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A Model for Implementing Accounting Information Systems in Small and Medium Sized Enterprises

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ABSTRACT

Much have been researched about the issues of accounting and information systems (IS) in small and medium sized enterprises (SMEs), including their link to performance. However, past studies have struggled to show a direct impact of either accounting or IS on performance. Based on a comprehensive review of accounting and IS literature, this paper offers an alternative model to viewing the fit between accounting information systems (AIS) requirements and IS processing capacity, and assessing the link with the performance of SMEs. Using information processing theory as a theoretical foundation, the model offers new insights into the potential factors that influence AIS requirements, types of IT sophistication and its link to IS processing capacity, the fit between AIS requirements and IS processing capacity, and the potential impact of aligning AIS requirements and IS processing capacity on overall firm performance.

ABSTRAK

Banyak kajian berkaitan dengan isu-isu perakaunan dan sistem maklumat di kalangan syarikat-syarikat bersaiz kecil dan sederhana telah dijalankan, termasuklah hubungan antara perakaunan dan sistem maklumat dengan prestasi syarikat. Walau bagaimanapun, kajian-kajian lepas sukar membuktikan wujudnya hubungan secara langsung antara praktis perakaunan atau sistem maklumat dengan prestasi syarikat. Berdasarkan sorotan literatur yang komprehensif, artikel ini menawarkan satu model alternatif bagi mengkaji keseimbangan antara keperluan sistem maklumat perakaunan dan kapasiti pemprosesan sistem maklumat, dan seterusnya menilai hubungan antara keseimbangan tersebut dengan prestasi syarikat. Menggunakan teori pemprosesan maklumat sebagai asas, model ini dapat memberi gambaran baru mengenai faktor-faktor yang mempengaruhi keperluan sistem maklumat perakaunan dan kapasiti pemprosesan sistem maklumat, dan impak daripada capaian keseimbangan tersebut ke atas prestasi keseluruhan syarikat.

INTRODUCTION

A model for viewing accounting, information systems (IS), and information technology (IT), is essential if organisations, particularly small and medium sized enterprises (SMEs), are to plan effectively their accounting information systems (AIS) implementation. While it is well argued that

the usage of more contemporary AIS information and the adoption of more sophisticated IS processing mechanisms would enhance performance, past studies have never been able to fully demonstrate the impact of accounting and IS on performance (Shin, 2001). A comprehensive review of IS literature indicated that IT adoption within SMEs has grown tremendously over the last two decades. Alas, results from many studies suggested that very few of the resulting systems have had significant impacts on the way management makes decisions. Most SMEs were found to use IT to support operational and administrative activities. This finding is consistent with accounting studies which suggest that SMEs rely on traditional accounting information such as balance sheets and income statements to make business decisions. Hence, a model which allows SMEs to gain broader perspectives of AIS functions as an information provider together with the roles of IT as an important IS processing mechanism can be powerful means of providing focus and improving the effectiveness of AIS implementations, and ultimately to enhance organisational performance.

Lee (2001) stressed that the quality of a system's design is determined by how accurately requirements are captured which in turn determines how well they can be interpreted. This implies that the determination of organisational information requirements is as important as if not more, than the technology required to process the information. Indeed, IT itself comprises of (*information*) and (*technology*) aspects. However, the information and technology functions in an organisation are often viewed as two separate areas (Goldsworthy, 1996). Without a proper model to guide the management, the situation often results in a mismatch between the information required and the technology adopted. This tendency inflicts unnecessary expenses on the organisation (Gul, 1991).

Developments in the areas of accounting, IS and IT over the last two decades proffer new ways of looking at the roles of AIS. Firstly, there has been substantial technological progress. For example, the evolution in database technology has enabled the implementation of a new accounting model, i.e. Resources-Events-Agents (REA). The REA accounting model is based on economic changes rather than debits and credits as in the traditional accounting model (McCarthy, 1982) and this enables modern AIS to capture and provide information beyond the historical and financial related data. Powerful and user-friendly AIS packages are also available at much lower costs. Furthermore, the use of local area network (LAN) or wide area network (WAN), coupled with relational databases enable faster cross-departmental reporting with drill-down and roll-up features. Secondly, there have been considerable changes to the ways accounting is being viewed. Mauldin and Ruchala (1999) claimed that modern AIS is now capable of capturing non-financial, external, and future-oriented data, and hence putting more emphasis on the economies of business operations and strategic management. Indeed the survival of the accounting profession rests with its ability to integrate new and sophisticated IT into the accounting practices (Elliot, 1992).

The main aim of this paper is to propose a model for AIS implementation in the specific context of SMEs. Instead of exploring IS in a broad sense, this paper has a more restricted view of AIS, in which AIS is an important component of a modern IS in SMEs (Mitchell, Reid & Smith, 2000). The paper begins with a definition of SMEs, followed by an overview of accounting and IS-related studies. It then discusses information processing theory and relates it to the importance of fit between AIS requirements and IS processing capacity. A model for AIS implementation in SMEs is then proposed. The model explains the links between contextual factors and AIS requirements, IT sophistication and IS processing capacity, influence factors and AIS alignment, and the impact of aligning AIS requirements and IS processing capacity on business performance.

