sophistication

Model	Unstandardized coefficients		Standardized coefficients		
	B	Std. Error	Beta	t	Sig
1 (constant)	-1.26	.45		-2.77	.00
IIT	.135	.07	.09	1.77	.07
OMK	.16	.07	.13	2.32	.02
OME	.16	.06	.13	2.51	.01
OMX	.21	.07	.17	3.08	.00
IN	.55	.06	.45	8.55	.00
EC	-.05	.07	-.03	-.73	.46

Table 5.29

Results of Multiple Regression Between AIS Sophistication and Organizational Performance

Model	Unstandardized coefficients		Standardized coefficients		
	B	Std. Error	Beta	t	Sig
1 (constant)	2.39	.12		19.62	.000
AIS	.40	.03	.59	11.01	.000

Further, the third step while conducting regression analysis is to test the relationship between AIS sophistication and the organizational performance. As shown in Table 5.30, the result of ANOVA reveals a significant F-value (F =121.28, and p < .001). Therefore, null hypothesis is rejected.

Table 5.30

The ANOVA (b) Results

Model	Sum of squares	Df	Mean square	F	Sig.
1Regresssion	37.89	1	37.89	121.28	.000
Residual	70.92	227	.31		
Total	108.82	228			

As depicted in Table 5.31, the value of R² was 0.348 and this indicates that AIS sophistication, which is an independent variable, simply explains 34.8 percent of the variance in the organizational performance with a standard error of the estimate 0.55.

Table 5.31
Model Summary of the Multiple Regression between AIS Sophistication and the Organizational Performance

Model	R	R Square	Adjusted R square	Std.Error of the Estimate	Durbin Watson
1	.059	.348	.345	.55	1.96

Consequently, results of the regression analysis as shown in Table 5.30 reveals a Beta value of 0.59 for AIS sophistication as an independent variable. This therefore shows that the AIS sophistication strongly contributes to the change in behavior of organizational performance. In addition, there is a strong significant relationship between AIS sophistication and the organizational performance (β=.59, P=.000).

5.12 The Mediating Effect of AIS Sophistication

McKinonn, Warsi and Dwyer (1995) and Baron and Kenny (1986) indicated that for mediating relationships to take place, the following four steps that must be observed:

1. The independent variable (IV) must influence the dependent variable (DV) significantly.

2. The IV must influence the mediating variable (MV) significantly.

3. The MV must influence DV significantly.

4. To establish that the mediating variable fully mediates the relationships between independent variable and dependent variable, the impact of independent variable

on dependent variable should be zero or β must not be significant; whereas, partial mediator exists when β is significant at a reduced level.

In view of the conditions above, three regression equations must evaluate with the purpose of testing mediation. The first step is to regress the dependent variable on the independent variable. The second step involves regress the mediator on the independent variable while the third step equally requires regressing the dependent variable on both the independent variable and the mediator, and in the third regression equation the impact in steps, 3 and step 4 are evaluated. According to Baron and Kenny (1986), the coefficients for each equation must be separated, evaluated and tested. There is no need for hierarchical or stepwise regression.

Based on the discussion above, the test of mediation in this study followed the concept of Baron and Kenny (1986), by taking into consideration four steps. The two assumptions that independent variables affect organizational performance and independent variables affect AIS sophistication were tested.

5.12.1 Results of Multiple Regressions between Independent Variables and Dependent Variable

The outputs of the direct path between independent variables and the organizational performance of SMEs as shown in Table 5.32 and Table 5.34 disclosed that there is a significant and positive relationship between independent variables and the organizational performance. Importantly, Table 5.32 reveals that all the independent

variables account for 43.9 percent of the variance of organizational performance (R^2 = 0.439).

Table 5.33 also reveals significant β values for all the independent variables excluding environmental conditions. The Table shows the regression a coefficient of importance of IT is (0.00), owner or manager knowledge is (0.15), owner or manager education is (0.19), owner or manager experience is (0.34), IT investment is (0.29), and an environmental condition is (-0.01). Therefore, it can be ascertain that the independent variables significantly influence the organizational performance of SMEs. Hence, the first assumption was confirmed.

Table 5.32
Model Summary of the Multiple Regression between Independent Variables and Organizational Performance

Model	R	R Square	Adjusted R square	Std.Error of the Estimate
1	.66	.439	.424	.52
2	.70	.499	.483	.49

Table 5.33
The ANOVA (b) Results

Model		Sum of squares	Df	Mean square	F	Sig.
1	Regression	47.81	6	7.96	28.99	.000
Residual		61.01	222	.27		
Total		108.82	228			
2	Regression	54.31	7	7.75	31.46	.000
	Residual	54.50	221	.24		
	Total	108.82	228			

Table 5.34
Results of Multiple Regressions Between Independent Variables and AIS Sophistication and Organizational Performance

Model	Unstandardized coefficients		Standardized coefficients		
	B	Std.Error	Beta	T	Sig
1 (OP)	0.66	.30		2.14	.03
IIT	.00	.05	.00	.126	.89
OMK	.12	.04	.15	2.61	.01
OME	.16	.04	.19	3.61	.00
OMX	.29	.04	.34	6.10	.00
IN	.24	.04	.29	5.55	.00
EC	-.010.05		-.01	-.19	.84
2 (OP)	.94	0.29		3.16	.63
IIT	-0.2	0.04	-.25	-.47	.05
OMK	0.08	.045	.10	1.93	.00
OME	0.12	0.43	.15	2.90	.00
OMX	0.24	.04	.28	5.27	.01
IN	0.12	.04	.14	2.52	.96
EC	0.02	.04	.00	.04	.00
AIS	221	0.04	.32	5.13	

Furthermore, the second assumption is the relationship between the independent variables and mediating variable (AIS sophistication). The outputs reveal that the independent variables have significant influence on AIS sophistication ($R^2= 0.499$). The regression coefficients of owner or manager knowledge, owner or manager education, owner or manager experience, and IT investment were strong significant at 0.10, 0.15, 0.28, and 0.14 respectively. This therefore indicates that the second assumption was also fulfilled with the exclusion of the importance of IT variable having negative value of -0.25.

The third assumption states that the influence of the independent variables must be controlled. Based on this assumption, the independent variables and AIS sophistication were regressed simultaneously on the organizational performance of SMEs. Therefore, the researcher conducted final regression by using both the independent variables and AIS sophistication as independent variables and the organizational performance as dependent variable for establishing the mediation effect of AIS sophistication as represented in Figure 5.1.
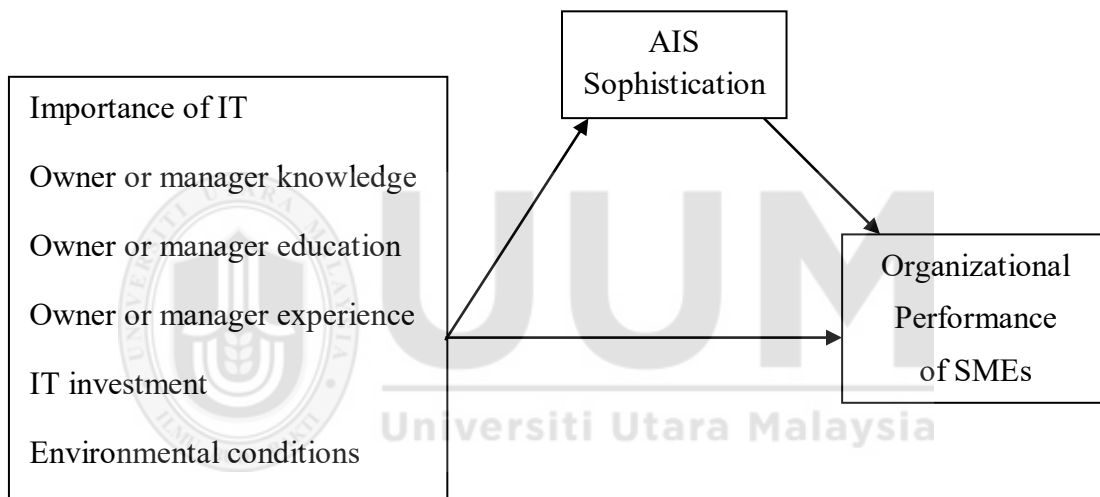
Figure 5.1
The Mediating Effect of AIS Sophistication

Table 5.35
Results of Multiple Regression Between Independent Variables and AIS Sophistication and Organizational Performance

Variables	B	Std. Error	β	Sig
IIT	-.02	.04	-.02	.63
OMK	.08	.04	.10	.05
OME	.12	.043	.15	.00
OMX	.24	.04	.28	.00
IN	.12	.04	.14	.01
EC	.00	.04	.00	.96
AIS	.22	.04	.32	.00

Table 5.36
Results of Mediation Analysis

Independent variables	Direct Effect of IV on DV	Total Effect of IV on DV	Results
IIT	.00	-.02	No mediation
OMK	*.15	*.10	Partial mediation
OME	**.19	**.15	Partial mediation
OMX	**.34	**.28	Partial mediation
IN	**.29	*.14	Partial mediation
EC	-.010	.00	No mediation
AIS		**.32	

Note: *P < 0.05, **P <0.01; ns= Non-significant

However, after adding the value of AIS sophistication to the equation, the beta values of importance of IT (IIT) (β= -0.02, p > 0.05) and environmental condition (EC) (β= 0.00, p > 0.05) was not significant again. This therefore reveals that the AIS sophistication does not mediate the influence of importance of IT and environmental condition on the organizational performance. Additionally, the link between environmental conditions and AIS sophistication on the organizational performance also has no mediating effect in the relationship. In this regard therefore, hypotheses (H13) and (H18) are rejected and supported. Besides that, the justifications for these results are demonstrated in chapter six.

However, owner or manager knowledge (OMK), owner or manager education (OME), owner or manager experience (OMX), and IT investment (IN) still maintain the level of their significance but at a reduced level. This therefore indicates that the AIS sophistication partial mediates the relationship between owner or manager knowledge,

owner or manager education, owner or manager experience, and IT investment and the organizational performance.

5.13 Normality

According to Gravetter and Wallnau (2009), normality is used in explaining the symmetrical, bell-shaped curve, with the greatest frequency of scores in the middle, and smaller frequencies towards the extremes. Pallant (2007) in this respect explained that the researcher could assess normality through skewness and kurtosis. Coakes, Steed and Ong (2009) in this view refer to skewness and kurtosis as the shape of the distribution.

Table 5.37
Normality of Data

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std Error	Statistic	Std Error
IIT	229	-0.76	0.16	0.53	0.320
OMK	229	-1.03	1.61	0.536	0.320
OME	229	-0,28	0.161	-0.29	0.320
OMX	229	-0.31	0.161	0.15	0.320
IN	229	-1.25	0.161	1.45	0.320
EC	229	-1.43	0.161	2.71	0.320
AIS	229	-0.00	0.161	-0.64	0.320
OP	229	-1.20	0.161	3.65	0.320

Pallant (2001) however clarified that skewness value provides an indication of the symmetry of the distribution while the kurtosis value provides information about the "weakness" of the distribution. According to Hair et al. (2006), normality exists when skewness and kurtosis ratios are +/- 2.58. Table 5.37 shows the results of normality test.

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From Table 5.37, it can be recognized that all variables are normally distributed since all the findings of skewness and kurtosis are in the varying of +/- 2.58, as recommended by Hair *et al.,* (2010). This determined that the data was ready and suitable for multiple regression analysis.

CHAPTER SIX

DISCUSSION AND CONCLUSION

6.0 Introduction

This chapter discusses the findings of this study. As mentioned in Chapter two, there are six independent variables in this research: importance of IT, owner or manager's knowledge, owner or manager's education, owner or manager's experience, IT investment, and environment conditions. AIS sophistication considered as a mediating variable, and organizational performance as a dependent variable. This chapter presents the refined research framework, and provides an overview and conclusions of the study. In this regard, the researcher discusses the summary of the results and the conclusions made by this study. A discussion on the contributions that this study has done, in terms of theories and practices, is presented as well. This is followed by research limitations and recommendations for further future research in the area of organizational performance of SMEs. This chapter ends with a summary.

6.1 Research Framework
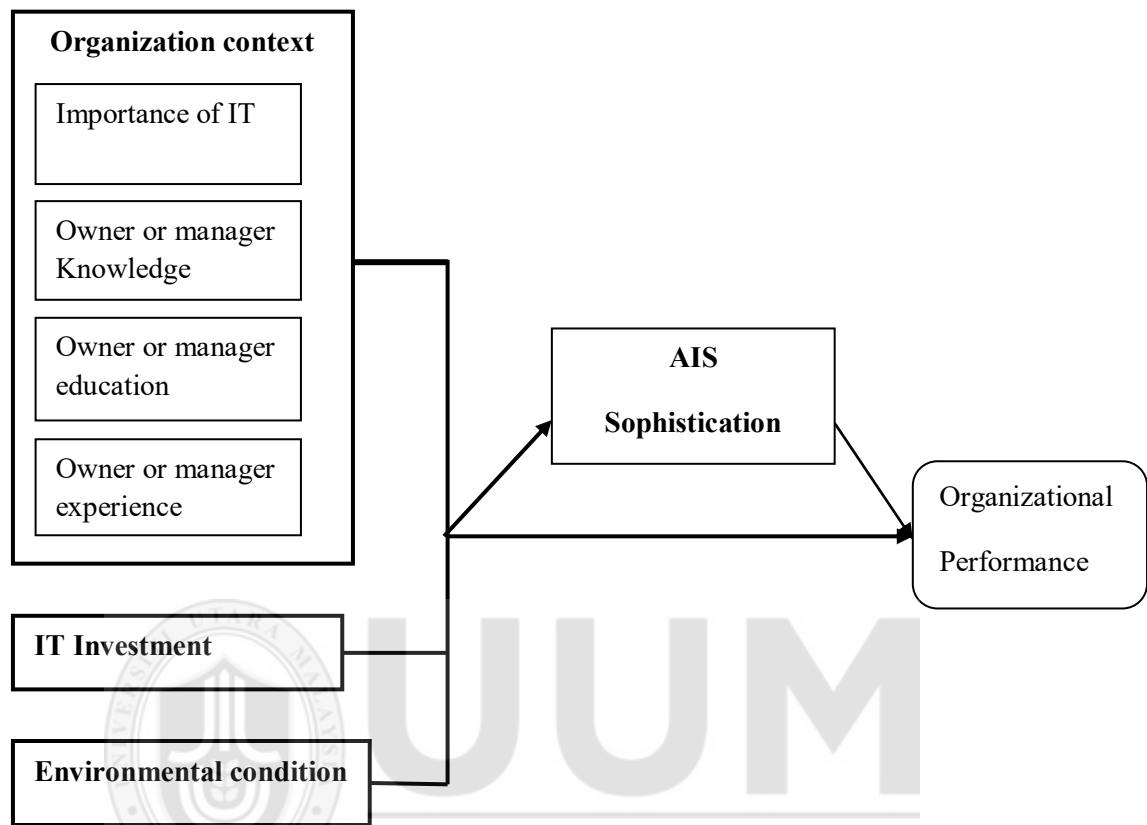
Figure 6.1
Research Framework

Figure 6.1 shows that new independent variables surfaced emerged following the data analysis in which that those independent variables are the same as was suggested previously on chapter three at the page 121: importance of IT, owner or manager's knowledge, owner or manager's education, IT investment and environmental conditions. The next section describes and discusses the refined framework from the practical perspective.

6.2 Research Hypotheses Test Results

As it has been mentioned in Chapter five, multiple regression analysis was used to test the research hypotheses. Consequently, the number of tested hypotheses is 19, as shown in Table 6.1. Of 13 direct hypotheses, four did not support. H13 and H18 removed from the table because their results had no mediation impact. The remaining nine hypotheses significantly influence AIS sophistication and organizational performance of SMEs in Saudi Arabia and are subsequently supported. The next sections discuss this in depth.

Table 6.1
Results of Research Hypotheses Test (H1-H19)

H.No.	Statement of Hypotheses	Remarks
(H1-H6): The results of IVs ⟶ Performance		
H1	There is a relationship between importance of IT and SME performance.	Not supported
H2	There is a relationship between owner or manager's knowledge and SME performance.	Supported
H3	There is a relationship between owner or manager's education and SME performance.	Supported
H4	There is a relationship between owner or manager's experience and SME performance	Supported
H5	There is a relationship between IT investment and SME performance.	Supported
H6	There is a relationship between environmental conditions and SME performance.	Not supported
(H7-H12): The results of IVs ⟶ AIS sophistication		
H7	There is a relationship between importance of IT and AIS sophistication.	Not supported
H8	There is a relationship between owner or manager's knowledge and AIS sophistication.	Supported
H9	There is a relationship between owner or manager's education and AIS sophistication.	Supported
H10	There is a relationship between owner or manager's experience and AIS sophistication.	Supported
H11	There is a relationship between IT investment and AIS sophistication.	Supported
H12	There is a relationship between environmental conditions and AIS sophistication.	Not Supported
H14	The relationship between owner or manager's knowledge and SME performance is mediated by AIS sophistication.	Partial mediation
H15	The relationship between owner or manager's education and SME performance is mediated by AIS sophistication.	Partial mediation
H16	The relationship between owner or manager's experience and SME performance is mediated by AIS sophistication.	Partial mediation
H17	The relationship between IT investment and SME performance is mediated by AIS sophistication.	Partial mediation
H19	There is a relationship between AIS sophistication and SMEs performance.	Supported

6.3 Objective One: To identify the factors that influence the performance of SMEs in Saudi Arabia (H1-H6)

This section relates to the independent variables or determinants of organizational performance. Each factor is discussed in turn.

6.3.1 Importance of IT (H1)

The researcher hypothesized a relationship between the importance of IT and the organizational performance of SMEs in Saudi Arabia. This is in line with the propositions of previous studies that, hypothesized that perceived the importance of IT and operational and strategic business tools will have an influence on the performance of small business. (Bracker *et al.,* 1988; Bracker & Pearson, 1986; Holmes & Nicholls, 1988; Huck & McEwen, 1991; Jones, 1992; Lee & Runge, 2001; Pineda *et al.,* 1998; Pizzini, 2006; Reid & Smith, 2000; Rogoff *et al.,* 2004; Stephens *et al.,* 2005; Thong, 1999). Furthermore, the importance of IT to companies normally and SMEs in particular is often identified as an effective way of enhancing accounting functions. Suitable use of IT ensure timely and accurate accounting reports and other financial information for managers, in relation to the impacts of their decision making and the results of their business operations on the firm's performance (Halabi , Barrett, and Dyt 2010; Saeidi, 2014).

Despite the efforts of the previous studies, future researches call to conduct more research with the purpose of gaining better comprehension of the relationship between IT and organizational performance. Previous studies have also shown a weakness between the business performance and emergent organizational, environmental and IT factors (Boulianne, 2009). Additionally, the results of the regression test (see Table 5.32) show that the importance of IT was not statistically significant (P= .899, β= .007)

to the organizational performance of SMEs in Saudi Arabia, because of lack of infrastructure, technological support and access to quality IT consulting services. There is a similar gap between IT utilization and the perceived importance of IT among respondents. The results of current study is responding to the findings of the study conducted by Farhanghi, Abbaspour, and Ghassemi (2013) who, examined the effect of IT on the organizational structure and the firm performance. The findings of their study exposed that, IT has a direct and indirect impact on the performance. In addition, Wilson, Iravo, Tirimba and Ombui (2015) investigated the association between IT and performance in Nairobi, Kenya, finding that IT plays a major role in the performance of logistics firms there.

The result of regression analysis on the importance of IT and organizational performance is not significant in this study. However, the results of previous studies in this respect have been inconsistent (e.g. Kelly, 1994; Parthasamthy & Seth, 1993). For instance, Stassman (1990) and Yosri (1992) demonstrated that the relationship between IT and companies' performance is hardly significant, whereas Alshbiel and AL-Awaqleh (2011) and Gil (2004) found no significant relationship between AIS and managerial or company performance.

On the other hand, the correlation test showed a significant linear relationship (P= .003) (Table 5.32). It can be therefore, ascertained from the findings of the regression and correlation analysis that there is a relationship between the importance of IT and organizational performance as stated by hypothesis H1. Hence, these findings supported

by previous studies stated that, the significance of IT to companies in general and SMEs in particular is often identified as an effective manner of enhancing accounting functions. A proper use of IT ensures timely and accurate accounting reports and other financial information for managers, in relation to the impacts of their decision making and the results of their business operations on the firm's performance (Halabi, Barrett, and Dyt 2010; Saeidi, 2014). Therefore, regarding SMEs of Saudi Arabia context a study implemented by Alshuabi (2017) confirmed on his findings that, the usage of IT among SMEs in Saudi Arabia context could significantly contribute to the growth of other income activities particularly for SMEs sector within Saudi Arabia.

6.3.2 Owner or Manager's Knowledge (H2)

The present study hypothesized that there is a relationship between owner or managers' knowledge and organizational performance. This position be established previously (Nissen 2006a) that while knowledge creation and its subsequent transfer (for example, learning) is a dynamic aspect of knowledge especially in the context of organizations, knowledge must be used with the purpose of attaining the goals of the organization. It been theorized that knowledge is a powerful resource that many organizations use to create a positive effect on performance. Researchers also explain that owner or managers' knowledge has a strong influence on organizational performance.

Alnajjar (2016) examined the influence of accounting managers' knowledge and top management support on AIS, and the influence of AIS on management and the organizational performance, among SMEs in the UAE. His findings indicated a positive

relationship in both cases. He added that using AIS helps decision makers to gain useful information towards achieving organizational goals and objectives.

The influence of owner or managers' knowledge on organizational performance was found to be less significant (P= .010) but positive (β= .152) as illustrated in Table 5.32. This finding supported by previous studies (e.g. Wenger, 1986) of a contingency perspective concerning interdependence, and their relationship to knowledge flows and performance. Hussin and Suhaimi (2011) and Ismail and King (2007) also asserted that to gain suitable knowledge it would be essential for owner or the manager to and run e-business processes to meet the business strategy. It is, however, interesting to observe that organizations often apply unsophisticated IT or IS knowledge such as word processing, presentation and spreadsheet applications regularly. In addition, companies concentrate on the basic IT or IS knowledge obligatory for handling day-to-day managerial tasks. This basic knowledge offers partial support for moving on to advanced technologies for instant e-business. Nevertheless, there is a difference in advanced ITor IS knowledge across companies where the successful ones have been identified more significantly widespread knowledge of sophisticated IT or IS applications than less successful companies. In this regard, it is essential for the owner or manager to have satisfactory knowledge of advanced IT or IS for the purpose of planning and guiding the organization towards strategic use of e-business. These and many other studies make certain that the knowledgeable owner or manager plays a vital role particularly in facilitating e-business alignment through advanced IT or IS knowledge. Transitive memory theory suggests that the level of interdependence should

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notify managers about how best to organize (i.e. arranging the organization's meta-knowledge, or who knows what sort of knowledge the organization should have).

Additionally, Kamyabi and Devi (2011), investigated the impact of the factors such as owner or manager knowledge, technical competition, competitive intensity, and complexity of marketing decisions on the managers' decisions of the manufacturing sector of SMEs in Iran context that use the external accountants' advisory services. Then, the study investigates the impact of these advisory services on SMEs performance adopting the Resource-based-view as the theoretical approach of the firm. The results of their study indicated that, the usage of the external accountants' advisory services has a positive relationship with the owner or manager knowledge, technical competence, competitive intensity, and complexity of marketing decisions. Their study concluded that, the usage of advisory services has a positive impact on SMEs performance.

The correlation test (Table 5.32) emphasizes that there is a linear relationship between the manager's knowledge and organizational performance. It can be recognized that the more knowledge the owner or manager has in the context of SMEs in Saudi Arabia, the better the organizational performance will be. In other words, hypothesis H2 was supported. Meaning that owner or manager who have a sufficient knowledge of accounting will perform his or her tasks efficiently and the performance of SMEs will enhanced in return.

6.3.3 Owner or Manager's Education (H3)

The present study hypothesized a relationship between owner or manager's education and organizational performance. The literature review revealed that the majority of past studies only considered education generally, without specific emphasis on the type of education with respect to business or otherwise. Huck and McEwen (1991) and Stokes and Blackburn (2002) argued that management involvement in entrepreneurial courses or training as sponsored by a university or similar establishment would help to improve entrepreneurship and SMEs' performance. However, the focus of these studies was not on the type of education (business or non-business), as they gave preference to financial performance and not sophistication of the accounting practices. Other scholars have equally argued that training and education could positively improve the performance of small businesses (Aldrich & Martinez, 2001; Collins-Dodd et al, 2004; Simpson *et al.,* 2004). Similarly, Chiliya and Roberts-Lombard (2012) discovered a positive relationship between education and the performance of grocery shops in South Africa, while Simpson *et al*. (2004) discovered that education and training positively influence the performance of small business. Yeboah (2015) indicated that the educational qualification of the entrepreneur and the size of the enterprise have the most significant impact on SMEs' growth, concluding that managers must be educated; if they do not have formal schooling they should periodically join seminars and workshops to gain the requisite knowledge and skills to improve their business growth.

In the present study, the owner or manager's education was measured by using background information and that collected from previous studies, resulting in the two items shown on the questionnaire attached with the current study (Kasseeah 2012).

The output from regression tests shown in Table 5.32 clearly indicate that owner or manager's education (P= .000) has a significant influence on organizational performance, positive (β= .199). This is equally confirmed and supported by the results of the correlation test (see Table 5.32), manager's education has a significant (P= .000) linear relationship. As results, the findings of the present study corresponded with the findings of the study conducted by Sitharam and Hoque (2016) who specified that, SMEs' owners who are highly educated are capable to attain and improve skills and positively impact on SMEs performance. Following this, an empirical study implemented by Zannah, *et.al.,* (2017) who examined the effect of the age owners and managers, the business age, and the education of owners and managers, on the SMEs performance in Nigeria context; the findings of their study indicated that all the independent variables have a positive and significant relationship with SMEs performance. Therefore, hypothesis H3, which states that there is a relationship between owner or managers' education and the organizational performance of SMEs in Saudi Arabia, was supported. Hence, the findings of the current study denote that the level of education of owner or manger will affect the performance of SMEs as the study of Sitharam and Hoque (2016) supported this assumption, as it said that, SMEs' owners who are highly educated are capable to attain and improve skills and positively affect SMEs performance.

6.3.4 Owner or Manager's Experience (H4)

Owner or manager's experience is essential to business success. As noted by Bracker *et al.,* (1988), lack or absence of previous business experience could negatively influence performance. They asserted that the majority of small and medium electronics business owners had left their technical positions as employees in big electronic technology organizations to start their own businesses. They considered that this could be considered a problem after the initial growth phase when the business would need the benefit of business management tools and practices. Aldrich and Martinez (2001) equally agreed that previous knowledge, which could acquired through experience, training, or formal education, is essential. From this perspective, Harada (2003) proved that there is a relationship between previous experience in the industry or related business experience and performance and turnover.

Kamunge, Njeru and Tirimba (2014) confirmed that SMEs are becoming progressively more important in terms of employment, wealth creation and the development of innovation. Their study displays the factors that influence the growth and performance of SMEs, including the availability of financial and managerial experience. Access to finance and the availability of management experience considered as the key socio-economic factors affecting the growth and performance of SMEs.

This study confirmed that owner or managers' experience has a significant positive influence (P= .000, β= 342) on organizational performance (see Table 5.32). It agrees with Chiliya and Roberts-Lombard (2012) in their study of grocery shops in South

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Africa. This result is further confirmed by the results of correlation test shown in Table 5.32 expressing a significant (P= .000) linear relationship between owner or managers' experience and the organizational performance of SMEs in Saudi Arabia. In turn the results of the current study also in line with the findings of the study of Zannah, *et.al.,* (2017) who investigated the impact of owners or managers experience, owners or managers age, and owners or managers education on the performance of SMEs. Their findings signified that, there is a positive and significant relationship between the independent variables, which are owners or managers' experience, owners or manager's age, and owners or manager's education on the performance of SMEs.Therefore, hypothesisH4, which states that there is a relationship between owner or managers' experience and organizational performance, is supported. The meaning of the findings of the current study as long as the owner or manager owned the previous experience as long as the performance of SMEs will improved as the previous literature discussed.

6.3.5 IT Investment (H5)

Researchers in the field of IT consider that IT investment alone is not a critical condition to enhance the performance of any organization. Such resources could be tantamount to wasted investment. Instead, they advocate IS investment which can be converted into assets (i.e. IS infrastructure and applications) for creating value for the organization. Therefore, efficient and effective use of IT is expected to bring an intermediate influence on the performance of the organization. An example of this is when IT is being used in services and manufacturing, while the business processes are streamlined for improving decisions that will subsequently affect business performance

(Ravichandran & Lertwongsatien, 2005). Following this, the study of Alsaraireh (2013) indicated that there is a significant effect of IT investment on the ability to enhance the decision-making process for the purpose to improve administrative, financial and operational process and improve the financial performance. On the other hand, Dandago (2015) revealed in his findings, there was no significant relations exist between the IT investment and the financial performance of Banks in Nigeria, when Net Profit Margin (NPM) measured it. The results of regression for this study (Table 5.32) revealed that IT investment has a significant (P= .000) and positive (β= .292) influence on organizational performance. This is supported by the significant (P= .000) and positive relationship between these two variables as shown in the correlation test (see Table 5.32). Based on the result of regression and correlation analysis, hypothesis H5, which stated that there is a relationship between IT investment and organizational performance of SMEs in Saudi Arabia, is hereby supported. This finding is in line with the study of Shaukat and Zafarullah (2009) that IT investment had great influence on the performance of Pakistani banks. The findings of the current study agree with the implications of the pervious literature, which indicated as much as the company spends on IT as much as the performance as a result will improve.

6.3.6 Environmental Conditions (H6)

Baines and Langfield-Smith (2003) examined the association of between competitive environments, organizational design, advanced manufacturing technology and advanced accounting practices. They concluded that an increasingly competitive environment has resulted in increased focus on differentiation strategies, in

turn, encouraging changes in organizational design, advanced manufacturing technology and advanced management accounting practices.

In addition, Harash (2015) investigates the impact of the environmental uncertainty as a moderation factor on the relationship between AIS and the performance of SMEs. The results of the study confirm that, the environmental uncertainty has full moderation influence the performance of SMEs. The study concluded that, the dimensions of the environmental uncertainty are major moderators on the association exist between AIS and the performance. Finally, the study emphasis that, the performance of SMEs differs with the alternatives of the AIS they have adopted

Dut (2015) investigated how the local business environment affects SMEs' performance. His study was based on theoretical arguments for the relationship between the business environment and SME performance, opposing the findings of previous studies, which provided empirical evidence that the local business environment in which a company is embedded can have a significant effect on its performance (Neneh & Vanzyle, 2014; Ng & Kee, 2012; Tu, 2012). On the other hand, Dut (2015) commented that other studies found that the local business environment had an inverse association with firms' performance (De Jong, Phan & VanEes, 2012; Luo, 1999). These mixed findings suggest that the impact of the business environment on firms' performance varies according to the national or regional economic context (Ng & Kee, 2012; Alexandrova, 2004). Finally, Dut (2015) concluded that, by using fixed impact and random impact models, the empirical findings showed that local government's favoring

policies for private firms and the labour force have a positive influence on SMEs' performance. The main implication of Dut's (2015) study is therefore providing better understanding for SMEs in addressing local environmental factors, which significantly influence their performance.

The current study hypothesized a relationship between environmental conditions and organizational performance. The result of the correlation test (Table 5.32) reveals no significant (P= .829) linear relationship between the two variables. This is supported by the result of the regression test (Table 5.32) where the influence of environmental conditions on organizational performance is not significant (P= .848) and is negative well (β= - .010). This finding therefore indicates that the influence of environmental conditions such as marketing practices, competitors' actions and consumer tastes on the performance of SMEs in Saudi Arabia is not significant. This agrees with other scholars, who assert that as dynamism is increasing in the environment, organizations would certainly need more non-financial accounting information concerning issues like increased frequency of reporting, consumer tastes, and competitors' actions, making greater use of forecast information (Gordon and Miller, 1976).

Chong and Chong (1997) also re-emphasized the significance of external, future-oriented and non-financial data in an uncertain and turbulent environment. Based on the justification of previous studies, it can be concluded that external environmental conditions along with uncertainty in the environment positively or negatively affect the relationship between environmental conditions and organizational performance. As

stated earlier, H6 hypothesized the existence of a relationship between environmental conditions and the organizational performance of SMEs. Therefore, the regression and correlation results support this assumption. Meaning that, the environmental condition associated with the organizational performance of SMEs, as long as the environment conditions have to be taken into a consideration for gaining the better organizational performance.

6.4 Objective Two: To identify the factors that influence AIS sophistication in Saudi Arabia (H7-H12)

6.4.1 Importance of IT (H7)

Previous studies have established that managers' characteristics have some influence on the degree of adoption of IT by SMEs (Lee & Runge 2001). Their knowledge about the perceived importance, or relative advantages of IT in their business was related to the degree of IT adoption (Lee &Runge, 2001). Rogoff *et al.,* (2004) affirmed that owners or managers' perception can contribute positively or hinder performance.

This researcher hypothesized the relationship between the importance of IT and AIS sophistication. The results of the regression test (Table 5.35) show that it was not significant statistically (P= .078, β= 0.099). However, the result of correlation test was found to be significant (P= .000) (Table 5.35). The correlation test is responding to the findings of Sacer and Oluic (2013), who indicated that, the influence of IT on accounting process and as consequence on accounting information systems quality. They concluded that, IT influences how AIS operating, contributing to a preparation of information, processing, and presenting accounting information. They assert that, IT has

a significant contribution to the AIS characteristics such as, the accuracy and timeliness of accounting information and the quality of accounting information systems.

Stephens *et al.* (2005) explored the significance of the implementation gap in the area of the Baldrige criteria for performance excellence (CPE) practices in small businesses. Importantly, the results of their study revealed that a higher level of importance of implementation is significant in this respect. It is therefore an important issue in organizational performance with respect to how the importance of IT influences AIS sophistication. Thus, the owners "or managers' knowledge of the perceived importance of IT and its relative advantages in the business was found to be related to IT adoption levels (Lee & Runge, 2001). However, the result from the regression test conducted in this study reveals no relationship between the importance of IT and AIS sophistication. The perceived importance of IT by managers of SMEs in Saudi Arabia is very low since they considered the adoption of high technology than should be expected. Even though they did know IT is essential for the improvement of their businesses, they did not apply the technology efficiently. Based on this result, H7 that stated there is a relationship between the importance of IT and AIS sophistication is thereby, rejected.

Chemingui and Lallouna (2013) support this by saying that people resist modern technology because they are still holding on to the traditional ways. The results also reflect a form of resistance to change to the new technology or a new system. However, it is essential to state that resistance is inevitable but the agents of change must anticipate it (Al-Khasawneh, Khasawneh, Bsoul, Idwan & Turan, 2013; Luftman, 2004).

Essentially, previous studies have shown that while some auditors have positive opinion about the importance of technology, others are still reluctant to use it (Al-Ansi, Ismail, & Al-Swidi, 2013). It is understood that how the importance of IT plays a crucial role of achieving higher of organizational performance as the literature review regarding this demonstrated.

6.4.2 Owner or Manager's Knowledge (H8)

This study hypothesized a relationship between owner or the manager's knowledge and AIS sophistication. As demonstrated in Table 5.35, this relationship was found to be significantly low (P= .21) but positive (β= .136). This finding agrees with Worrall (2007), who stated that the growth of a firm is keenly determined by the level of knowledge possessed by its manager. This is also in line with the RBV position, which illustrates that the owners or managers of SMEs are unable to perform the accounting functions internally and effectively because of inadequate knowledge and unqualified employees (Everaert *et al.,* 2006; Jayabalan *et al.,* 2009). Regarding the accounting knowledge that managers have to obtain it, a research conducted by Sallem and Nasir (2017) indicated that, for the reason to confirm the smooth flow of activates within the organization, managers have to have an expectation to have a straight level of accounting knowledge. As well, managers are expected to be familiar with the diverse function of accounting. Unluckily, most of managers do not have adequate accounting knowledge and they often delegate the accounting function to other departments.