A SUMMARY OF LITERATURE REVIEW

Small and Medium Sized Enterprises

This paper proposes a model for implementing AIS in SMEs. Several compelling reasons justify the selection of SMEs for this paper. Kaplan

(1994) argued that contemporary accounting research is best served by studying the largest and most successful subjects. The reason is that smaller businesses are less likely to possess the expertise or resources to make significant breakthroughs or innovations in contemporary accounting techniques and IT sophistication. However, Mitchell et al. (2000) argued that "much of the research potential of SMEs derives directly from the contrast which they provide with large organisation as a research setting" (p. 2). For example, SMEs operating in dynamic environments are more vulnerable to external forces and thus require more information and better IS processing mechanisms than larger organisations to make good decisions (El Louadi, 1998). In fact, the absence of professional or even experienced accounting and IS support within the SMEs means that AIS design and IT sophistication found within this type of firms will be derived purely from the managerial needs and demand (Mitchell et al., 2000). Furthermore, the size of SMEs provides a relatively less complex research object compared with that of the large organisation and thus the nature, role and development of AIS design and IT are more visible to the researcher. Therefore the SMEs setting will provide a relatively pure and focused insight into the management needs for accounting information and IT as an information processing mechanism.

Unfortunately, there is no generally accepted definition of SMEs. Three commonly used criteria for defining SMEs are number of employees, annual sales, and fixed assets (Ibrahim & Goodwin, 1986). Number of employees is the most common size criterion used by researchers (DeLone, 1988; Montazemi, 1987; Raymond & Pare, 1992; Raymond, Pare & Bergeron, 1995; El Louadi, 1998; Cragg, King & Hussin, 2002). The reason is that most SMEs are reluctant to disclose their annual sales or revenues due to lack of trust and openness (Robinson & Pearce, 1984). Thus, most researchers chose number of employees as a criterion to differentiate between SMEs and large businesses.

In the absence of a precise definition, SMEs are defined in different context in various business cultures (Seyal, Rahim & Rahman, 2000). Even the number of employees varies to what constitutes small and medium size organisations. For example, organisations having less than 250 employees in Canada and United States are categorised as medium (Raymond & Pare, 1992; Raymond et al., 1995; Magal & Lewis, 1995). By contrast, those with less than 150 in the United Kingdom (Cragg et al., 2002) and Malaysia (e.g. Foong, 1999) are considered as medium. The same situation applies to the definition of small business. Organisations having less than 50 employees in the United Kingdom and Canada are known as small (Raymond & Pare, 1992; Cragg & King, 1993). In the United States, Singapore and New Zealand, those with less than 100 employees are included in the definition of small organisations (Malone, 1985; Igbaria, Zinatelli, Crags, & Cavaye, 1997; Thong, 1999). In Malaysia, the Small and Medium Industries Development Corporation (SMIDEC) defines SME as a company with full-time employees not exceeding 150 and annual sales turnover of not exceeding RM25 million.

Accounting Literature

Horngren, Sunden, and Stratton (1999) defined AIS as a formal means of gathering and communicating data to aid and coordinate collective decisions in light of the overall goals or objectives of an organisation. An effective AIS design should provide to both internal and external parties with timely and relevant information (Holmes, Lindsay, & Shepherd, 1990). Generally, AIS studies can be classified into two broad categories. First are studies that investigate AIS from the perspective of financial accounting. Second are studies that investigate AIS from the perspective of management accounting.

The existing accounting literature provides little illustration of AIS development within SMEs, in particular management accounting systems. Indeed, there is considerable evidence to suggest that within SMEs, financial accounting systems remains the principal source of information for its management. For example, Holmes and Nicholls (1989) and McMahon and Davies (1994) revealed that the majority of SMEs prepare and rely heavily on statutory accounts as

their primary source of information for making decisions. SMEs are also more likely to outsource their accounting work due to lack of accounting knowledge and support (Reid & Smith, 2000). Most SMEs tend to see accounting activity as a paperwork burden rather than an important component of the firms' IS that delivers relevant and timely information upon which decisions can be made (Duncan, 1993).

Management accounting studies can be further classified into two categories. First are studies that adopt an objective view, which is concerned with the extent that conventional models or techniques are employed in SMEs. These studies often suggest that SMEs have little management information, poor control and decision-making is ad hoc (Nayak & Greenfield, 1994). Second are those that adopt a subjective orientation, which focus on management accounting design that is created idiosyncratically in the firms. Perren and Grant (2000) summarised that these studies found SMEs acquire effective information and control through informal means and that decision-making can be more sophisticated than anticipated. Financial awareness among SME managers varies considerably and the use of IT for the preparation of management accounting information is not at its full potential (Marriot & Marriot, 2000).

Several studies have also investigated the fit between contextual factors and AIS design (Choe & Lee, 1993; Mia & Chenhall, 1994; Abernethy & Guthrie, 1994; Chong & Chong, 1997). These contingent-based studies generally focus on: (1) the characteristics of AIS information; and (2) the use of AIS techniques (Mak, 1989). While these studies provide interesting insights into the relationship between contextual factors and AIS design, they often neglect the supply side of the information, i.e. IS processing capacity. Most of these studies simply assume that the information required will somehow be made available by the organisation, which in reality is not necessarily the case. Gul (1991) argued that the perceptions of usefulness or importance of AIS characteristics of information in itself are inadequate, since it is the extent to which these characteristics of information are available that would have a deeper impact on decision-making processes. On the other hand, available AIS information must also be useful to the business. Unsurprisingly, studies that examined the link between AIS design and performance produced inconclusive and in many instances contradictory results (McMahon & Davies, 1994; Thomas & Evanson, 1997; McMahon, 2001). Most of these contingent-based studies also concentrated on medium and large organisations, whereas very little research was conducted in the SME settings (Reid & Smith, 2000).

Information Systems

There exists a large body of IS literature in the SME context. Early IS studies in SMEs focused on the issue of IT adoption. While the sophistication of IT adoption has increased tremendously, very few of the resulting systems had been successful in providing support to the management (Cragg & Zinatelli, 1995; Thong, 1999). There is limited evidence that IT is used to support strategic decision-making (King, Piper, & Whittaker, 1991). The most prevalent applications in SMEs are transactional in nature (Raymond, 1992). More recent studies by Bridge and Peel (1999) and Foong (1999) further confirmed that computers in SMEs are mainly used for administrative and operational tasks rather than for strategic planning. Fuller (1996) argued that the key problem to the lack of strategic use of IT in SMEs relates to the poor fit between what the systems are offering and what is needed. Business people and IT professionals were too concerned with getting systems designed and implemented (Goldsworthy, 1996). They often failed to see that the aspect they should have been concentrating on was the information itself. Sophisticated IT alone does not guarantee success if it is unable to provide the information required. This situation is even more crucial when there is a lack of accounting and IS support in SMEs (Mitchell et al., 2000). More positively, results

from several studies show some support to the idea that IT helps SMEs develop and implement business strategy. For example, Lesjak (2001) concluded that IT was used strategically when it was perceived as being integral to a firm's strategy. Based on the results of case studies of 27 SMEs, Levy, Powell and Yetton, (2001) showed that IT investment in SMEs is strongly influenced by their strategic context.

Many studies have also examined the link between IT sophistication and IS success. Unfortunately, different researchers used different measures of IT sophistication (Kagan, Lau & Nusgart, 1990; Raymond & Pare, 1992; Lai, 1994; Raymond et al., 1995; Cragg & Zinatelli, 1995; Foong, 1999), and thus produced inconclusive and in many cases contradictory findings. Most studies focused on the technological aspect of IT sophistication and often neglected other important aspects such as informational, functional, and managerial sophistication.

The link between IT sophistication and performance has also received the attention of IS researchers. However, most studies struggled to show a direct impact of IT on performance. Shin (2001) argued that IT is an essential tool, but not sufficient by itself, to be truly effective. Rather, IT needs to be coupled with other factors to have an impact on performance. Therefore, many have investigated the fit or alignment between contextual factors and IT sophistication and examined its link to business performance. For example, Chan, Huff, Barday, and Copeland (1997) focused on the link between business strategy and IT strategy, while Raymond et al. (1995) focused on the link between organisational structure and IT structure. Bergeron, Raymond, and Rivard (2001) explored the links between strategic orientation, organisational structure, and strategic IT management with performance. More recently, Cragg et al. (2002) concluded that firms that aligned their IT strategy with business strategy performed better than firms that did not. While the results of past studies showed a positive relationship between IT alignment and business performance, Ballantine, Bonner, Levey, Marti, Mumo, and Powell (1998) argued that SMEs do not have a clearly defined IS/IT or business strategy and thus made it difficult to evaluate the impact of IS/IT investment on performance. Chang and Jevons Lee (1992) suggested that these contextual factors are often translated in terms of information requirements of the organisation. Hence, instead of measuring the links between contextual factors and IT strategy, alignment studies should focus on the fit between organisational information requirements and its IS processing capacity to generate the information.

INFORMATION PROCESSING THEORY

Information processing theory postulates that organisational IS processing capacity must match its information requirements to have significant impacts on performance (Galbraith, 1973). The theory assumes that "an organisation is a complex system whose primary problem of relating to its environment is the acquisition and utilisation of information" (Bolon, 1998, 212). The greater the uncertainty, the greater the amount of information that needs to be processed to achieve a given level of performance (Galbraith, 1973). Organisations would respond to the increasing information demand by increasing their IS processing capabilities (Egelhoff, 1991). In this case, providing managers with less information than required would affect the quality of the decisions made, which could eventually impede performance. On the other hand, investing in sophisticated IT may turn out to be an inefficient and costly information processing mechanism for firms that are faced with lower levels of information requirements (Rhee, 2001). Furthermore, providing managers with unnecessary information would only cause information overload which could eventually hamper the performance (Gul, 1991). Thus, a high performing firm is one in which the information requirements are matched with IS processing capacity and firms which experience a mismatch suffer in terms of lost performance.