More principally Komala (2012) determines that the influence of Accounting Information System (AIS) to the quality of accounting information by considering the

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accounting's knowledge of managers and support top management. The results of the study revealed that accounting's knowledge of managers and top management support have a significant effect to AIS. As well as, the quality of AIS has an impact on the quality of accounting information.

One of the reasons why SME owners or managers must seek sufficient knowledge is a lack of the necessary skills and resources to perform accounting functions internally effectively (Everaert *et al.,* 2006). However, the majority of SME managers lack awareness about a number of advisory services and other support available to them (Ismail & King, 2007; Ismail & Abidin, 2009; Liddicoat & Stringer, 2005), result of adequate evidence of the benefits of such services (Watson, 2003), or lack of support in seeking relevant information (Devi & Samujh, 2010). Therefore, the findings of this study confirm that possession of adequate knowledge of AIS sophistication will go a long way to assist managers to perform their functions effectively.

Based on the above findings above, hypothesis H8 was found to be supported. This was also buttressed by the results of the correlation test (see Table 5.35) that confirms that there is a linear relationship between owner or managers' knowledge and AIS sophistication. Therefore, as the literature review above indicated, the more owner or manager have adequate knowledge regarding accounting field, the more the performance of their firms be better and AIS will assist owner or manager to perform their work effectively.

6.4.3 Owner or Manager's Education (H9)

Managers without education find it difficult to recognize the benefits of AIS (Dennis, 2000). In the course of establishing small businesses, many managers do not set up a formal accounting system. One of the general reasons for this is lack of resources and time, and attitude. This trend has also been established in the course of economic growth of a small business, where the manager has insufficient skills in accounting practices, or is too busy to be worried about following accounting practices (Dennis, 2000).

In his study of planning in small businesses, Jones (1982) found that business organizations that had more sophisticated planning had managers who tended to be older and had some formal education, suggesting that these managers appreciate the value of planning and have greater confidence in the firm's ability to make and implement plans (Jones, 1982). In this study, it was hypothesized that there is a relationship between managers' education and AIS sophistication. The results (Table 5.35) confirm that owner or managers' education significantly (P= .012) and positively (β=.139) influences AIS sophistication. Even though the significance level in this case is more than .05, previous studies have established its acceptance at this level (Harrison, 1994; Collier *et al.,* 1990; Armitage & Boritz, 1986). As well as, the findings of the current study are responding with the findings of the study implemented by Esmeray (2016) who aim to provide empirical evidence regarding the measuring of the association between the usage of accounting information systems (AIS) by SMEs in Turkey and companies' improved performance indicators. The findings of the study revealed a positive and significant association between the usage of AIS and the

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education status of managers. Besides, the number of employees increase, and the usage of AIS also increase. The results of the study determined that, a positive association between the usage of AIS and the growth of sales and the growth of customer and revenue occurred. Hypothesis H9 is therefore supported and hence, the AIS sophistication of SMEs in the Saudi context must be considered as part of the owner or manager's education that can influence AIS sophistication. Meaning that as the level of education increase as the efficiency of implementing AIS will be better and effective for the advantages of growth of the firms.

6.4.4 Owner or Manager's Experience (H10)

This study hypothesized that there is a relationship between owner or the manager's experience and AIS sophistication. The findings of the hierarchical regression test (as expressed in Table 5.35) specified a significant positive relationship (P=.002, β= 173) between them. This implies that the relationship between owner or manager experience and AIS sophistication is more efficient if the manager has long experience that will influence AIS sophistication. The findings of the linear is corresponding with the study conducted by Ramli (2013) focusing on the external factors of training, experience, and internal expertise of the usage of AIS in three, four, and five-star hotels in Malaysia. Consequently, the data implemented based on the questionnaires method in which were being gathered through a postal questionnaires that sent to the senior accounting managers in three, four, and five start relevant hotels. Then, the data analyzed by the usage of Partial Least Squares (PLS) statistics program. The findings of the study confirmed that, experience of managers and internal expertise influenced the usage of

AIS, while training did not have a significant association to AIS users in the hotel industry in Malaysia. The study concluded that, the using of AIS requires the users to have a good basic knowledge in accounting together with the knowledge of basic computer works. Ramli (2013) added that, the training program would provide users with great potential information by systems that allow the users of such accounting systems to adjust with accounting maters.

According to Bracker *et al.* (1988), the lack of previous business experience does influence performance. They realized that most of SME owners who were surveyed had resigned from technical positions in big electronic technology companies to start their own business. These findings are in line with previous research that demonstrated that previous work experience of the owner or manager will affect the small business and adoption of technology. A number of studies on SME owners have investigated whether previous experience has any relationship with business performance (Aldrich & Martinez, 2001; Harada, 2003; Simpson *et al.,* 2004; Stokes & Blackburn, 2002). Most agree that the previous experience of owners or managers matters for enhancing performance of SMEs, in which AIS sophistication must be considered in order to improve performance. Therefore, Hypothesis H10 is supported. This means the well experience acquired by owners or managers will influence AIS in effective way. Meaning that, SMEs within Saudi Arabia should keep in mind the training program has an essential role for accounting users or owners or managers to deal with accounting matters as the study of Ramli (2013) recommended.

6.4.5 IT Investment (H11)

Past studies have articulated managerial sophistication in different ways, including top management support, IT investment, IT adoption process and its control, and evaluation of IT (Raymond & Pare, 1992). Consequently, top management commitment was found to be the paramount factor influencing IT implementation. Given the proportion of financial resources and human effort that have been invested in IT projects in large organizations, it is important that top management be committed to ensuring successful implementation of IT, including AIS.

Taking into consideration the results of the regression test (Table 5.35) it can be seen that AIS sophistication was significantly and positively influenced by IT investment (P= .000, β= .453). The result of the correlation test shown in Table 5.35 equally confirms a significant (P= .000) linear relationship between IT investment and AIS sophistication. The result of this study is in line with the findings of previous scholars where IT investment was found to have a positive influence on the financial performance in the insurance industries of South Korea (Kim, Xiang & Lee, 2009). Kim *et al*. (2009) also found a positive relationship between IT investment and cost efficiency in China, but with little or no impact on organizational growth or the level of economic development. Moreover, Feller, Finnegan, and Nilsson (2011) found a positive and significant impact of investment IT at the levels of organizational productivity fundamentally with information system and AIS particularly. Correspondingly, with respect of, investigating the effect of investment in IT on the organizational productivity of SMEs' performance. The findings of analysis indicated that, the investment in IT have a positive and

significant impact on the organizational productivity of performance of SMEs, especially with using Information System (IS) and Accounting Information System (AIS) in particular. (Medina-Quintero, 2015; Feller *et al.,* 2011). Based on the foregoing, Hypothesis H11 is hereby supported. Conclusively, the result of IT investment in this study was found to be positive and in line with the study of Shaukat and Zafarullah (2009) where IT investment has a great impact on IT success in Pakistani banks. Therefore, it is obvious from the previous studies how the investment of IT associated with using AIS which means as long as the SMEs is spending on IT investment as long as it has a positive impact on using of either IS or AIS in particular as the study of Medina-Quintero (2015); Feller *et al*. (2011) mentioned.

6.4.6 Environmental conditions (H12)

The results of the regression test (Table 5.35) dictate that environmental conditions have a positive but insignificant influence on AIS sophistication (P= .466, β= -.037). This was established by previous studies that argued that sophisticated accounting information is only relevant in respect of organizational performance when there is a high level of uncertainty in the environment. When the level of uncertainty is low, management only need to make accurate and relevant predictions about the market, which does not require a high level of information sophistication (Gul & Chia, 1994).

Harash (2015) investigates the impact of the environmental uncertainty as a moderation factor on the relationship between AIS and the performance of SMEs. The results of the study confirm that, the environmental uncertainty has full moderation effect on the

performance of SMEs. The conclusion of his study indicated that, the dimensions of the environmental uncertainty are major moderators on the relationships exist between AIS and the performance. Lastly, the study emphasis that, the performance of SMEs differs with the alternatives of the AIS they have adopted. This means that hypothesis H12, which stated that there is a relationship between environmental conditions and AIS sophistication is supported.

6.5 Objective Three and Four: To investigate the relationship between AIS sophistication and performance of SMEs in Saudi Arabia (H13-H19)

Hypotheses 13 to 19 consider the mediating impact of AIS sophistication on the association between the independent variables and organizational performance.

First of all, the mechanism of the mediation impact will be as, the authors Mackinnon, Coxe and Baraldi (2012) mentioned, the business theories regularly specify mediation mechanisms by which a predictor variable influences the outcome variable. Understanding the potential relationship of the mediation analysis considered an appropriate and important approach in this area. The mediation relationship occurs when, in considering the relationship of an independent variable (X) and a dependent variable (Y), an additional variable (Z) may fill one of a number of roles. Every role for the third variable illustrates different theoretical model of the relationship between X, Y and Z, as well as a different method of statistical analysis. The third variable that is both unrelated to the predictor X and has little or no impact on the association between X and Y is called a covariate; a covariate is not often of essential theoretical interest but it has been used to account for additional variation in the outcome Y. The third variable Z can

also be related to both X and Y in a particular way, in that the inclusion of Z changes the association between X and Y.

The mediating hypotheses have empirically shown that the presence of AIS sophistication in an organization has an impact on the relationship between the independent variables and the organizational performance of SMEs.

Regarding the issue of the current study is to address AIS sophistication as a mediating variable on the relationship between organizational factors, technological factors, and environmental factors and the organizational performance of SMEs in Saudi Arabia context. Therefore, the following arguments of the previous studies are as the following.

Christina (2013) investigated the mediating influence of Management Accounting Information System (MAIS) on the relationship between knowledge of accounting function, perception environmental uncertainty, and managerial performance. The study adopted a survey method, which distributed among managers of industrial manufacturing listed in Indonesian Stock Exchange. The results of the study determined that Management Accounting Information System (MAIS) mediates the association between knowledge of accounting function, and the perception of environmental uncertainty on managerial performance.

In addition, Ahemed, Smith, Ismail, and Roni (2014) affirmed that, Accounting Information System (AIS) is a central for a company and it provides valuable data for

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decision makers. In this since, the study of Ahemed, Smith, Ismail, and Roni (2014) investigated how the component of AIS, executive vision and IT skills affect the firm performance. They adapted a resource-based-view (RBV) framework and the data collected from 366 of SMEs in Malaysia context. Their results of the study implied that, the impact of AIS on the firm performance had a partial mediation by information transparency, a component of corporate governance, whereas a full mediation effect was occurred for executive vision and IT skills on the firm performance. The results, therefore, justified that, the importance of transparency on AIS to greater depth, promoting SMEs to rearrange their policies on AIS, staff training, and largely transparency to better enhancement for firm performance.

More significantly a study a conducted by Al-Shbiei and Al-Olimat (2016) investigated the effectiveness of AIS as a mediator variable on the association between IT and the competitive advantage. The study provided interesting results, firstly the study's findings express that there is an impact of IT on the competitive advantage, and there is an impact of AIS effectiveness on the competitive advantage. Secondly, the study's results also indicated that, there is a significant influence for AIS effectiveness as a mediator variable on the association between IT and the competitive advantage.

Regarding the issue of importance of AIS in Saudi Arabia's SMEs context, a study examined by Trabulsi (2018) stated that, AIS is considered as an essential organizational mechanism in which is serious matter for the effectiveness of decision-making and control in organization. In this regard, Trabulsi (2018) investigated the impact of AIS on

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the organizational performance's dimensions, which are (cost reduction, improving quality, and effective decision-making) in SMEs of Saudi Arabia context. The results of this study revealed that using AIS has a significant influence on the organizational performance normally and on all its dimensions mainly involving cost reduction, improving quality and effective decision-making. They conclude that more attention must be made against AIS as an improvement tool for the better organizational performance.

Furthermore, a study conducted by Al-dmour, Al-Fawaz, Al-dmour, and Allozi (2017) indicated that there are some studies did not find a direct relationship between AIS and a firm's business performance, whereas, there are other studies found a direct association occurred between AIS and firm's businesses performance. In this regard, it ensured that, the implementation of a proper Accounting Information System (AIS) considered as an enabler to the competitive advantage. Absolutely, it is recognized causal links on the relationship between AIS and firm performance.

Regarding AIS sophistication factor, it was use as proxy for the growth stage of small businesses by the authors Durler and Luehlfing (2015). In this regard, Durler and Luehlfing (2015), attempts to offer insights that relevant of owner or manager awareness of Electronic Data Interchange (EDI) benefits, the owner or manager perception of Electronic Data Interchange benefits while the implementation of EDI has been compulsory faced (mandated) by a trading partner in small business. The independent variables of this study are owner or manager perception of EDI forced and owner or

manager awareness of EDI benefits. Meanwhile, the dependent variable of this research is the growth stage of business, which considered as the proxy for the level of AIS or IS sophistication. The results of their research implied that, the ANOVA analysis indicated that the level of AIS or IS sophistication has relationship with the owner or manager awareness of EDI benefits even though the results of the factor analysis suggests that owner or managers may not be as aware of EDI risks (versus EDI benefits).

The only exception to this circumstance is the relationship between the importance of IT and AIS sophistication since no mediating effect was established on the relationship between the environmental conditions and AIS sophistication as mediating variable on organizational performance and has no mediation impact. Discussion of these results is detailed in the following paragraphs:

The findings of the current study illustrate that there is partial mediation in the relationship between owner or manager's knowledge (similarly education and experience), AIS sophistication and organizational performance. Equally, a partial mediation has also occurred in the relationship between owner or manager education, AIS sophistication and organizational performance. This is also applicable to the relationship between owner or manager experience and AIS sophistication and organizational performance. Additionally, there is also partial mediation in the relationship between IT investment, AIS sophistication and organizational performance. Therefore, Hypotheses H14, H15, H16 and H17, line with past studies are accepted. Similarly, the relationship between AIS sophistication and organizational performance

(H19) is supported and in line with Gande *et al.,* (2011) who empirically found a positive relationship between AIS and performance among SMEs in Spain.

Surprisingly however, the importance of IT and AIS sophistication has no mediating impact on organizational performance. This is also true for the relationship between environmental conditions and AIS sophistication, where there is no mediating impact on organizational performance. Justification of these findings is demonstrated in the following paragraph:

First, no mediating impact of the importance of IT and AIS sophistication on organizational performance is in line with the results of Chemingui and Lallouna (2013), who found that people resist using modern technology such as mobile financial services because they find it difficult to switch from traditional ways (e.g. branch services) to modern methods. In this instance, the customers are challenged to adjust their behaviors and habits to interact with modern technology by embracing the mobile services that are provided. Their findings also stated that one of the reasons why customers decide to use the mobile service is that the service is compatible with their needs, behavior and habits, and it does afford them opportunity to use the technology individually and on a trial basis. This therefore triggers pleasure in using it, while system quality also has a positive influence on consumers' self-confidence. Hence, Hypothesis (H13), which stated that the relationship between importance of IT and SME performance is mediated by AIS sophistication, is rejected.

Secondly, it is clear that there is no mediation of organizational performance on the relationship between environmental conditions and AIS sophistication. These results confirm those of previous studies (e.g. Al-Eqab & Ismail 2011) where the relationships between three dominant contingency factors such as environmental conditions, IT sophistication, and business strategy and AIS sophistication, revealed no significant relationship between environmental conditions and AIS sophistication. Therefore, Hypothesis (H18) is not supported. Meaning that, AIS is very essential for achieving higher organizational performance among SMEs in Saudi Arabia as the previous studies related AIS and organizational performance illustrated.

6.6 Research Contributions

This study has theoretical contributions and practical implications as discussed in the following paragraphs.

6.6.1 Theoretical Contribution

Viewing the findings from the academic perspective to identify the relationship between organizational factors (owner or manager's knowledge, owner or manager's education and owner or manager's experience), IT investment, environmental conditions and their influence on AIS sophistication and the organizational performance, the current study demonstrates the following findings:

First, the current study provides empirical evidence to support the organizational, technological, and environmental (TOE) theory in which the independent variables of

this study together with the mediating variable and dependent variables are embraced by these thoughts of TOE theory. Moreover, this, is responding to the main thrust of Tornatzky and Fleischer's (1990) Technology-Organization-Environment Theory (TOE) is that three factors are essential in the adoption and implementation of technology: the technological, organizational and environmental contexts.

In addition, taking into a consideration, the arguments raised of the Resource-Based-View (RBV), as a scholar considered the organization as the collection of human and physical resources in which is bounded together a structure of the organization. Regarding of the view explained by RBV, its resources determine a company's performance. (Gottschalk, & Solli-Saether, 2005; McIvor, 2009), Therefore, the current study presents the factors such as importance of IT, owner or manager knowledge, owner or manager education, owner or manager experience, IT investment, environmental conditions, and AIS sophistication as the indicators of the organizational performance among SMEs in Saudi Arabia context. In this case, overall the findings of the present study indicated the positive and significant relationship between the independent variables and the organizational performance of SMEs. Hence, it recognized that, the mentioned variables of the current study together with the mediating variable are contributed to the organizational performance of SMEs in Saudi Arabia.

Second, studies on the impact of AIS sophistication to be a mediation variable on the relationship between organizational factors, technological factors, environmental factors, and the organizational performance, specifically in the SMEs sector are still in

short supply. Ramli (2015) emphasis that, AIS have essential role for decision-making process within the organization. The study of Ramli (2015) implied that, the internal users of AIS particularly managers may make inappropriate decisions due to the lacking of accounting information, which in turn leads to the future risk situation of the company. More specifically, regarding the issue of SMEs sector, Zafar *et al.,* (2015) indicated that SMEs within Saudi Arabia context is important factor in the economic growth essentially, when those SMEs applied AIS approach within SMEs sector.

Currently, a study conducted by Trabulsi (2018) in Saudi Arabia context highlighted that, in high level of the competiveness and attractive organizational setting like SMEs in the market place, it is a critical opportunity to attain a competitive advantage among SMEs in Saudi Arabia context. In this regard, Trabulsi (2018) aim to investigate the effect of using AIS on the organizational performance's dimensions, which are cost reduction, improving quality, and effective decision-making. The results of his study recommended that, more attention should be directed towards AIS as improvement approach for achieving better organizational performance.