MODEL

Based on the previous discussions, it has become clear that despite conceptual and empirical research efforts addressed at a wide variety of accounting, IS and IT issues in SMEs, there is still a lack of understanding of AIS requirements, IS processing capacity, the fit between AIS requirements and IS processing capacity, and its impact on performance. Indeed, much need to be considered before SMEs can effectively implement their AIS.

The first important issue of AIS implementation in SMEs relates to the extent to which SME managers perceive the importance of accounting information, in particular strategic management accounting information, to assist in making business decisions. The managers of SMEs need to view AIS beyond the traditional scope of transaction processing systems to include non-financial, external, and future-oriented information. They also need to understand the factors surrounding the firms which might have an impact on AIS requirements. This issue is important for SMEs as these firms, perhaps more than larger organisations, face particularly turbulent and uncertain environments (Blili & Raymond, 1993). In addition, external forces such as changes in government regulations, tax laws and interest rates tend to have more impact on SMEs than on larger businesses. Therefore, SMEs require more information than larger organisations to make good decisions (El Louadi, 1998) and central to decision-making, especially if taken place under pressure, is the set of information which decisions are predicated. The scale, scope, quality, and timeliness of information all have a crucial bearing on the decisions managers make (Mitchell et al., 2000).

The second important issue of AIS implementation in SMEs relates to the capabilities of the existing IS processing to generate the information. In this case, the managers of SMEs need to understand the capabilities of various technologies available which will determine how effective can they use them. They need to view IT at a much broader perspective beyond the technological sophistication but to also include other IT aspects such as informational, functional and managerial sophistication (Raymond & Pare, 1992). McIntosh (1998) argued that SMEs need to recognise that IT has the potential to improve productivity, quality and performance– areas that are essential for the survival and success of their firms.

Whilst the two issues are essential to further understand AIS requirements and IS processing capacity of the SMEs, what is more important is the issue of fit between AIS requirements and IS processing capacity. As SMEs require more information to deal with higher uncertainties in highly competitive and market demand conditions, they also need to enhance their IS processing capacity to match with higher information requirements to have a significant impact on the decision–making processes and ultimately enhance the firm performance (Van de Ven & Drazin, 1985). Therefore, using information processing theory as a theoretical foundation, this paper offers an alternative model to viewing the fit between AIS requirements and IS processing capacity, and then assessing the link to the performance of SMEs. The proposed model for AIS implementation in SMEs is illustrated in Figure 1 and will be explicated in the sections that follow.

The model shows that AIS alignment is directly related to performance. The model specifically links AIS alignment with performance. It does not suggest a direct link between either AIS requirements and performance or IS processing capacity and performance. Instead, any link between AIS requirements or IS processing capacity and performance is via AIS alignment. The argument is that the effectiveness of IS processing capacity will be contingent on the AIS requirements as suggested from the information processing perspective (Galbraith, 1973, 1977; Tushman & Nadler, 1978; Egelhoff, 1982).

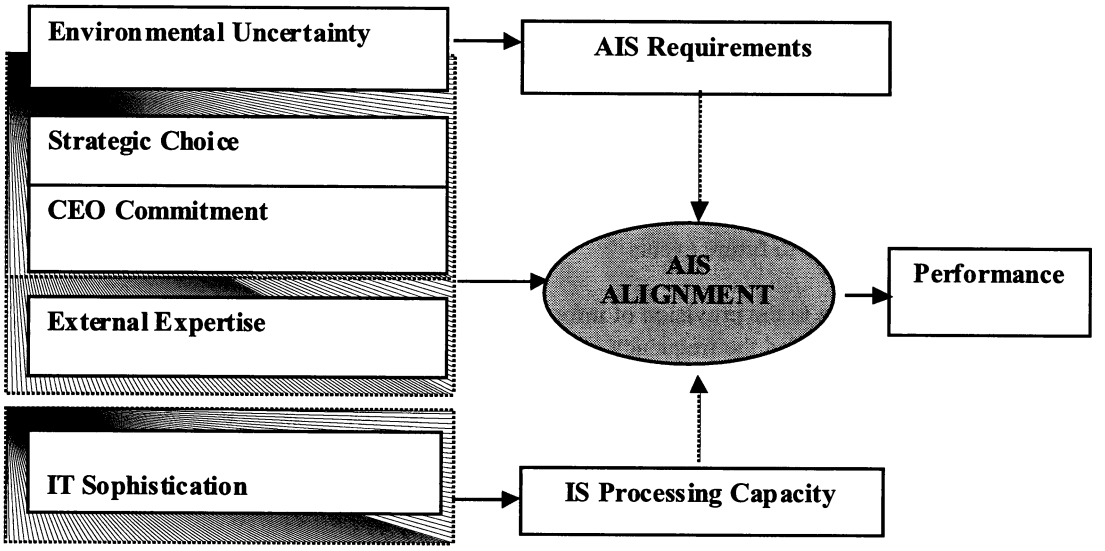

Figure 1

AIS Design

A comprehensive review of AIS literature indicated that information characteristics have been considered as key AIS design variables by many researchers (Ewusi-Mensah, 1981; Gordon & Narayanan, 1984; Chenhall & Morris, 1986; Choe & Lee, 1993; Abernethy & Guthrie, 1994; Chong & Chong, 1997). As discussed earlier, the definition of AIS has evolved over the years from one focusing on the provision of more formal, financially quantifiable information to assist in decision making–processes to one that embraces a much broader scope of information (Chenhall, 2003). Among the dimensions used by previous researchers to reflect the design of AIS include focus, orientation, time horizon, aggregation, integration, timeliness, financial and non-financial, and quantitative and qualitative. The description of each dimension is summarised in Table 1.