The third significant contribution of the current study is ensuring the role of AIS sophistication as a mediator of the relationship between the importance of IT, owner or manager knowledge, owner or manager education, owner or manager experience, IT investment, environmental conditions, and the organizational performance of SMEs. In turn, the findings of the current study help to fill the gap in the area by observing the mediating impact of AIS sophistication on the relationship between the above

mentioned independent variables and the organizational performance of SMEs in Saudi Arabia context. Since previous studies asserted that factors which influence AIS sophistication and the performance of SMEs have not been identified (Al-Eqab & Ismail, 2011; Baker *et al.,* 2008; Berisha-Namani, 2009; Boulianne, 2009; Etemadi *et al.,* 2009; Grande *et al.,* 2011; Hammad & Jusoh,2010; Kobelsky *et al.,* 2008). Other previous studies such as the study of Susanto (2017) confirmed that, AIS considered as a system, which is very crucial in the organization because AIS generate significant information for the organization. Besides, the findings of Madurapperuma and Manawadu (2016) exposed that, most of SMEs encounter problems of lack of accounting knowledge. Finally, Trabulsi (2018) call for attention should be carry out directly towards of AIS as enhancement way for achieving better organizational performance.

Based on the above arguments this current study, therefore fills the gap in the literature by establishing a relationship between the organizational attributes (importance of IT, owner or manager knowledge, owner or manger education, owner or manager experience), IT investment, and environmental conditions on AIS sophistication as a mediator variable, and their impact on the performance of SMEs in Saudi Arabia context. Furthermore, the study concentrated on Saudi Arabia since research on SMEs is very limited in this country in particular, and in developing countries in general.

6.6.2 Practical Implications

One of the most purposes of this study is to enrich our practical understanding of those factors that influence AIS sophistication with respect to the organizational context

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(importance of IT, owner or manager's education, owner or manager knowledge, and owner or manager experience), the technological context (IT investment) and the environmental context (environmental conditions) and their impact on the organizational performance of SMEs in Saudi Arabia. By applying the findings of the current study, owners or managers of SMEs might improve their performance. The discussion of the practical contribution will be as the following:

The current study aims to enrich practical understanding regarding AIS sophistication as a mediator, particularly in the relationship between the independent variables and the organizational performance of SMEs to the framework development and results of the hypotheses testing. It provides an insight into SMEs organizational performance in Saudi Arabia from the perspective of the factors could affect on AIS sophistication as mediator factor and the effect of those factors on the organizational performance of SMEs. By Using the Findings, managers might improve the organizational performance of SMEs, and thereby ensuring SMEs sector survival in this highly competitive marketplace.

The present study struggles to provide SMEs in Saudi Arabia with practical advice on how to implement AIS sophistication effectively, through concentrating on addressing of the independent variables that influence on it and influence on the organizational performance of SMEs.

Furthermore, the findings that show which independent variable have more effect on AIS sophistication as mediator factors, and which factors as well has the greatest impact on the organizational performance of SMEs can be used by managers to take the benefits of AIS sophistication and in turn improve the organizational performance of SMEs. Managers have to notice the level of their education of accounting knowledge, their knowledge and their experience that successfully lead to implement AIS sophistication properly and turn can lead to improve the organizational performance of SMEs. Thus, by focusing of accounting knowledge and skills that provide the users of implementing AIS efficiently, the management within SMEs has to organize training workshop for employees together with the managers within those entities for the purpose to enhance the organizational performance of SMEs in which make those SMEs compete effectively in the market place.

The current study provides evidence, which stressed that investment in IT, can lead to enhance the organizational performance. Because as much as the company invest in IT as much as the organizational performance improved as the previous studies indicated in chapter three of this thesis. Therefore, SMEs managers should regularly comprehend that they can more readily achieve their organizational performance goals by enhancing g their employees' skills and capabilities in order to can deal with the level of AIS sophistication efficiently and in turn, the organizational performance of SMEs will improved.

Overall, the practical findings of the study propose that SMEs that are looking to develop their performance through AIS sophistication take into the consideration the organizational, technological, and environmental factors that might influence the organizational performance of SMEs either positively or negatively.

Finally, the current study has other practical implications at different levels. First, the findings will help the managers of SMEs in Saudi Arabia in particular and in developing countries in general to improve the performance of their businesses. This study focuses on the owners or managers of SMEs in Saudi Arabia, and the findings will provide insights into the significance of adoption of modern technology such as accounting information sophistication, IT investment, education, knowledge and experience in improving organizational performance.

Second, this study is important as it attempts to advise SME generally on how to serve their clients professionally and how to cope with the challenge of foreign investments. Third, it will help government to design appropriate policies and programs to enhance the performance of SMEs through the development of AIS sophistication and through provision of adequate training for employees and owners or managers, so that the operators become more knowledgeable in using advanced IT.

6.7 Limitations and Suggestions for Future Research

In the light of the findings of this study, it is essential to discuss the limitations of this study with a view to making future research recommendations.

First, although it filled the gap identified with respect to the factors that influence AIS sophistication and its impact on the organizational performance of SMEs, the present study only focused on managers of SMEs in Saudi Arabia. As the study of Altokhais (2017) stated that, the important role of SMEs for nationalized development was long realized by Saudi Arabia government. Consequently, the government has integrated vital strategies for the promotion of SMEs in is Vision 2030 document. The plan organized under Saudi Arabia Vision 2030, is to improve the contribution of SMEs to the GDP from the recent 20 percent to 35 percent. Therefore, future researchers might consider SMEs in other developing countries.

Secondly, this study is cross-sectional in nature; this implies that the current study examines those factors that influence AIS sophistication and its subsequent influence on the organizational performance of SMEs examining the topic over a single period. However, new versions of AIS sophistication will surface over time, and in order to evaluate their impact, longitudinal studies will enable researchers to collect data over the long period of time, which may be required to investigate the extent the changes that have occurred.

6.8 Conclusion

This study investigated the relationship between the organizational context (importance of IT, owner or manager's knowledge, owner or manager's education, owner or manager's experience), the technological context (IT investment) and the environmental context (environmental conditions) and their influence on AIS sophistication and its

impact on the organizational performance of SMEs in Saudi Arabia. It also examined the mediating effect of AIS sophistication on the relationship between the organizational, technological and environmental contexts on their organizational performance. The study has made an important contribution through provision of factors that enhance the understanding of AIS sophistication and its impact on the organizational performance of SMEs, since previous researchers have paid little attention to this issue. In carrying out the study therefore, multiple regressions were performed to test 19 hypotheses related to the factors influencing AIS sophistication and its impact on organizational performance. Of these 19 hypotheses, six consider mediating variables on the relationship between AIS sophistication and organizational performance.

Consequently, this study has achieved its objectives, based on the results of multiple regression analysis between the independent variables and organizational performance, since the independent variables were found to have a positive and significant impact on organizational performance. Additionally, the AIS sophistication was proved as a mediating variable. Following from this, the results of multiple regression analysis of the relationship between the independent variables and AIS sophistication show that the independent variables significantly influence AIS sophistication with one exception, which is the relationship between the importance of IT and AIS sophistication, where there was a negative impact.

In addition, the present study examined AIS sophistication as a mediating variable between the independent variables and the dependent variable (organizational performance of SMEs). Importantly, the findings revealed that AIS sophistication played a partial mediating role on the relationship between owner or manager's knowledge, owner or manager's education, owner or manager's experience, and IT investment on organizational performance.

On the other hand, the relationship between the importance of IT and AIS sophistication as a mediating variable on organizational performance, and the relationship between environmental conditions and AIS sophistication as a mediating variable on organizational performance, indicated that there is no mediation impact in the relationship. Justification for these findings was demonstrated in this chapter.
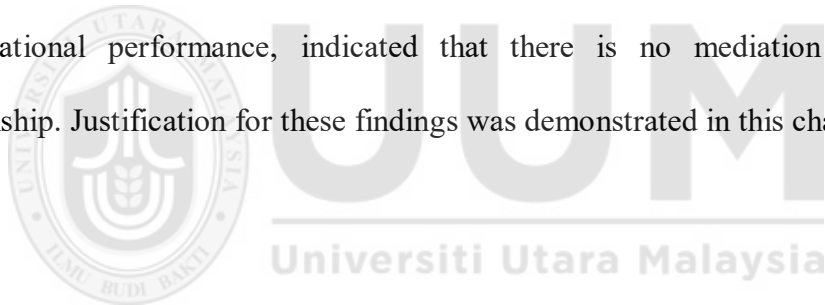
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Appendix (A)

English Questionnaires

QUESTIONNAIRE

</div>

<div align="center">

**The Factors Influence Organizational Performance: Testing
the Mediating Effect of Accounting Information System (AIS) Sophistication of SMEs in
Saudi Arabia**

</div>

Dear Sir / Madam,

This questionnaire was designed to identify the factors that influence on the Accounting Information System sophistication (AIS) and its impact on the organizational performance of SMEs in Saudi Arabia in partial fulfilment of the requirements for the degree of doctoral of philosophy in accounting information systems at University Utara Malaysia (UUM). It is hoped that the results will contribute to knowledge available to technical and accounting departments' owners or managers of SMEs. Therefore, we would like you to spend a little time answering questions related to mentioned title above. Your answers are very important to the accuracy of our study.

<div align="center">

**If you would like to receive a copy of the summary of the research results,
Please write your email address below (or attach a business card):**

Email……………………………………………………………………………………………

INFORMATION GATHERED WILL BE KEPT STRICTLY CONFIDENTIAL

</div>

Please return the completed questionnaire using the self-addressed envelope enclosed at your earliest possible convenience.

<div align="center">

Thank you for your help.

</div>

Mohsen Ali Muthanna Al-Adhreai
E-mail: almuhsen2009@yahoo.com

PART 1:
Demographic

1. Please specify your position: Owner ☐   Manager ☐

2. Gender   Male ☐   female ☐

3. Age: ……………………………years.

4. Years of operations / business

   - 1-3 years ◯
   - 4-10 years ◯
   - More than 10 years ◯

Personal information

5. Manufacturing activities sectors
   Please indicate which type of activities that your company involves by choosing from the list below: (just put the symbol tick (✔) :

Furniture	
Rubber and plastic	
Food and beverage	
Chemicals & chemical products	
Non-metallic mineral products	
Basic Metals	
Others (please specify)	

6. Number of employees :
   less than5 ☐   5 to 50 ☐
   51 to 150 ☐   151 to 250 ☐

7. Annual sales turnover :
   Less than SR 250, 000 ……………………… ☐
   SR 250, 000 to SR 1.0 million ……………… ☐
   SR 1.0 million to SR 5.0 million …………… ☐
   SR 5.0 million to SR 10.0 million …………. ☐
   SR 10.0 million to SR 25.0 million …………. ☐
   More than SR 25.0 million…………………. ☐

PART 2:
Independent variables contains six section

- **Section A:**

Importance of IT

The following statements will help us understand more about Saudi's owners or managers self- perceived information technology importance level of IT. In this section 5 point scale is used to measure your perceptions toward the importance of each

technology identified in your current working environment. Please circle an appropriate number for each statement:

Not Important 1	Less Important 2	Moderate Important 3	Important 4	Very Important 5

Word processing: Computer program that facilitates entry and preparation of documents such as letters or reports.	1	2	3	4	5
Electronic Spreadsheets: software which allows entering either alphanumeric or numeric data and manipulating it either via standard functions or auditor programmed functions.	1	2	3	4	5
Electronic Presentations: software that facilitates the organization and use of text, voice, and/or images to communicate concepts e.g. PowerPoint	1	2	3	4	5
E-Mail: exchange of mail messages via Intranet and/or Internet	1	2	3	4	5
Internet search & retrieval: permit user to search text that is in electronic format and retrieve, view, and print desired text.					
Image processing: conversion of paper documents into electronic from through scanning and the subsequent storage and retrieval of the electronic image.	1	2	3	4	5
Electronic working papers: software which generates at trail balance, lead schedules, and other schedules useful for the recording of evidence in assurance engagement.	1	2	3	4	5
Generalized accounting software: computer program which helps the accountant access client computer data files, extract relevant data, and perform some particular function such as addition or comparison.	1	2	3	4	5
Expert systems: computer software that provides relevant information and / or decision models to assist a human in	1	2	3	4	5

making a decision or accomplishing some task.					
Embedded accounting models / real-time accounting modules: programmed routines incorporated into application program which are designed to perform accounting function.	1	2	3	4	5
Database search & retrieval: software uses relational structures between data files and facilitates varying data retrieval and use.	1	2	3	4	5
Simulation software: abstraction of some aspect of real system which is based on using a model to evaluate the reliability of information from real world sources. This may be thought of as a very high-level analytical review of a company's data.	1	2	3	4	5
Flowcharting / Data modeling: software using the source code version of programs to produce flowcharts program logic.	1	2	3	4	5
Computer- Aided Systems Engineering (CASE) Tools: integrated package of computer tools that automate important aspects of the software development process to increase software development and quality of developed t systems.	1	2	3	4	5
Cooperative Client/ Server Environment: distribution of processing functions between two or more computers as in a local area network.	1	2	3	4	5
Workflow technology: software and hardware that facilitates the capture of data in the workplace to improve management of the business. For example, using an electronic scanner to record the movement of materials in a warehouse based on the barcodes on the materials.	1	2	3	4	5
Groupware: software that permits users to categorize, store, and share data among themselves as well as communication with each other about that data, preferably in a real-time mode.	1	2	3	4	5

Database design & installation: software that permits the creation and use of relational structures between data files.	1	2	3	4	5
Time Management & billing systems: computer program which assists in capturing, managing, billing, and reporting time sent on professional activities	1	2	3	4	5
Test data: a set of transactions that processed to test the programmed or procedural operations of computer applications.	1	2	3	4	5
Small business accounting Software: accounting software package used to record transactions, maintain general and subsidiary ledgers, and generate financial statements.	1	2	3	4	5
Tax return preparation software: software perhaps incorporating expert knowledge, which assists the accounting in identifying relevant information, capturing and recording it in a manner that can be filed with tax authorities.	1	2	3	4	5
Digital communications: bandwidth-telecommunications devices used to facilitate the rapid and undeterred transfer of data.	1	2	3	4	5
EDI-Traditional: transfer of data or payments electronically between computers using software.	1	2	3	4	5
EDI-Web Based: the extension to XML-based EDI.	1	2	3	4	5
Wireless communications: the ability to transfer digital data without the use of cables, twisted-pair, or fibre optics.	1	2	3	4	5
Agent technologies: programmed modules that are given certain levels of authority and autonomy to act on behalf of their '' supervisor'', such as to decide whether to order more inventory and from which supplier.	1	2	3	4	5
Encryption software: changing data using some type of encoding/ decoding algorithm so that unauthorized persons who can access the encrypted data will not be able to read it or use it.	1	2	3	4	5

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Firewall software/ hardware: part of '' security technology'' that enforces an access control policy between two networks.	1	2	3	4	5
User authentication systems: devices used to verify that a system user is who he/ she claim to be.	1	2	3	4	5
Intrusion detection & monitoring: part of '' security technology'' that identifies unauthorized requests or services.	1	2	3	4	5
Internal network configurations: linkage of individuals and data through hardware and software systems that permits the exchange of various types of data.	1	2	3	4	5
External network configurations: intranet, extranet, and internet access devices that enable users physically separated from the server to access it.	1	2	3	4	5
Enterprise resource planning: business-wide information systems that cross boundaries.	1	2	3	4	5
Application service providers: companies which host (provide hardware, software and connectivity) for specific business applications.	1	2	3	4	5

- **Section B:**

Owner or Manager Knowledge:

Please indicate the level of your knowledge of the following accounting techniques and IT applications, using a five-point scale from 1 = no knowledge to 5 = extensive knowledge.

Financial accounting techniques	1	2	3	4	5
Management accounting techniques	1	2	3	4	5
Word-processing package	1	2	3	4	5
Spreadsheet package	1	2	3	4	5

Database package	1	2	3	4	5
Accounting-based applications	1	2	3	4	5
Computer-assisted production management	1	2	3	4	5
E-mail	1	2	3	4	5
Internet searching	1	2	3	4	5

- **Section C1:**

Owner or Manager Education

1. What is your Highest Education Level?
- High School/GED ……………….……… ☐
- Doploma……………………….…….. ☐
- Graduate Degree………………………... ☐
- Master Degree…………………………... ☐
- Other (please specify) …..…………….. ☐

2. Please choose one category that best describes your area of education:
- Other qualification (please describe) ………………………………… ☐
- Science and Mathematics (biology, chemistry, applied mathematics)... ☐
- Humanities (art, sociology, history, languages) ……………………... ☐
- Computer Science (information systems or technology) …………….. ☐
- Business (accounting, finance, management, marketing)…………….. ☐

- **Section C 2:**

Owner or Manager Experience

1. Please choose one category that describes your previous work experience before you became the owner or manager of this organization.
- No previous experience ……………….…… ☐
- Other, please specify………………………… ☐
- Craftsman……………………………………... ☐
- Retailing ……………………………………… ☐
- Accounting/Finance/Banking/Management… ☐

2. How many years of previous work experience did you have before you became the owner or manager of this organization?
- Less than 1 year ………………….. ☐
- 1 to 5 years ………………………. ☐
- More than 5 years up to 10 years ☐
- More than 10 years up to 15 years ☐
- More than 15 years……………… ☐

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- **Section C3:**

IT investment objectives

What is your opinion on the contribution of IT in achieving the following objectives?
Please allocate a total of 100 points to indicate the relative degree of contribution,
making sure that each column adds up to 100.

Objectives	Contribution of Information Technology		
	3 years ago	Present	3 years later
Cut operating costs.			
Gain competitive advantage and increase sales/ market share.			
Invest in information infrastructure (e.g. website, e-commerce, and e-mail systems) to facilitate information access and communication.			
Invest just to compete, simply because other competitors are doing it.			
Total	**100**	**100**	**100**

- **Section C 4:**

Environmental Condition

❖ We are interested in your company's relationship to its external environment. Please rate the characteristics or behavior of various sectors on the following 5-point scale.