Table 1
AIS Characteristics of Information

Dimension	Descriptions	Researchers
Focus	Addresses whether the data items are to be rather broad and diffused or whether they are to be rather specific and narrow	Gordon Lascker, 7 Tuggle (1978) Chenhall & Morris (1986) Choe & Lee (1993)
Orientation	Determines whether the data items report primarily internal facts (relates to the organisation itself) or facts with external origin (deals with events outside the domain of the organisations)	Gordon et al. (1978) Ewusi-Mensah (1981) Choe & Lee (1993) Gordon & Narayanan (1984)

(continued)

Dimension	Descriptions	Researchers
Time horizon	Refers to whether the data items are ex-post, which relates to past events, or ex-ante, which pertains to future events	Gordon et al. (1978) Gordon & Narayanan (1984)
Timeliness	Refers to the provision of information on request and the frequency of reporting systematically collected information	Chenhall & Morris (1986)
Aggregation	Represents whether the reports contain too little detailed information or too much detailed information	Chenhall & Morris (1986) Lederer & Smith (1989)
Integration	Refers to the information that needs to be generated to reflect the impact of the interacting effects of the various functions in the organisations and the formulation of targets	Chenhall & Morris (1986) Gul (1991)
Financial / non-financial	Financial information is expressed in monetary terms, whereas non-financial information is not expressed in monetary terms	Gordon & Narayanan (1984)
Quantitative / qualitative	Quantitative information is expressed in numeric terms, but qualitative information is expressed in non-numeric terms	Ewusi-Mensah (1981) Choe and Lee (1993)

Of all these dimensions, the classification made by Chenhall and Morris (1986) is the most popular and widely adopted by many AIS researchers (Gul, 1991; Abernethy & Guthrie, 1994; Gul & Chia, 1994; Chong, 1996; Chong & Chong, 1997). Based on their review of past studies related to AIS design, Chenhall and Morris (1986) reclassified AIS design into scope, aggregation, integration and timeliness. These four dimensions include all the dimensions of AIS design highlighted in Table 1.

The scope of AIS refers to focus, quantification, and time horizon. Traditional AIS provides information which focuses on events within the organisation, which are quantified into monetary terms, and relates to historical data. A broad scope AIS, on the other hand, provides information related to the external environment which may be economic or non-economic. It also includes non-monetary measurements of many of these external environmental characteristics and provides estimates of the likelihood of future events occurring. Timeliness refers to the provision of information on request and the frequency of reporting systematically collected information. Timely information is expected to provide reports upon the most recent events and to provide rapid feedback on decisions, and this is particularly important under uncertain environmental conditions. Aggregate information

refers to the various forms of aggregation ranging from provision of basic raw, unprocessed data to a variety of aggregations around periods of time or areas of interest such as responsibility centres or functional areas. It also refers to the summation in formats consistent with formal decisional models such as discounted cash flow analysis, cost-volume-profit analysis, and inventory control models. Finally, integration refers to the coordination of the various segments within the organisation. AIS characteristics which may assist coordination would include the specification of targets which account for the effects of the interacting segments and information on the impact that decisions in one area have on operations throughout the organisation.

In order to effectively implement AIS, SMEs need to carefully identify their AIS requirements before making a decision to invest their money in sophisticated technology. The AIS characteristics of information discussed above can be used as a guideline. In addition, SMEs need to understand the external factors surrounding their businesses, such as external environment uncertainty, and also internal factors, such as their business strategy that could have an impact on their AIS requirements. However, only two dominant variables hypothesised by AIS researchers in the theoretical development of contingency theories, i.e. perceived environmental uncertainty and strategic choice, both of which will be discussed in the following sections.

Environmental Uncertainty and AIS Requirements

Environment appears to be the most dominant variable in contingency studies. Duncan (1972, p. 314) defined the environment "as the totality of physical and social factors that are taken directly into consideration in the decision-making behaviour of individuals in the organisation". The internal environment consists of those relevant physical and social factors within the boundaries of the organisation, whereas external environment consists of those factors outside these boundaries. Three components of internal environment include organisational personnel, organisational functional and staff units, and organisational level. The external environment consists of customers, suppliers, competitors, and socio-political and technological factors.