	Unpredictable			Easy to predict	
The actions of your competitors are…	1	2	3	4	5
	Unpredictable			Easy to predict	
The demand for your product is…	1	2	3	4	5
	Very Frequently			Very rarely	
To remain competitive, your firm must					

change its marketing practices…	1	2	3	4	5
	Very rapid			Very slow	
The rate of technological evolution in your industryis…	1	2	3	4	5
	Very dissatisfied			Very satisfied	
Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company...	1	2	3	4	5
	Strongly disagree			Strongly agree	
The legal, economical, and political constraints surrounding your company have remained about the same…	1	2	3	4	5

Part 3:
Mediator Variable AIS Sophistication:
Among the following AIS applications, please tick the applications presently implemented in your firm. (You may tick one or more boxes if appropriate).

☐	General ledger	☐	Cost accounting
☐	Account receivable	☐	Financial accounting
☐	Accounts payable	☐	Financial analysis
☐	Billing	☐	Budgeting
☐	Order entry	☐	Project management
☐	Purchasing	☐	Production variance
☐	Inventory	☐	Budget variance
☐	Production planning and control	☐	Modeling
☐	Payroll	☐	Personnel management

Part 4:

<u>Organizational Performance of SMEs</u>

During the last three years, please to give your opinion the following statements:

Decreased Significantly	Decreased	No Change	Increased	Increased significantly
1	2	3	4	5

Level of the productivity	1	2	3	4	5
Product quality	1	2	3	4	5
Number of deliveries on time	1	2	3	4	5
Sales growth rate	1	2	3	4	5
Operating profit growth rate	1	2	3	4	5
Cash flow growth rate	1	2	3	4	5

Please use this space to write any comments you wish to make

....
....
....
....

Thank you for spending your precious time answering the questionnaire. Your contribution to this study is highly appreciated.

Universiti Utara Malaysia

College of Business

Accountancy Department

جامعة الشمال الماليزية
كلية التجارة
قسم المحاسبة

بسم الله الرحمن الرحيم

استبيان

لعوامل التي تؤثر في تطور نظام المعلومات المحاسبي وتأثيرها على الاداء التنظيمي للشركات الصغيرة و المتوسطة في المملكة العربية السعودية.

السلام عليكم ورحمة الله وبركاته
عزيزي المالك أو عزيزي مدير الشركة

لقد صمم هذا الاستبيان للتعرف على العوامل التي تؤثر في تطور نظام المعلومات المحاسبي وتأثيرها على الاداء التنظيمي للشركات الصغيرة و المتوسطة في المملكة العربية السعودية. وذلك من أجل إكمال المتطلبات الازمة لنيل درجة الدكتوراه في نظم المعلومات المحاسبي بجامعة الشمال الماليزية. على أمل أن تساهم نتائج هذا البحث في الجانب المعرفي لتطبيقات نظم المعلومات المحاسبي في الشركات الصغيرة و المتوسطة. لذلك فأننا نرغب من حضرتكم أن تمنحونا قليلاً من وقتكم الثمين لملئ هذه الاستبيان لتحقق بعنوان البحث أعلاه، اجابتكم مهمة جدا و ذلك من أجل دقة دراستنا.

إذا كنت ترغب في الحصول على نسخة من صفحة نتائج البحث فأكتب عنوان بريدك الالكتروني أسفل هذا، أو وافقنا ذلك إكراما على ذلك (:

البريد الالكتروني: ....

البيانات التي ستدلي بها المتعلق بهذا الاستبيان سيكون محاطا بالسرية التامة.

لطفاً إعادة الاستبيان المكتمل بياناتك في أقرب وقت ممكن و ذلك بإعادتك خدام الظرف المرفق بوضعه داخل الظرف و اغلاق الظرف.

شكرا جزيلا لمساعدتكم.

اسم الباحث: محسن فهد مثنى العضرعي
بريد الالكتروني: almuhsen2009@yahoo.com
هاتف محمول:

القسم الأول

المعلومات الشخصية :

8. وظيفتك الحالية في الشركة   مالك ☐   مدير ☐

9. الجنس :   ذكر ☐   أنثى ☐

10. العمـر : .... سنة .

11. عدد السنوات من العمل التجاري
من سنة إلى 3 سنوات . ☐
من 4 إلى 10 سنـوات . ☐
أكثر من عشر سنـوات . ☐

بيانات عامة عن الشركة :

12. قطاعات أو أنشطة الصناعية
يرجى تحديد أي من أنشطة التي تمارسها شركتك و لكتابتها خيارك من القائمة التي
يوضح بإشارة ✓ (أمامها) :

أثاث ومواد مكتبية	
مطاط وب	
مشروبات) مطبات (و أغذية	
مواد كيميائية أو منتجات كيميائية	
المنتجات معدنية	
معادن أساسية	
أنشطة أخرى) فضلا اذكرها (	

13. عدد الموظفين :
أقل من 5 ☐   من 5 إلى 50 ☐
من 51 إلى 150 ☐   من 151 الى 250 ☐

14. المعدل السنوي لدوران المبيعات :

- أقل من 25,000 ريال سعودي .... ☐
- من 25,000 ريال سعودي و حتى 1 مليون ريال سعودي .... ☐
- من 1 مليون ريال سعودي و حتى 5 مليون ريال سعودي ...... ☐
- من 5 مليون ريال سعودي و حتى 10 مليون ريال سعودي .... ☐
- من 10 مليون ريال سعودي و حتى 25 مليون ريال سعودي ... . ☐
- أكثر من 25 مليون ريال سعودي .... ☐

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تغيرات المحتوى القلمي وتتضمن ستة أقسام وهي على النحو الآتي :

● **فقرة أ :**

أهمية تكنولوجيا المعلومات

الفقرات التي تساعد في الكشف عن مدى أهمية تكنولوجيا المعلومات في الكلية أو المدارس في الطلبة الكلية العربية السعودية أو المتوى الطلبة لتكنولوجيا المعلومات .

لظفت حديد مدى أهمية تكنولوجيا المعلومات باتباع اختيار الرقم المناسب بحسب البتنويب من 1-5 وذلك بوضع عائرة كما هو موضح أدناه :

5	4	3	2	1
مهمة جدا	مهمة	مهمة إلى حد ما	قليلة الأهمية	ليست مهمة

	معالجة الكلمات (Word Processing)
5 4 3 2 1	هو برنامج حاسوبي يتيح لك إدخال و إعداد المستندات مثل الرسائل والتقارير , مثال على ذلك برنامج معالجة المستندات مايكروسوفت وورد.
5 4 3 2 1	الجداول الإلكترونية (Electronic, Spreadsheets) هو برنامج يمكن من إدخال البيانات الحسابية أو الختلطة و معالجتها بالطرق الحسابية أو بالطرق المحلية للبرمجة , مثال على ذلك برنامج الجداول البيانية (Microsoft Excel)
5 4 3 2 1	برنامج العرض الإلكتروني (Electronic Presentation) هو برنامج يمكن من تنظيم و استخدام الصور و الصوت و تلك الصور وصور الفيديو , مثال على ذلك برنامج (PowerPoint)
5 4 3 2 1	البريد الإلكتروني (E-mail) هو عبارة عن وسيلة لتبادل الرسائل الإلكترونية من خلال الشبكة العنكبوتية (الانترنت) او شبكة محلية (انترانت).
5 4 3 2 1	البحث والتنتت والتصفح (Internet search & retrieval) يسمح للمستخدم البحث عن الانترنت و معين وشبكل صفحة الكترونية ، مثال على ذلك تصفح الالكتروني والعرض والطباعة لما يراد طباعته .
5 4 3 2 1	معالج الصور (Image processing) وتوكل على تحويل المستندات الورقية إلى مستندات الكترونية وتكون من خلال تصويرها بواسطة الماسح الضوئي (scanner) لكي يتم تخزينها أو حفظها أو تصفحها على هيئة صورة الكترونية.
5 4 3 2 1	أوراق العمل الالكترونية (Electronic working papers)

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5	4	3	2	1	حواسيب أنظمة مصدورة المراجعة وهي سلسلة من الأدوات كلوك وجداول عاوب ى المتعددة وتسجيل الوقائل في المراجعة بصورة دقيقة وآنية .

برمجيات لمحاسبة عامة)Generalized accounting software (

5	4	3	2	1	وهي عبارة عن برامج حاسوب تستساعد لمحاسبين طول حياتهم العملية من خلال الحاسوب واخذ العينات والتحقق منها والقيام ببعض العمليات كالفرز والمقارنة.

انظمة الخبيرة)Expert systems (

5	4	3	2	1	وهي برنامج يعيني الحاسوب ليوفر المعلومات ذات الصلة أو هذاك القرار المساعدة للفرد باتخاذ القرار أو انجاز بعض المهام.

نماذج لمحاسبة المعلة / الوقت الحقيقي صدارات المحاسبية

(Embedded accounting models / real-time accounting modules)

5	4	3	2	1	برامج تطبيقية تعمل عبر الحاسوب بحيث تصمم من اجل الوصول وعمل المحاسبي.

لحث قاعدة بيانات والمنترجاعها)Database search & retrieval (

5	4	3	2	1	وهي برنامج يستخدم الحاسوب بترتيب وتصنيف البيانات المختلفة وأئول كيفية التعامل مع البيانات واستخدامها.

برامج لمحاكاة)Simulation software (

5	4	3	2	1	وهو صورة لبعض مظاهر النظام الصلي الذي يعطي الدور الذي يلعبه المستخدم ومكونات النظام المختلفة المهمة وتوفير الكوادر العلمية وذلك لتقليل التأثيرات في أي صفات التحليل ومراجعة بيانات الشركة.

نمذجة البيانات)Flowcharting / Data modeling (

5	4	3	2	1	وهي برنامج حاسوبي يستخدم صور ادوات الرسوم لتوفير البرامج التطبيقية وتمكن من رؤية الكل برنامج نظام معقدة ومعبرة.

أدوات هندسة أنظمة لحاسوب المساعدة

)Computer- Aided Systems Engineering (CASE) Tools (

5	4	3	2	1	وهي مجموعة متكاملة من ادوات الحاسوبية التي تسمح جولة واسعة من العمليات وتطوير للبرمجيات ودفع برامج التنفيذ فيها و انظهار تاريخية تطور مطورنظم الموجودة والنظم المستخدمة.

العمل او المزبون التعاوني وبيئة التعاونة.

Cooperative Client/ Server Environment

5	4	3	2	1	وهي عبارة عن عمليات تتوزع بين حاسوبين او جهازي كمبيوتر او اكثر في الشركة للعامل اتصا .

5 4 3 2 1	**التدفق التكنولوجي (Workflow technology)**
	برنامج وجهاز الكترونية وقد وجبتسير وي الوثائق الطباعية وتوفير الوصول إلى ان على مستوى الطرق وتوفير الوصول الى داري فوضى سريع لها الشراء :- يتم استخدام الوحة الماسح الضوئي (scanner) الكترونية تسجيل لحركات المالي في المخزن يتم دائما في الوقت لنقل التسليل هذه المواد
5 4 3 2 1	**مجموعة برامج الكترونية (Groupware)**
	برنامج حاسوبي يحل محل يستخدم تقسيم وتخزين و شاركة البيانات والمعلومات ولكي يمكن هذا البعض هذا البعض وليمكن التوصل والتصرف هذا البعض رسم والمواقف المعلومات البيانات ولكن في الوقت المحدد ولكن ب.
5 4 3 2 1	**تصميم قواعد البيانات وتركيبها (Database design & installation)**
	للبرمجيات التي يتم شراء ولتخدمات لكي بترتيب قنية لزم لفات البيانات.
5 4 3 2 1	**إدارة الوقت وأنظمة الفوترة (Time Management & billing systems)**
	برنامج حاسوبي يساعد في وي الوثائق الطباعية وإدارة طور وفير وابرز ل لوقت الوقت الذي يقضي في أنشطة المهنية.
5 4 3 2 1	**اختبار البيانات (Test data)**
	مجموعة من المعام التي يتم تطويرها علاج بالسلطة دقق حسيبات لغير الر البيانات للبرمجية او ا جريطية ستعمال الحاسوب .
5 4 3 2 1	**برنامج حل الصغيرة غي المعاملة ل لمحاسبي (Small business accounting Software)**
	وهو عبارة عن برنامج حاسوبي صدار محاسبي يستخدم لتسجيل البيانات ولحفاظ على سجل ا ستباذ العام توفر عن ه وكل ميق ومبأعداد البيانات المالية.
5 4 3 2 1	**برمجيات اعداد اقرار الضريبي (Tax return preparation software)**
	وهو عبارة عن برنامج بوصفيها اعفي وجهود المعزمة لتخصرصية والتي يستعد لمحاسوب او لوقت فيت يتميز للمفي موات ذات على قيمة لحص رها تسجل طبيق في المنو نحفظ ا بالتزامن مع جرلحة للضرائب.
5 4 3 2 1	**اتصالات الرقمية (Digital communications)**
	هي أجزة مزمة تسل مق تسخدم لتسيل وصول البيانات بسرعة فائقة.
5 4 3 2 1	**التبادل الكتروني للبيانات (EDI-Traditional)**
	هي على وقول البيانات أو لموضوعات البيانات الوجه بين أجهزة الكمبيوتر بربط تستخدام برامج الحاسوب .
5 4 3 2 1	**التبادل الكتروني للبيانات عبر الانترنت (EDI-Web Based)**
	هي على تتوسع في بسط نظام (XML) معهدة في التبادل الكترونية للبيانات .
5 4 3 2 1	**اتصالات السلكية (Wireless communications)**

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المقدرة على ارسال وتحويل البيانات الرقمية من دون استخدام أي مسلك او وصلة معينة اوب سيلكية.

					تقنيات الوكيل (Agent technologies)
5	4	3	2	1	برامج وموارد ادارة تعطيها مستوى معين من الحرية والتحكم من المستخدم من اجل قيام وبالعمل نيابة عن هذا على عنه.
					مثل : في اتخاذ قرار بالقيام بطلبية لاثر للمخزون و من أي مورد يطلب لك.

					برامج التشفير او الترميز (Encryption software)
5	4	3	2	1	تغير المفهوم للبيانات او للبيانات ونصها للمستخدم معين من الترميز او التشفير وتلك كلت فمن نوع الشهر خ لهذا المفهوم لهوه أو لهو ذي لهو سليم مصر حية من اخوراق للبيانات وكمهالك ونيرين اتطع لك لش خ أنه قرأ او يبت لك خدم للبيانات.

					برامج وأجهزة الجدار الناري (Firewall software/ hardware)
5	4	3	2	1	هي جزء من أمن المفهومات التي يفرض تبت استخدام سياسة التحكم بين شبكتين.

					نظم التحقق من المستخدم (User authentication systems)
5	4	3	2	1	أجهزة تست خدم التأكد من أن مستخدمي تلك انظمة ا هم المخولون با ستخدام.

					كشف التسلل والمراقبة (Intrusion detection & monitoring)
5	4	3	2	1	جزء من أمن المفهومات التي تتحق وبالتعرف فى ا لطلبات أو الخدمات غير المصرح بها.

					مكونات الشبكة الداخلية (Internal network configurations)
5	4	3	2	1	هي بسبب افرادو للبيانات من خلا ل اجهزة والبرامج الالكترونية لتوريد تست مجتمعو ادل أوا متعددة من البيانات .

					مكونات الشبكة الخارجية (External network configurations)
5	4	3	2	1	شبكة مليبية ،شبكة خارجية ، أجهزة تشبكة تت رنت تمف نهو تست محل مستخدمين ما يبه لشبكك نفصل عن التوفير لعملية الدخول لعلى لك لشبكات.

					نظام تخطيط موارد لمؤسسات (Enterprise resource planning)
5	4	3	2	1	عبارة عن لأنظمة مفهومات أعمال وللع تتن تجاوز حدود للشركة .

					مزودي خدمة لتطبيق (Application service providers)
5	4	3	2	1	شركات تقوم بتوفير ا جهزة الالكترونية وللبرامج الالكترونية وخدمة اتصال ال من أجل تطبيقات أعمال محددة.

- الفقرة ب :
المعرفة للملك أو المورر :
لفظ أت تحديد متواك المعرفي لتقنيات وتطبيقات تقنيا المفهومات اتية بسحب التقييم من 1- 5 بحيث تبتدر من الرقم(1) (يعني عدم وجود معرفة الى للرقم(5) (يعني معرفة شاملة ، وذلك بوضع طائرة لعلى للرقم الذي يتطابق مع

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معرفتكم:

تقنيات لمحاسبة لمالية	5 4 3 2 1
تقنيات لمحاسبة ا ا دارية	5 4 3 2 1
تطبيق معالج الكلمات	5 4 3 2 1
حزم برامج الجدولة	5 4 3 2 1
حزم قاعدة البيانات	5 4 3 2 1
تطبيق انترنت معمد في لمحاسبة	5 4 3 2 1
إدارة حسابات مساعدة الحاسوب	5 4 3 2 1
البريد الالكتروني	5 4 3 2 1
البحث بالانترنت	5 4 3 2 1

- **الفقرة ج 1 :**
  لمستوى لتعليمي للمالك أو لمدير
  1. ما هو أعلى مستوى ثقافي للتعليم ؟ ضع إشارة ✓ أمام الإجابة لكل منها سبة:
  – ثانوية عامة .... ☐
  – دبلوم .... ☐
  – خريج بدرجة البكالوريوس .... ☐
  – خريج بدرجة الماجستير . ... ☐
  – أخرى الرجاء حدد ذلك .... (.)

  2. لرجاء اختيار فئة الانسب التي تحدد مجال التعليمك :-

مؤهلات أخرى الرجاء اذكرها .... (.)	
العلوم و الرياضيات	(كيمياء ، أحياء ، الرياضيات التطبيقية) ☐
العلوم الادبية	(فنون , لغة , جغرافيا , تاريخ , لغات) ☐
علوم الكمبيوتر	(نظم معلومات أو تكنولوجيا) ☐
أعمال	(محاسبة , مالية , إدارة , تسويق) ☐

- **الفقرة ج 2 :**
  خبرة لمالك أو لمدير :
  1. الرجاء اختيار فئة واحدة التي تبين خبرتك السابقة قبل أن تصبح مالك ا أو مدير المنشأة أو المنظمة التي تعمل فيها:-

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- يوجد ضرائب مسبقة...................................... ☐
- أخرى، من فضلك حدد ها...................................... ☐
- لم من لا حوفية...................................... ☐
- البيع بالتجزئة...................................... ☐
- محلية / إقليمية / ا عمال الصرفية/ ارة .... ☐

2. لحظاً حديد عدد السنوات في شركتك السابقة قبل أن تصبح مالكا أو مدير الشركتك او مؤسستك :-
- أقل من سنة واحدة .... ☐
- من سنة واحدة الى 5 سنوات .... ☐
- أكثر من 5 سنوات وحتى 10 سنوات .... ☐
- أكثر من 10 سنوات وحتى 15 سنه .... ☐
- أكثر من 15 سنه .... ☐

- الفقرة ج 3 :

اهداف استثمار تقنية المعلومات :

ما هو رأيك في ما يقبل من مهمة تقنية المعلومات لتحقيق الاهداف التالية ؟

لحظاً القيام بتوزيع ما جلته على نقطة من سلة اهداف استثمار تقنية المعلومات لتحقيق تلك
الأهداف :

في كل حال تأكد من ان كل عمود من ان يتم صل جلته الى 100 نقطة .

هـــــداف	تقنية المعلومات		
	بعد 3 سنوات قادمة	أو الوقت الحاضر	3 سنوات مضت
اخفض التكاليف التشغيلية.			
أحصل على ميزة تنافسية لزيادة المبيعات /لزيادة حصة السوق.			
تأثير المرفي في البيئة التي تقنية المعلومات)على سبيل المثال : الموقع الالكتروني ، التجارة الالكترونية ، وأنظمة البريد الالكتروني وذلك تسهيل الحصول على المعلومات واتصالات.			
تأثير المرفي يراقب ببساطة ما يفعلون ن المنافسون الاخرون يقوم ون به.			
جملي	100	100	100

- الفقرة ج 4 :

الوضع المؤوي :

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❖ نحن مهتمون بـ قـة شركتك بـالبيئة الخارجـية ، مـن فـضلك حدد معدل الخص ائـ أو الـتصرفات و الـسلوكيات
للقطاعات الـمختلـف ة بحسب الـترتيب اتـي من 1 الى 5)وتـكبوضـع دائـرة فـي ا يـار الـفضل ب (:

من السهل التنبؤ به				غير متوقع	
5	4	3	2	1	ردود الفعل لفلسيك هي
من السهل التنبؤ به				غير متوقع	
5	4	3	2	1	الطلب فـى مـتجات الشركة هو ...
نادر جداً				متكرر جداً	
5	4	3	2	1	لتقى مفلسا, فـى شركتك أنتغير مـمارسيك اـ التسويقية.
بطيء جداً				سريع جداً	
5	4	3	2	1	إنـريب ة الـتطور التقني فـي صناعك.
راض جداً				غير راض جداً	
5	4	3	2	1	رضـا الـعمـيـل فـي بـعدد الـمتجات و الـخدمات الـتي تـم تسويق ها خ ل الـخمس السنوات الـمضي فـي شركتك.
موافق بشدة				غير موافق بشدة	
5	4	3	2	1	الاتجاهات القانونية و ا قتصاية و الـسياسية الـمحيطة بشركتك تغيت كما هي ...

القسم الثالث:

الـتغير لـوبري طـتطور نظام الـمعلومات الـمحاسبي:

فـي ما يـيـتطبيق ات الـنظام الـمعلومات الـمحاسبي
الـفضل أضع ع مـقصح) ✔ (أمام الـتطبيقات الـمطبقة أو الـمتخدم فـي شركتك :ـ

	محاسبة التكاليف
	محاسبة مالية
	الـتحليل المالي
	وضع الميزانية
	إدارة المشاريع
	تراوح ا نتاج
	تراوح الميزانية
	العرض
	إدارة شؤون الموظفين

	سجل استاذ العام
	حسابات الدائنين أو الموردين
	الحسابات المدينة
	فـوترة
	ادخال الطلب
	المشتريات
	المخزون
	تخطيط ا نتاج و التحكم
	قائمة الرواتب

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القسم الرابع :

ا   ء لتنظيمي للشركات الصغيرة والمتوسطة

من خلال الثلاث سنوات الأخيرة مفضلك أنت عطينا رأيك في القرارات المتخذة بوضع دائرة على الخيار الذي يتناسب مع
شركتكم (:

| | 5 ازدياد بشكل ملحوظ | 4 ازدياد | 3 تغيير | 2 نقص | 1 نقص بشكل ملحوظ |

1 2 3 4 5	مستوى الإنتاجية
1 2 3 4 5	جودة المنتج
1 2 3 4 5	عدد التوصيات أو التسليمات في الوقت المناسب
1 2 3 4 5	معدل نمو المبيعات
1 2 3 4 5	معدل نمو ربح التشغيل
1 2 3 4 5	معدل نمو تدفق السيولة النقدية

ثم فضلك استخدم هذه المساحة لكتابة تعليقك التي ترتأيها

....
....
....
....
....
....
....

شكراً جزيلاً لكم على حسن وقتكم الغالي والثمين في الإجابة على أسئلة الاستبيان
خالص تحياتي ،،،

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Appendix (C)

Correlation

Correlations

Notes			
Output Created			AST 18:28:58 2015--02
Comments			
Input	Data		C:\Users\aziz\Desktop\Orginal Data (4) -.sav
	Active Dataset		DataSet1
	Filter		<none>
	Weight		<none>
	Split File		<none>
	N of Rows in Working Data File		229
Missing Value Handling	Definition of Missing		User-defined missing values are treated as missing.

[DataSet1] C:\Users\aziz\Desktop\Orginal Data (4) -.sav

Correlations

		IIT	OMK	OMX	OME	IN	EC	AIS	OP
IIT	Pearson Correlation	1	.365**	.178**	.053	.222**	.127	.282**	.198**
	Sig. (2-tailed)		.000	.007	.424	.001	.056	.000	.003
	N	229	229	229	229	229	229	229	229
OMK	Pearson Correlation	.365**	1	.356**	.284**	.166*	.073	.345**	.381**
	Sig. (2-tailed)	.000		.000	.000	.012	.273	.000	.000
	N	229	229	229	229	229	229	229	229
OMX	Pearson Correlation	.178**	.356**	1	.331**	.183**	.006	.368**	.517**
	Sig. (2-tailed)	.007	.000		.000	.005	.924	.000	.000
	N	229	229	229	229	229	229	229	229
OME	Pearson Correlation	.053	.284**	.331**	1	.183**	.058	.321**	.408**
	Sig. (2-tailed)	.424	.000	.000		.006	.381	.000	.000
	N	229	229	229	229	229	229	229	229
IN	Pearson Correlation	.222**	.166*	.183**	.183**	1	-.005-	.554**	.418**
	Sig. (2-tailed)	.001	.012	.005	.006		.934	.000	.000
	N	229	229	229	229	229	229	229	229
EC	Pearson Correlation	.127	.073	.006	.058	-.005-	1	-.008-	.014
	Sig. (2-tailed)	.056	.273	.924	.381	.934		.902	.829
	N	229	229	229	229	229	229	229	229
AIS	Pearson Correlation	.282**	.345**	.368**	.321**	.554**	-.008-	1	.590**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.902		.000
	N	229	229	229	229	229	229	229	229

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OP	Pearson Correlation	.198**	.381**	.517**	.408**	.418**	.014	.590**	1
	Sig. (2-tailed)	.003	.000	.000	.000	.000	.829	.000	
	N	229	229	229	229	229	229	229	229

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT OP
  /METHOD=ENTER IIT OMK OMX OME IN EC
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN
  /SAVE PRED DFBETA.
```

Regression

Notes

Output Created		AST 18:29:29 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\Orginal Data (4) -.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.

Syntax		REGRESSION
		/MISSING LISTWISE
		/STATISTICS COEFF OUTS R ANOVA
		/CRITERIA=PIN(.05) POUT(.10)
		/NOORIGIN
		/DEPENDENT OP
		/METHOD=ENTER IIT OMK OMX OME IN EC
		/SCATTERPLOT=(*ZRESID ,*ZPRED)
		/RESIDUALS DURBIN
		/SAVE PRED DFBETA.
Resources	Processor Time	00 00:00:00.375
	Elapsed Time	00 00:00:00.540
	Memory Required	5076 bytes
	Additional Memory Required for Residual Plots	200 bytes
Variables Created or Modified	PRE_1	Unstandardized Predicted Value
	DFB0_1	DFBETA for (Constant)
	DFB1_1	DFBETA for IIT
	DFB2_1	DFBETA for OMK
	DFB3_1	DFBETA for OMX
	DFB4_1	DFBETA for OME
	DFB5_1	DFBETA for IN
	DFB6_1	DFBETA for EC

[DataSet1] C:\Users\aziz\Desktop\Orginal Data (4) -.sav

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	EC, IN, OMK, OME, IIT, OMX	.	Enter

a. All requested variables entered.

b. Dependent Variable: OP

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.663[a]	.439	.424	.52423	1.857

a. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX

b. Dependent Variable: OP

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.811	6	7.968	28.995	.000[a]
	Residual	61.011	222	.275		
	Total	108.821	228			

a. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX

b. Dependent Variable: OP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.661	.308		2.144	.033
	IIT	.007	.052	.007	.126	.899
	OMK	.124	.047	.152	2.615	.010
	OMX	.293	.048	.342	6.104	.000
	OME	.162	.045	.199	3.617	.000
	IN	.244	.044	.292	5.551	.000
	EC	-.010-	.052	-.010-	-.192-	.848

a. Dependent Variable: OP

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N

327

Predicted Value	1.7676	4.6062	3.6739	.45793	229
Std. Predicted Value	-4.163-	2.036	.000	1.000	229
Standard Error of Predicted Value	.042	.170	.088	.027	229
Adjusted Predicted Value	1.8486	4.6198	3.6760	.45450	229
Residual	-2.38847-	1.44622	.00000	.51729	229
Std. Residual	-4.556-	2.759	.000	.987	229
Stud. Residual	-4.769-	2.780	-.002-	1.011	229
Deleted Residual	-2.61732-	1.46824	-.00206-	.54327	229
Stud. Deleted Residual	-5.023-	2.823	-.004-	1.024	229
Mahal. Distance	.466	23.093	5.974	4.390	229
Cook's Distance	.000	.333	.007	.032	229
Centered Leverage Value	.002	.101	.026	.019	229

a. Dependent Variable: OP

Charts

Scatterplot

Dependent Variable: OP