Many studies had found that AIS requirements are subjected to the level of environmental uncertainty (Gul, 1991; Mia, 1993; Gul & Chia, 1994; Chong & Chong, 1997). The argument was that environmental uncertainty makes managerial planning and controls more difficult due to the unpredictability of future events (Chenhall & Morris, 1986). Uncertainty of the environment even makes a well-formulated plan obsolete and impractical (Teo & King, 1997). The environmental factor is even more critical in SMEs as smaller firms are more vulnerable to external forces than larger firms (Welsh & White, 1981). Therefore, as environmental dynamism increases, businesses require more external and non-financial information, more frequent reporting and greater use of forecasted information (Chong & Chong, 1997). At the same time, firms need to enhance their IS processing capacity in order to match with higher information requirements (Ven de Van & Drazin, 1985). In other words, IS processing capacity must be in tandem with AIS requirements to effectively deal with higher uncertainties in competitive and market demand conditions. However, Mia (1993) warned that sophisticated AIS information is only effective in terms of performance when the level of environmental uncertainty is high. When environmental uncertainty is low, the management is able to make relatively accurate predictions about the market and thus requires less sophisticated AIS information (Gul & Chia, 1994). Therefore, it is expected that firms that operate in a more turbulent and uncertain environment are more likely to have higher degree of AIS requirements than those that do not.

Strategic Choice and AIS Requirements

Business strategy also appears to be one of the important variables in recent studies. Many have considered organisational strategic choice as the potential determinant of AIS design (Chong & Chong, 1997). Much of the original strategy

measurement work involved the use of typologies. Two well-known strategy typologies that have been widely adopted by researchers in accounting as well as IS discipline are Miles and Snow (1978) and Porter (1980).

Porter's three overall strategies are cost leadership, differentiation, and focus. A cost leadership strategy aims to exploit scale, scope and other economies, producing a highly standardised and homogenous product, using state of the art technology. A differentiation strategy aims to emphasise the uniqueness of a product as perceived by the customers. Combining the elements of cost leadership and product differentiation, a focused strategy could be directed at a specific market segment in a unique way. Miles and Snow's typology of strategies divides organisations into prospector, defender, analyser, and reactor types. Firms following a prospector strategy frequently add and change their products and services, and consistently attempt to be the first in the market. They are innovators, flexible and entrepreneurial in their outlook and continually undertake a relatively high rate of new products and market development. A defender operates in relatively stable product areas and focus on maintaining market share through cost leadership, quality, and service. Combining the strengths of the defender and the prospector, the analyser seeks to simultaneously minimise risk while maximise opportunities for growth. A reactor essentially lacks a consistent strategy. Its strategy has characteristics of each of the other type's strategies at different times and thus is difficult to categorise clearly.

Chong and Chong (1997) suggested that organisational strategic choice would determine its environmental domain, which in turn would influence the scope of AIS information required to cope with the uncertainty. For example, firms pursuing a prospector-type strategy are associated with high levels of environmental uncertainty, whilst defender-type firms are associated with relatively low levels of environmental uncertainty. As a result, external, non-financial and future-oriented information would be appropriate for managers pursuing the prospector-type strategy. On the contrary, the narrow product domain of defender-type firms reduces the need for extensive monitoring of the external environment conditions and is congruous with narrow scope AIS information, and thus require less IS processing capacity. Therefore, it is expected that firms pursuing the prospector-type strategy are more likely to have higher degree of AIS requirements than those that do not.

IT Sophistication and IS Processing Capacity

From the information processing perspective, IT is one of the mechanisms that can be used to increase organisational IS processing capabilities (El Louadi, 1998). According to Huber (1990, p. 65), "use of advanced IT leads to more available and more quickly retrieved information, including external information, internal information, and previously encountered information, and thus leads to increased information accessibility". Daft and Lengel (1986) also placed particular emphasis on IT, especially computer-based information processing as a means by which organisations reduce uncertainty. More recently, El Louadi (1998) confirmed that IT sophistication has a direct effect on the amount of external and internal information provided. Therefore, it is expected that firms with more sophisticated IT are more likely to have a higher degree of AIS capacity than those that are without.

A number of researchers have attempted to characterise IT sophistication in order to examine its impact on IS success and firm performance (Montazemi, 1987; Raymond, 1990; Kagan et al., 1990; Cragg & King, 1992; Raymond et al., 1995; Hussin, King & Cragg, 2002). Most of these studies used Nolan's stages of EDP growth model (Nolan, 1973, 1979) as a theoretical foundation. This concept has been recognised as a multi-dimensional variable where researchers have selected various dimensions to reflect the sophistication of IT of an organisation. In an attempt to present an integrated view of the diverse approaches to characterising IT sophistication, Raymond and Pare (1992) developed a multi-dimensional construct which included all aspects related to technological support, information content, functional support, and management practices in the specific context of SMEs.