```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT AIS
  /METHOD=ENTER IIT OMK OMX OME IN EC
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN
  /SAVE PRED DFBETA.
```

Regression

Notes

Output Created		AST 18:31:14 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\Orginal Data (4) -.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION
		/MISSING LISTWISE
		/STATISTICS COEFF OUTS R ANOVA
		/CRITERIA=PIN(.05) POUT(.10)
		/NOORIGIN
		/DEPENDENT AIS
		/METHOD=ENTER IIT OMK OMX OME IN EC
		/SCATTERPLOT=(*ZRESID ,*ZPRED)
		/RESIDUALS DURBIN
		/SAVE PRED DFBETA.
Resources	Processor Time	00 00:00:00.329
	Elapsed Time	00 00:00:00.540
	Memory Required	5236 bytes
	Additional Memory Required for Residual Plots	200 bytes
Variables Created or Modified	PRE_2	Unstandardized Predicted Value
	DFB0_2	DFBETA for (Constant)
	DFB1_2	DFBETA for IIT
	DFB2_2	DFBETA for OMK
	DFB3_2	DFBETA for OMX
	DFB4_2	DFBETA for OME
	DFB5_2	DFBETA for IN
	DFB6_2	DFBETA for EC

[DataSet1] C:\Users\aziz\Desktop\Orginal Data (4) -.sav

330

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	EC, IN, OMK, OME, IIT, OMX	.	Enter

a. All requested variables entered.

b. Dependent Variable: AIS

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.659[a]	.434	.419	.77379	1.812

a. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX

b. Dependent Variable: AIS

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	102.002	6	17.000	28.393	.000[a]
	Residual	132.924	222	.599		
	Total	234.926	228			

a. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX

b. Dependent Variable: AIS

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.264-	.455		-2.777-	.006
	IIT	.135	.076	.099	1.771	.078

331

OMK	.162	.070	.136	2.321	.021
OMX	.219	.071	.173	3.081	.002
OME	.166	.066	.139	2.518	.012
IN	.554	.065	.453	8.553	.000
EC	-.056-	.077	-.037-	-.730-	.466

a. Dependent Variable: AIS

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.5766	4.4389	3.1878	.66886	229
Std. Predicted Value	-3.904-	1.870	.000	1.000	229
Standard Error of Predicted Value	.062	.252	.130	.039	229
Adjusted Predicted Value	.5319	4.4220	3.1858	.66857	229
Residual	-2.17689-	1.97554	.00000	.76354	229
Std. Residual	-2.813-	2.553	.000	.987	229
Stud. Residual	-2.846-	2.619	.001	1.003	229
Deleted Residual	-2.22765-	2.07945	.00200	.78973	229
Stud. Deleted Residual	-2.893-	2.655	.002	1.007	229
Mahal. Distance	.466	23.093	5.974	4.390	229
Cook's Distance	.000	.065	.005	.009	229
Centered Leverage Value	.002	.101	.026	.019	229

a. Dependent Variable: AIS

Charts

Scatterplot

Dependent Variable: AIS
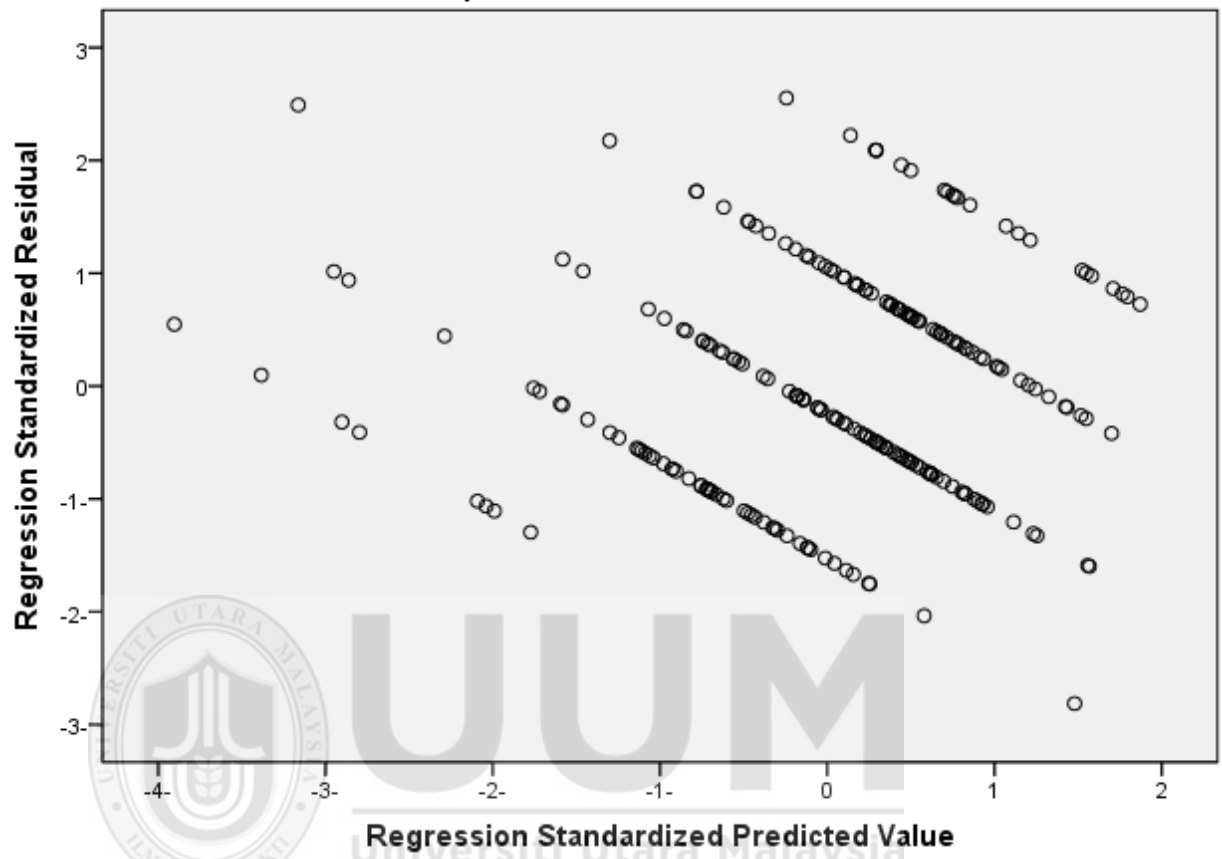
Appendix (D)

Factor analysis for OMK

Factor Analysis

Notes		
Output Created		AST 19:14:36 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) - .sav
	Active Dataset	DataSet1
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.
Syntax		FACTOR
		/VARIABLES OMKq43 OMKq44 OMKq45 OMKq46 OMKq47 OMKq48 OMKq50 OMKq51 OMKq49
		/MISSING LISTWISE
		/ANALYSIS OMKq43 OMKq44 OMKq45 OMKq46 OMKq47 OMKq48 OMKq50 OMKq51 OMKq49
		/PRINT INITIAL CORRELATION KMO AIC EXTRACTION ROTATION
		/FORMAT BLANK(.4)
		/CRITERIA MINEIGEN(1) ITERATE(25)
		/EXTRACTION PC
		/CRITERIA ITERATE(25)
		/ROTATION VARIMAX
		/METHOD=CORRELATION.
Resources	Processor Time	00 00:00:00.046
	Elapsed Time	00 00:00:00.154
	Maximum Memory Required	11172 (10.910K) bytes

335

Correlation Matrix

		Financial accounting techniques	Management accounting techniques	Word-processing package	Spreadsheet package	Database package	Accounting-based applications	E-mail	Internet searching	Computer-assisted production management
Correlation	Financial accounting techniques	1.000	.794	.734	.696	.669	.718	.572	.587	.609
	Management accounting techniques	.794	1.000	.746	.703	.687	.725	.578	.616	.669
	Word-processing package	.734	.746	1.000	.780	.721	.709	.601	.644	.694
	Spreadsheet package	.696	.703	.780	1.000	.773	.732	.614	.648	.651
	Database package	.669	.687	.721	.773	1.000	.708	.610	.628	.646
	Accounting-based applications	.718	.725	.709	.732	.708	1.000	.639	.684	.671
	E-mail	.572	.578	.601	.614	.610	.639	1.000	.876	.651
	Internet searching	.587	.616	.644	.648	.628	.684	.876	1.000	.630
	Computer-assisted production management	.609	.669	.694	.651	.646	.671	.651	.630	1.000

336

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.924
Bartlett's Test of Sphericity	Approx. Chi-Square	1870.789
	df	36
	Sig.	.000

Anti-image Matrices

		Financial accounting techniques	Management accounting techniques	Word-processing package	Spreadsheet package	Database package	Accounting-based applications	E-mail	Internet searching	Computer-assisted production management
Anti-image Covariance	Financial accounting techniques	.299	-.124-	-.055-	-.019-	-.016-	-.058-	-.023-	.017	.020
	Management accounting techniques	-.124-	.277	-.043-	-.009-	-.025-	-.039-	.015	-.017-	-.056-
	Word-processing package	-.055-	-.043-	.271	-.084-	-.031-	-.005-	.016	-.025-	-.069-
	Spreadsheet package	-.019-	-.009-	-.084-	.272	-.103-	-.048-	-.003-	-.012-	-.007-
	Database package	-.016-	-.025-	-.031-	-.103-	.326	-.042-	-.017-	-.002-	-.030-
	Accounting-based applications	-.058-	-.039-	-.005-	-.048-	-.042-	.308	.006	-.044-	-.050-
	E-mail	-.023-	.015	.016	-.003-	-.017-	.006	.212	-.153-	-.066-
	Internet searching	.017	-.017-	-.025-	-.012-	-.002-	-.044-	-.153-	.198	.015

	Computer-assisted production management	.020	-.056-	-.069-	-.007-	-.030-	-.050-	-.066-	.015	.390
Anti-image Correlation	Financial accounting techniques	.928a	-.432-	-.193-	-.067-	-.051-	-.191-	-.090-	.071	.058
	Management accounting techniques	-.432-	.933a	-.157-	-.033-	-.084-	-.132-	.063	-.074-	-.169-
	Word-processing package	-.193-	-.157-	.945a	-.310-	-.104-	-.017-	.069	-.109-	-.211-
	Spreadsheet package	-.067-	-.033-	-.310-	.940a	-.344-	-.164-	-.013-	-.053-	-.023-
	Database package	-.051-	-.084-	-.104-	-.344-	.957a	-.134-	-.064-	-.009-	-.084-
	Accounting-based applications	-.191-	-.132-	-.017-	-.164-	-.134-	.963a	.023	-.178-	-.144-
	E-mail	-.090-	.063	.069	-.013-	-.064-	.023	.843a	-.745-	-.230-
	Internet searching	.071	-.074-	-.109-	-.053-	-.009-	-.178-	-.745-	.854a	.054
	Computer-assisted production management	.058	-.169-	-.211-	-.023-	-.084-	-.144-	-.230-	.054	.955a

a. Measures of Sampling Adequacy(MSA)

338

Communalities

	Initial	Extraction
Financial accounting techniques	1.000	.705
Management accounting techniques	1.000	.737
Word-processing package	1.000	.764
Spreadsheet package	1.000	.756
Database package	1.000	.719
Accounting-based applications	1.000	.752
E-mail	1.000	.646
Internet searching	1.000	.685
Computer-assisted production management	1.000	.666

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.430	71.444	71.444	6.430	71.444	71.444
2	.727	8.083	79.526			
3	.402	4.472	83.998			
4	.386	4.290	88.288			
5	.290	3.219	91.507			
6	.257	2.853	94.360			
7	.203	2.250	96.610			
8	.192	2.137	98.747			
9	.113	1.253	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Financial accounting techniques	.840
Management accounting techniques	.858
Word-processing package	.874
Spreadsheet package	.870
Database package	.848
Accounting-based applications	.867

E-mail	.804
Internet searching	.828
Computer-assisted production management	.816

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Rotated Component Matrix[a]

a. Only one component was extracted. The solution cannot be rotated.

Appendix (E)

Factor Analysis for EC

Factor Analysis

Notes

Output Created		AST 19:17:13 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) - .sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.
Syntax		FACTOR
		/VARIABLES ECq68 ECq69 ECq70 ECq71 ECq72 ECq73
		/MISSING LISTWISE
		/ANALYSIS ECq68 ECq69 ECq70 ECq71 ECq72 ECq73
		/PRINT INITIAL CORRELATION KMO AIC EXTRACTION ROTATION
		/FORMAT BLANK(.4)
		/CRITERIA MINEIGEN(1) ITERATE(25)
		/EXTRACTION PC
		/CRITERIA ITERATE(25)
		/ROTATION VARIMAX
		/METHOD=CORRELATION.
Resources	Processor Time	00 00:00:00.031
	Elapsed Time	00 00:00:00.140
	Maximum Memory Required	5544 (5.414K) bytes

Correlation Matrix

		The actions of your competitors are	The demand for your product is	To remain competitive, your firm must change its marketing practices	The rate of technological evolution in your industry is	Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company	The legal, economical, and political constraints surrounding your company have remained about the same
Correlation	The actions of your competitors are	1.000	.625	.418	.366	.359	.421
	The demand for your product is	.625	1.000	.390	.271	.386	.433
	To remain competitive, your firm must change its marketing practices	.418	.390	1.000	.404	.354	.322
	The rate of technological evolution in your industry is	.366	.271	.404	1.000	.427	.205
	Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company	.359	.386	.354	.427	1.000	.314
	The legal, economical, and political constraints surrounding your company have remained about the same	.421	.433	.322	.205	.314	1.000

343

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	353.610
	df	15
	Sig.	.000

Anti-image Matrices

		The actions of your competitors are	The demand for your product is	To remain competitive, your firm must change its marketing practices	The rate of technological evolution in your industry is	Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company	The legal, economical, and political constraints surrounding your company have remained about the same
Anti-image Covariance	The actions of your competitors are	.534	-.254-	-.086-	-.108-	-.020-	-.106-
	The demand for your product is	-.254-	.547	-.073-	.029	-.103-	-.121-
	To remain competitive, your firm must change its marketing practices	-.086-	-.073-	.709	-.173-	-.076-	-.085-
	The rate of technological evolution in your industry is	-.108-	.029	-.173-	.721	-.211-	.022

344

	Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company	-.020-	-.103-	-.076-	-.211-	.712	-.091-
	The legal, economical, and political constraints surrounding your company have remained about the same	-.106-	-.121-	-.085-	.022	-.091-	.748
Anti-image Correlation	The actions of your competitors are	.770a	-.470-	-.139-	-.174-	-.033-	-.167-
	The demand for your product is	-.470-	.760a	-.118-	.046	-.166-	-.189-
	To remain competitive, your firm must change its marketing practices	-.139-	-.118-	.860a	-.242-	-.107-	-.117-
	The rate of technological evolution in your industry is	-.174-	.046	-.242-	.769a	-.295-	.030
	Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company	-.033-	-.166-	-.107-	-.295-	.828a	-.125-

		-.167-	-.189-	-.117-	.030	-.125-	.867[a]
	The legal, economical, and political constraints surrounding your company have remained about the same						

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
The actions of your competitors are	1.000	.615
The demand for your product is	1.000	.583
To remain competitive, your firm must change its marketing practices	1.000	.475
The rate of technological evolution in your industry is	1.000	.386
Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company	1.000	.451
The legal, economical, and political constraints surrounding your company have remained about the same	1.000	.406

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.915	48.590	48.590	2.915	48.590	48.590
2	.913	15.223	63.813			
3	.656	10.939	74.752			
4	.622	10.360	85.111			
5	.537	8.942	94.054			
6	.357	5.946	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

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	Component
	1
The actions of your competitors are	.784
The demand for your product is	.763
To remain competitive, your firm must change its marketing practices	.689
The rate of technological evolution in your industry is	.621
Your satisfaction about the number of new products and services has been marketed during the past 5 years in your company	.671
The legal, economical, and political constraints surrounding your company have remained about the same	.637

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Rotated Component Matrix[a]

a. Only one component was extracted. The solution cannot be rotated.

Appendix (F)

Factor Analysis for OP

Factor Analysis

Notes

Output Created		AST 19:19:18 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) - .sav
	Active Dataset	DataSet1
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.
Syntax		FACTOR
		/VARIABLES OPq92 OPq93 OPq94 OPq95 OPq96 OPq97
		/MISSING LISTWISE
		/ANALYSIS OPq92 OPq93 OPq94 OPq95 OPq96 OPq97
		/PRINT INITIAL CORRELATION KMO AIC EXTRACTION ROTATION
		/FORMAT BLANK(.4)
		/CRITERIA MINEIGEN(1) ITERATE(25)
		/EXTRACTION PC
		/CRITERIA ITERATE(25)
		/ROTATION VARIMAX
		/METHOD=CORRELATION.
Resources	Processor Time	00 00:00:00.031
	Elapsed Time	00 00:00:00.152
	Maximum Memory Required	5544 (5.414K) bytes

349

Correlation Matrix

		Level of the productivity	Product quality	Number of deliveries on time	Sales growth rate	Operating profit growth rate	Cash flow growth rate
Correlation	Level of the productivity	1.000	.429	.422	.510	.470	.442
	Product quality	.429	1.000	.404	.476	.322	.337
	Number of deliveries on time	.422	.404	1.000	.385	.420	.494
	Sales growth rate	.510	.476	.385	1.000	.755	.659
	Operating profit growth rate	.470	.322	.420	.755	1.000	.718
	Cash flow growth rate	.442	.337	.494	.659	.718	1.000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.818
Bartlett's Test of Sphericity	Approx. Chi-Square	611.717
	df	15
	Sig.	.000

Anti-image Matrices

		Level of the productivity	Product quality	Number of deliveries on time	Sales growth rate	Operating profit growth rate	Cash flow growth rate
Anti-image Covariance	Level of the productivity	.646	-.132-	-.119-	-.073-	-.045-	-.021-
	Product quality	-.132-	.676	-.160-	-.150-	.062	.012
	Number of deliveries on time	-.119-	-.160-	.663	.044	-.038-	-.140-
	Sales growth rate	-.073-	-.150-	.044	.343	-.173-	-.081-
	Operating profit growth rate	-.045-	.062	-.038-	-.173-	.335	-.148-

350

	Cash flow growth rate	-.021-	.012	-.140-	-.081-	-.148-	.415
Anti-image Correlation	Level of the productivity	.906a	-.199-	-.181-	-.156-	-.097-	-.041-
	Product quality	-.199-	.789a	-.238-	-.312-	.131	.022
	Number of deliveries on time	-.181-	-.238-	.838a	.092	-.080-	-.267-
	Sales growth rate	-.156-	-.312-	.092	.789a	-.512-	-.215-
	Operating profit growth rate	-.097-	.131	-.080-	-.512-	.778a	-.396-
	Cash flow growth rate	-.041-	.022	-.267-	-.215-	-.396-	.845a

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
Level of the productivity	1.000	.506
Product quality	1.000	.389
Number of deliveries on time	1.000	.448
Sales growth rate	1.000	.729
Operating profit growth rate	1.000	.701
Cash flow growth rate	1.000	.679

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.451	57.517	57.517	3.451	57.517	57.517
2	.841	14.013	71.530			
3	.643	10.712	82.242			
4	.551	9.181	91.423			
5	.301	5.009	96.432			
6	.214	3.568	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

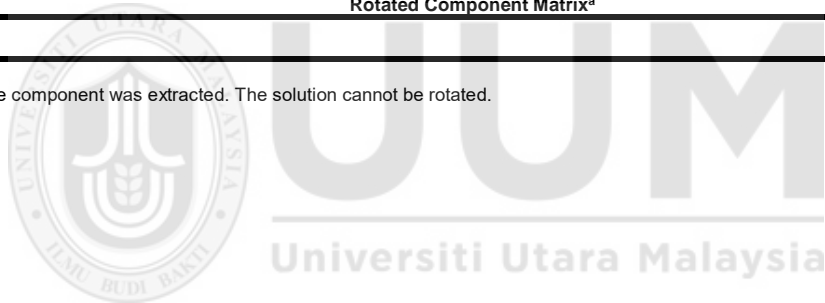|	Component
	1
Level of the productivity	.711
Product quality	.623
Number of deliveries on time	.669
Sales growth rate	.854
Operating profit growth rate	.837
Cash flow growth rate	.824

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Rotated Component Matrix[a]

a. Only one component was extracted. The solution cannot be rotated.
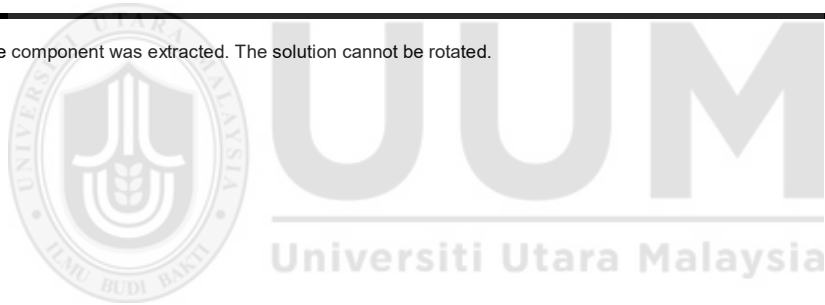
Appendix (G)

T-test

Regression

Notes

Output Created		AST 19:26:55 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) - .sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION
		/MISSING LISTWISE
		/STATISTICS COEFF OUTS R ANOVA
		/CRITERIA=PIN(.05) POUT(.10)
		/NOORIGIN
		/DEPENDENT OP
		/METHOD=ENTER AIS
		/SCATTERPLOT=(*ZRESID ,*ZPRED)
		/RESIDUALS DURBIN
		/SAVE PRED RESID DFBETA.
Resources	Processor Time	00 00:00:02.265
	Elapsed Time	00 00:00:01.926
	Memory Required	3756 bytes
	Additional Memory Required for Residual Plots	240 bytes
Variables Created or Modified	PRE_3	Unstandardized Predicted Value
	RES_1	Unstandardized Residual
	DFB0_3	DFBETA for (Constant)
	DFB1_3	DFBETA for AIS

354

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	AIS[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: OP

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.590[a]	.348	.345	.55897	1.960

a. Predictors: (Constant), AIS

b. Dependent Variable: OP

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.895	1	37.895	121.286	.000[a]
	Residual	70.926	227	.312		
	Total	108.821	228			

a. Predictors: (Constant), AIS

b. Dependent Variable: OP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.394	.122		19.623	.000

355

AIS	.402	.036	.590	11.013	.000

a. Dependent Variable: OP

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.7953	4.4018	3.6739	.40769	229
Std. Predicted Value	-2.155-	1.785	.000	1.000	229
Standard Error of Predicted Value	.038	.088	.050	.014	229
Adjusted Predicted Value	2.7774	4.4218	3.6748	.40647	229
Residual	-1.79526-	1.23480	.00000	.55774	229
Std. Residual	-3.212-	2.209	.000	.998	229
Stud. Residual	-3.252-	2.214	-.001-	1.004	229
Deleted Residual	-1.84081-	1.24041	-.00083-	.56448	229
Stud. Deleted Residual	-3.323-	2.233	-.002-	1.011	229
Mahal. Distance	.034	4.645	.996	1.158	229
Cook's Distance	.000	.134	.006	.020	229
Centered Leverage Value	.000	.020	.004	.005	229

a. Dependent Variable: OP
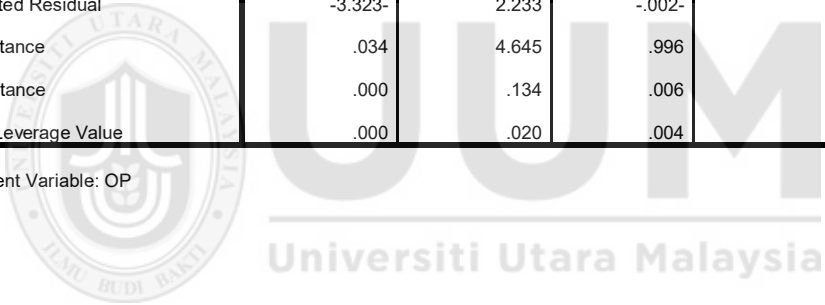
Charts

Scatterplot

Dependent Variable: OP
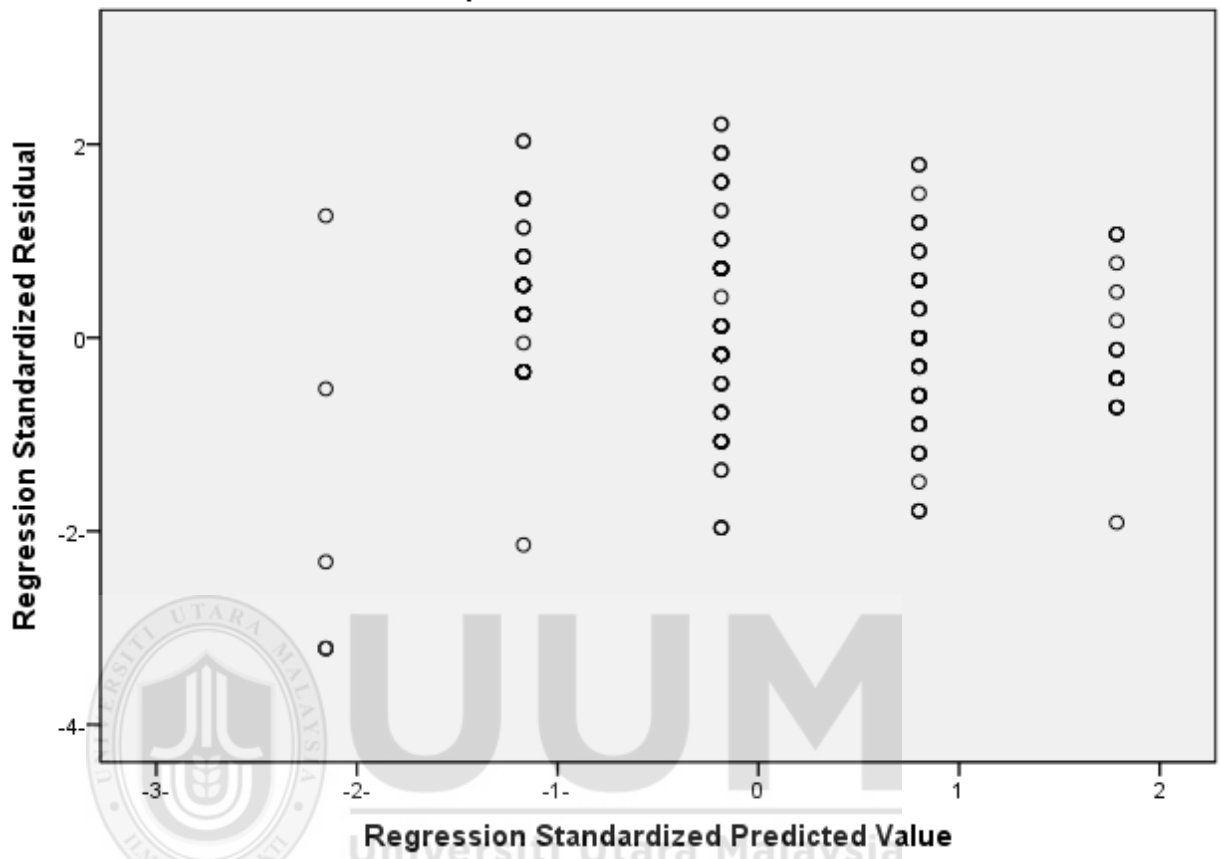
Appendix (H)

Normality

Descriptives

Notes

Output Created		AST 18:55:16 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) - .sav
	Active Dataset	DataSet1
	Filter	<none>
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	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=IIT OMK OMX OME IN EC AIS OP /STATISTICS=KURTOSIS SKEWNESS.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.006

[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav

Descriptive Statistics

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
IIT	229	-.769-	.161	.536	.320
OMK	229	-1.030-	.161	.536	.320
OMX	229	-.314-	.161	.155	.320
OME	229	-.281-	.161	-.290-	.320
IN	229	-1.256-	.161	1.453	.320
EC	229	-1.433-	.161	2.713	.320
AIS	229	-.004-	.161	-.641-	.320
OP	229	-1.204-	.161	3.654	.320
Valid N (listwise)	229				

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Appendix (I)

Mediating

Regression

[DataSet2] C:\Users\aziz\Desktop\Orginal Data rev.sav

Descriptive Statistics

	Mean	Std. Deviation	N
OP	3.6739	.69086	229
IIT	3.9663	.73996	229
OMK	3.8935	.84981	229
OMX	3.5437	.80585	229
OME	3.5131	.84801	229
IN	3.8253	.82893	229
EC	3.4716	.67397	229
AIS	3.1878	1.01507	229

Correlations

		OP	IIT	OMK	OMX	OME	IN	EC	AIS
Pearson Correlation	OP	1.000	.198	.381	.517	.408	.418	.014	.590
	IIT	.198	1.000	.365	.178	.053	.222	.127	.282
	OMK	.381	.365	1.000	.356	.284	.166	.073	.345
	OMX	.517	.178	.356	1.000	.331	.183	.006	.368
	OME	.408	.053	.284	.331	1.000	.183	.058	.321
	IN	.418	.222	.166	.183	.183	1.000	-.005	.554
	EC	.014	.127	.073	.006	.058	-.005	1.000	-.008
	AIS	.590	.282	.345	.368	.321	.554	-.008	1.000
Sig. (1-tailed)	OP	.	.001	.000	.000	.000	.000	.415	.000
	IIT	.001	.	.000	.003	.212	.000	.028	.000
	OMK	.000	.000	.	.000	.000	.006	.136	.000
	OMX	.000	.003	.000	.	.000	.003	.462	.000
	OME	.000	.212	.000	.000	.	.003	.190	.000
	IN	.000	.000	.006	.003	.003	.	.467	.000
	EC	.415	.028	.136	.462	.190	.467	.	.451
	AIS	.000	.000	.000	.000	.000	.000	.451	.
N	OP	229	229	229	229	229	229	229	229
	IIT	229	229	229	229	229	229	229	229
	OMK	229	229	229	229	229	229	229	229
	OMX	229	229	229	229	229	229	229	229
	OME	229	229	229	229	229	229	229	229
	IN	229	229	229	229	229	229	229	229
	EC	229	229	229	229	229	229	229	229

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Correlations

		OP	IIT	OMK	OMX	OME	IN	EC	AIS
Pearson Correlation	OP	1.000	.198	.381	.517	.408	.418	.014	.590
	IIT	.198	1.000	.365	.178	.053	.222	.127	.282
	OMK	.381	.365	1.000	.356	.284	.166	.073	.345
	OMX	.517	.178	.356	1.000	.331	.183	.006	.368
	OME	.408	.053	.284	.331	1.000	.183	.058	.321
	IN	.418	.222	.166	.183	.183	1.000	-.005	.554
	EC	.014	.127	.073	.006	.058	-.005	1.000	-.008
	AIS	.590	.282	.345	.368	.321	.554	-.008	1.000
Sig. (1-tailed)	OP	.	.001	.000	.000	.000	.000	.415	.000
	IIT	.001	.	.000	.003	.212	.000	.028	.000
	OMK	.000	.000	.	.000	.000	.006	.136	.000
	OMX	.000	.003	.000	.	.000	.003	.462	.000
	OME	.000	.212	.000	.000	.	.003	.190	.000
	IN	.000	.000	.006	.003	.003	.	.467	.000
	EC	.415	.028	.136	.462	.190	.467	.	.451
	AIS	.000	.000	.000	.000	.000	.000	.451	.
N	OP	229	229	229	229	229	229	229	229
	IIT	229	229	229	229	229	229	229	229
	OMK	229	229	229	229	229	229	229	229
	OMX	229	229	229	229	229	229	229	229
	OME	229	229	229	229	229	229	229	229
	IN	229	229	229	229	229	229	229	229
	EC	229	229	229	229	229	229	229	229
	AIS	229	229	229	229	229	229	229	229

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	EC, IN, OMK, OME, IIT, OMX	.	Enter
2	AIS[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: OP

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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
					Change Statistics				
1	.663[a]	.439	.424	.52423	.439	28.995	6	222	.000
2	.706[b]	.499	.483	.49663	.060	26.370	1	221	.000

a. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX

b. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX, AIS

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.811	6	7.968	28.995	.000[a]
	Residual	61.011	222	.275		
	Total	108.821	228			
2	Regression	54.314	7	7.759	31.460	.000[b]
	Residual	54.507	221	.247		
	Total	108.821	228			

a. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX

b. Predictors: (Constant), EC, IN, OMK, OME, IIT, OMX, AIS

c. Dependent Variable: OP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.661	.308		2.144	.033	.054	1.269
	IIT	.007	.052	.007	.126	.899	-.096	.109
	OMK	.124	.047	.152	2.615	.010	.030	.217
	OMX	.293	.048	.342	6.104	.000	.199	.388
	OME	.162	.045	.199	3.617	.000	.074	.250
	IN	.244	.044	.292	5.551	.000	.157	.330

Model		B	Std. Error	Beta	t	Sig.		
	EC	-.010	.052	-.010	-.192	.848	-.113	.093
2	(Constant)	.941	.297		3.166	.002	.355	1.526
	IIT	-.023	.049	-.025	-.473	.636	-.121	.074
	OMK	.088	.045	.108	1.938	.054	-.002	.177
	OMX	.245	.046	.286	5.270	.000	.153	.337
	OME	.125	.043	.154	2.909	.004	.040	.210
	IN	.121	.048	.145	2.526	.012	.027	.216
	EC	.002	.049	.002	.049	.961	-.095	.100
	AIS	.221	.043	.325	5.135	.000	.136	.306

a. Dependent Variable: OP

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	AIS	.325[a]	5.135	.000	.326	.566

a. Predictors in the Model: (Constant), EC, IN, OMK, OME, IIT, OMX

b. Dependent Variable: OP

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Appendix (J)

Mean & SD

Descriptives

Notes

Output Created		AST 18:53:00 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav
	Active Dataset	DataSet1
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=IIT OMK OMX OME IN EC AIS OP /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.020

[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
IIT	229	1.00	5.00	3.9663	.73996
OMK	229	1.00	5.00	3.8935	.84981
OMX	229	1.00	5.00	3.5437	.80585
OME	229	1.00	5.00	3.5131	.84801
IN	229	1.27	5.00	3.8253	.82893
EC	229	1.00	5.00	3.4716	.67397
AIS	229	1.00	5.00	3.1878	1.01507
OP	229	1.00	5.00	3.6739	.69086
Valid N (listwise)	229				

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Appendix (K)

Reliability