Table 2
IT Sophistication

Dimension	Criterion Variables
Technological	Variety of IT used, hardware characteristics, development tools, man-machine interface, processing mode, type of operation
Informational	Applications portfolio and integration of applications
Functional	IS personnel specialisation, role of the IS function, position of the IS function, decisional level, type of development, user participation
Managerial	Organisational objectives, top management implication, IT investment, presence of consultants, IT adoption process, IT planning process, control of IT, evaluation of IT

Source: Raymond and Pare (1992)

The concept integrates not only the aspects related to IT usage but also IT management. Raymond and Pare (1992) defined IT sophistication as "a construct which refers to the nature, complexity and interdependence of IT usage and management in an organisation" (p. 7). Technological sophistication reflects the number or diversity of IT components used. Informational context is characterised by the nature of its application portfolio. Functional dimension relates to the structural aspects of the IS function and IT implementation process. Finally, managerial dimension of IT sophistication relates to the mechanisms employed to plan, control and evaluate present and future applications. The criterion variables for each dimension are summarised in Table 2. While the concept was developed more than a decade ago, it does provide a comprehensive characterisation of IT beyond the technological sophistication as adopted by many IS researchers.

AIS Alignment

Information processing theory postulates that organisational information requirements must match its IS processing capacity to have an impact on performance. However, instead of exploring information in a broad sense, this paper takes on a more restricted view by choosing a narrower information class, that is, AIS information, in which AIS is an important component of a modern information system within the SMEs (Mitchell et al., 2000). Therefore, AIS requirements refers to the extent to which SMEs perceive the importance of AIS characteristics of information to assist in making business decisions, whilst IS processing capacity refers to the extent to which the IS processing by the SMEs are capable of providing the required information. AIS alignment refers to the fit between AIS requirements and IS processing capacity.

However, it is important to explore the concept of AIS alignment and how it might be measured. Fit or alignment is an important concept which has been debated in the literature and a number of approaches have been developed to operationalise the concept. Van de Ven and Drazin (1985) identified three different approaches of the concept of fit, which are selection, interaction, and systems. Venkatraman (1989) proposed six different perspectives from which fit could be defined and studied, which are moderation, mediation, matching, covariation, profile deviation, and gestalt. Different approaches require different mathematical models and have different theoretical implications (Bergeron et al.,

2001). Based on the results of previous studies, the following sections explicate two factors that may have an impact on the process of aligning AIS requirements and IS processing capacity.

CEO Accounting and IT Commitment and AIS Alignment

The importance of top management involvement and support in IS implementation is well advocated by many researchers in both large and small business organisations (DeLone, 1988; Galliers, 1991; Cragg & King, 1992; Thong & Yap, 1995; Thong, 1999, & 2001). In the context of SMEs, accounting and IT knowledge of the CEOs can determine the success or failure the of computerisation projects as they play dominant roles in SME business decisions. Often, the CEO is the only one in the firm that understands the objectives and directions of the business well (Otley, 1980). Hence, the CEO is in the best position to understand AIS requirements and then determine IT deployment that matches the business information needs. Therefore, it is expected that in organisations wherein top management or CEO commitment and support are prevalent, there will be a higher degree of alignment between AIS requirements and IS processing capacity.

External Expertise and AIS Alignment

The importance of vendors and consultants to computerisation projects in SMEs has been highlighted by many researchers (Gable, 1991; Yap, Soh & Raman, 1992; Thong, Yap & Raman, 1996; Igbaria et al., 1997). According to Thong, Yap & Raman (1994), the primary duties of vendors and consultants are to provide consultancy services related to information requirements analysis of the business, recommend suitable hardware and software, provide technical support and user training, and manage IS implementation. Several studies have also suggested the importance of government assistance in accelerating the adoption of IT in SMEs, particularly among developing countries (Gable & Raman, 1992; King, Gurbaxani, Kraemes, McFarlan, Raman & Yap, 1994; Yap, Thong, & Raman 1994; Yap & Thong, 1997). Accounting firms have also been argued as a potential advisor to SMEs in terms of AIS requirements and IT adoption (Davis, 1997; Boritz, 1999). The argument was that SMEs constitute a vast majority of the client base for most accounting firms and have close relationships with the business owners. Moreover, SMEs rely heavily on accounting firms as their most trusted business advisors (Davis, 1997). Accounting firms are knowledgeable about their clients and their clients' businesses. They know what the objectives are, and can suggest approaches to help reach those objectives. Hence it is more likely that accounting firms can educate and influence SMEs to employ more contemporary AIS information and sophisticated IT. The expertise offered by vendors, consultants, government agencies, and accounting firms can assist SMEs to gain a much broader perspective of information and technology and therefore be more likely to align AIS requirements and IS processing capacity.

AIS Alignment and Performance

The model in Figure 1 shows that AIS alignment is directly related to organisational performance. The model specifically links AIS alignment with performance. It does not suggest a direct link between either AIS requirements and performance or IS processing capacity and performance. Instead, any link between AIS requirements or IS processing capacity and performance is via AIS alignment. The argument is that the effectiveness of IS processing capacity is contingent on the amount of AIS requirements as suggested by information processing perspective (Galbraith, 1973; Tushman & Nadler, 1978; Egelhoff, 1991). As discussed earlier, both accounting and IS researchers have struggled to show a direct impact of either accounting on performance or IT on performance. Findings from these studies are inconclusive and in many instances contradictory. IS processing is not sufficient by itself to be truly effective. Rather, IS processing capacity must be in tandem with AIS requirements to have a significant impact on performance. To link AIS requirements to performance is also unrealistic. The argument is that managers could perceive some characteristics of AIS information to be useful but that information may not be available.