```
RELIABILITY
  /VARIABLES=IITq8 IITq9 IITq10 IITq11 IITq12 IITq13 IITq14 IITq15 IITq16 IITq17 IITq18
IITq19 IITq20 IITq21 IITq22 IITq23 IITq24 IITq25 IITq26 IITq27 IITq28 IITq29 IITq30
IITq31 IITq32 IITq33 IITq34 IITq35 IITq36 IITq37 IITq38 IITq39 IITq40 IITq41 IITq42
  /SCALE('IIT (Reliability)') ALL
  /MODEL=ALPHA.
```

Reliability

<table>
<tr><td colspan="3" align="center">Notes</td></tr>
<tr><td>Output Created</td><td></td><td>AST 19:01:52 2015--02</td></tr>
<tr><td>Comments</td><td></td><td></td></tr>
<tr><td>Input</td><td>Data</td><td>C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav</td></tr>
<tr><td></td><td>Active Dataset</td><td>DataSet1</td></tr>
<tr><td></td><td>Filter</td><td><none></td></tr>
<tr><td></td><td>Weight</td><td><none></td></tr>
<tr><td></td><td>Split File</td><td><none></td></tr>
<tr><td></td><td>N of Rows in Working Data File</td><td>229</td></tr>
<tr><td></td><td>Matrix Input</td><td></td></tr>
<tr><td>Missing Value Handling</td><td>Definition of Missing</td><td>User-defined missing values are treated as missing.</td></tr>
<tr><td></td><td>Cases Used</td><td>Statistics are based on all cases with valid data for all variables in the procedure.</td></tr>
<tr><td>Syntax</td><td></td><td>RELIABILITY

/VARIABLES=IITq8 IITq9 IITq10 IITq11 IITq12 IITq13 IITq14 IITq15 IITq16 IITq17 IITq18 IITq19 IITq20 IITq21 IITq22 IITq23 IITq24 IITq25 IITq26 IITq27 IITq28 IITq29 IITq30 IITq31 IITq32 IITq33 IITq34 IITq35 IITq36 IITq37 IITq38 IITq39 IITq40 IITq41 IITq42

/SCALE('IIT (Reliability)') ALL

/MODEL=ALPHA.</td></tr>
<tr><td>Resources</td><td>Processor Time</td><td>00 00:00:00.000</td></tr>
<tr><td></td><td>Elapsed Time</td><td>00 00:00:00.007</td></tr>
</table>

```
[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4)  -.sav
```

Scale: IIT (Reliability)

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Case Processing Summary

		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.973	35

```
RELIABILITY
  /VARIABLES=OMKq43 OMKq44 OMKq45 OMKq46 OMKq47 OMKq48 OMKq50 OMKq51 OMKq49
  /SCALE('OMK (Reliability)') ALL
  /MODEL=ALPHA.
```
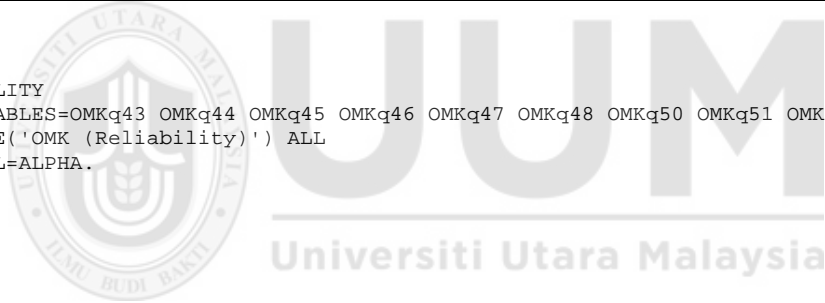
Reliability

Notes

Output Created		AST 19:03:49 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) - .sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
	Matrix Input	

Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY
		/VARIABLES=OMKq43 OMKq44 OMKq45 OMKq46 OMKq47 OMKq48 OMKq50 OMKq51 OMKq49
		/SCALE('OMK (Reliability)') ALL
		/MODEL=ALPHA.
Resources	Processor Time	00 00:00:00.015
	Elapsed Time	00 00:00:00.006

[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav

Scale: OMK (Reliability)
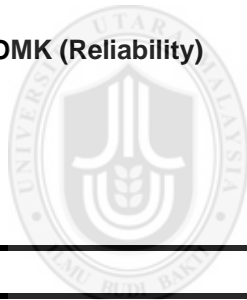
Case Processing Summary

		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.950	9

```
RELIABILITY
  /VARIABLES=OMEq52 OMEq53
  /SCALE('OME (Reliability)') ALL
  /MODEL=ALPHA.
```

Reliability

Output Created		AST 19:04:27 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=OMEq52 OMEq53 /SCALE('OME (Reliability)') ALL /MODEL=ALPHA.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.003

[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav

Scale: OME (Reliability)

Case Processing Summary

		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

Case Processing Summary

		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha[a]	N of Items
-.303-	2

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want

to check item codings.

```
RELIABILITY
  /VARIABLES=OMXq54 OMXq55
  /SCALE('OMX (Reliability)') ALL
  /MODEL=ALPHA.
```
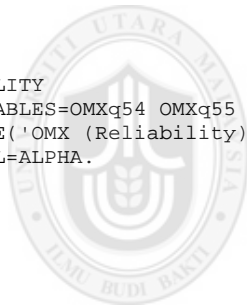
Reliability
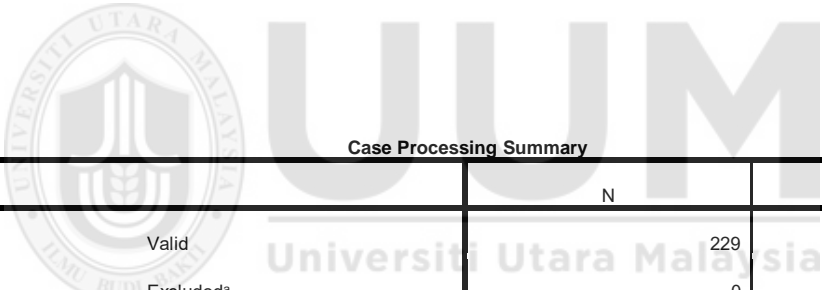
Notes

Output Created		AST 19:05:22 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.

	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY
		/VARIABLES=OMXq54 OMXq55
		/SCALE('OMX (Reliability)') ALL
		/MODEL=ALPHA.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.006

```
[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \ Data (4)  -.sav
```

Scale: OMX (Reliability)

Case Processing Summary

|		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.701	2

```
RELIABILITY
  /VARIABLES=INq56a INq57a INq58a INq59a INq60b INq61b INq62b INq63b INq64c INq65c
INq66c INq67c
  /SCALE('IN (Reliability)') ALL
  /MODEL=ALPHA.
```

Reliability

Notes

Output Created		AST 19:06:25 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=INq56a INq57a INq58a INq59a INq60b INq61b INq62b INq63b INq64c INq65c INq66c INq67c /SCALE('IN (Reliability)') ALL /MODEL=ALPHA.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.006

[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav

Scale: IN (Reliability)

Case Processing Summary

		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.926	12

```
RELIABILITY
  /VARIABLES=ECq68 ECq69 ECq70 ECq71 ECq72 ECq73
  /SCALE('EC (Reliability)') ALL
  /MODEL=ALPHA.
```

Reliability

Notes

Output Created		AST 19:06:58 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=ECq68 ECq69 ECq70 ECq71 ECq72 ECq73 /SCALE('EC (Reliability)') ALL /MODEL=ALPHA.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.004

```
[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4)  -.sav
```

Scale: EC (Reliability)

Case Processing Summary

		N	%
Cases	Valid	229	100.0
	Excluded^a	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.784	6

```
RELIABILITY
  /VARIABLES=AISq74 AISq75 AISq76 AISq77 AISq78 AISq79 AISq80 AISq81 AISq82 AISq83
AISq84 AISq85 AISq86 AISq87 AISq88 AISq89 AISq90 AISq91
  /SCALE('AIS (Reliability)') ALL
  /MODEL=ALPHA.
```

Reliability

Notes

Output Created		AST 19:08:52 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) - .sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229

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	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY
		/VARIABLES=AISq74 AISq75 AISq76 AISq77 AISq78 AISq79 AISq80 AISq81 AISq82 AISq83 AISq84 AISq85 AISq86 AISq87 AISq88 AISq89 AISq90 AISq91
		/SCALE('AIS (Reliability)') ALL
		/MODEL=ALPHA.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.010

[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav

Scale: AIS (Reliability)

Case Processing Summary

		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.843	18

RELIABILITY

378

```
/VARIABLES=OPq92 OPq93 OPq94 OPq95 OPq96 OPq97
/SCALE('OP (Reliability)') ALL
/MODEL=ALPHA.
```

Reliability

Notes

Output Created		AST 19:10:01 2015--02
Comments		
Input	Data	C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	229
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY
		/VARIABLES=OPq92 OPq93 OPq94 OPq95 OPq96 OPq97
		/SCALE('OP (Reliability)') ALL
		/MODEL=ALPHA.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.003

[DataSet1] C:\Users\aziz\Desktop\ 2 4 2015 \Orginal Data (4) -.sav

Scale: OP (Reliability)

Case Processing Summary

379

		N	%
Cases	Valid	229	100.0
	Excluded[a]	0	.0
	Total	229	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.849	6