The relationship between AIS requirements and IS processing capacity is likely to be reciprocal (Xiao, Dyson, Powell, 1996). While it may be true that more sophisticated IS processing leads to more sophisticated AIS requirements (IT acts as a cause), it is also true that a greater demand for sophisticated AIS information results in more sophisticated IS processing (IT acts as a facilitator). Hence the link is seen as the results of some successive and cumulative interactions between IS processing capacity and AIS requirements. The interest here is not so much with possible causes and effects that may exist, but more in the dependence of organisational performance on the interaction of AIS requirements and IS processing capacity.

CONCLUSION

A comprehensive review of literature shows that both accounting and IS researchers have struggled to show a direct impact of either accounting or IS on performance. Despite the suggestion that organisational information requirements and IS processing capacity must match to have an impact on performance, the literature indicated that prior research tended to investigate the issues of accounting and IS separately. Therefore, studies that examined the link between AIS design and IS processing capacity often produced inconclusive and in many instances contradictory results. In an attempt to fill this gap, this paper proposes an alternative model to assessing the link between AIS and performance of SMEs. The model focuses not only on AIS requirements but also IS processing capacity of an organisation. The central idea is that there must be a match between AIS requirements and IS processing capacity to have a significant impact on performance. Four dimensions of AIS characteristics of information discussed in this paper may provide a guideline to the types of AIS information required by the SMEs. It also highlighted two dominant contingency factors, i.e. perceived environmental uncertainty and strategic choice and discussed their implications on AIS requirements. Furthermore, this paper highlighted four aspects of IT sophistication, i.e. technological, informational, functional and managerial and discussed their impacts on IS processing capacity. Finally, this paper discussed the impacts of CEO accounting and IT commitment, and external expertise on AIS alignment. Whilst the model offers new insights into the potential factors that influence AIS requirements, types of IT sophistication and its link to IS processing capacity, the fit between AIS requirements and IS processing capacity, and the potential impact of aligning AIS requirements and IS processing capacity on the effectiveness of AIS implementation and ultimately overall firm performance, an empirical study is still needed to validate the model.

REFERENCES

Abernethy, M. A. & Guthrie, C. H. (1994). An empirical assessment of the "fit" between strategy and management information system design. *Accounting and Finance, 34*, 49-66.

Ballantine, J., Bonner, M., Levy, M., Martin, A., Munro, L. & Powell, P. L. (1996). The 3-D model of information systems success: the search for the dependent variable continues. *Information Resources Management Journal, 9*(4), 5-14.

Bergeron, F., Raymond, L. & Rivard, S. (2001). Fit in strategic information technology management research: an empirical comparison of perspectives, *OMEGA The International Journal of Management Science*, 29, 125-142.

Blili, S., & Raymond, L. (1993). Information technology: Threats and opportunities for small and medium-sized enterprises. *International Journal of Information Management, 13*(6), 439-448.

Bolon, D. S. (1998). Information processing theory: Implications for health care

organisations. *International Journal of Technology Management, 15*, 211-221.

Boritz, J. E. (1999). *The Accounting Curriculum and IT*. Retrieved from http:// www.ifac.org/StandardsAndGuidance/ Education/IEG11-Update.html

Bridge, J. & Peel, M. J. (1999). Research note: A study of computer usage and strategic planning in the SME sector, *International Small Business Journal, 17*(4), 82-87.

Chan, Y. E., Huff, S. L., Barclay, D. W., & Copeland, D. G. (1997). Business strategic orientation, information systems strategic orientation, and strategic alignment. *Information Systems Research, 8*(2), 125-150.

Chang, C. H. & Jevons Lee, C. W. (1992). Information acquisition as business strategy. *Southern Economic Journal, 58*(3), 750-761.

Chenhall, R. H. & Morris, D. (1986). The impact of structure, environment, and interdependence on the perceived usefulness of management accounting systems, *The Accounting Review, LXI*(1), 16-35.

Chenhall, R. H. (2003). Management control systems design within organisational context: Findings from contingency-based research and directions for the future, *Accounting, Organisation and Society, 28*, 127-168.

Choe, J. M. & Lee, J. (1993). Factors affecting relationships between the contextual variables and the information characteristics of accounting information systems. *Information Processing & Management, 29*(4), 471-486.

Chong, V. K. (1996). Management accounting systems, task uncertainty and managerial performance: a research note. *Accounting, Organisations and Society, 21*(5), 415-421.

Chong, V. K. & Chong, K. M. (1997). Strategic choices, environmental uncertainty and SBU performance: a note on the intervening role of management accounting systems. *Accounting and Business Research, 27*(4), 268-276.

Cragg, P. B. & King, M. (1992). Information system sophistication and financial performance of small engineering firms. *European Journal of Information Systems, 1*(6), 417-426.

Cragg, P. B. & King, M. (1993). Small-firm computing: Motivators and inhibitor. *MIS Quarterly*, March, 47-60.

Cragg, P. B. & Zinatelli, N. (1995). The evolution of information systems in small firms. *Information & Management, 29*, 1-8.

Cragg, P. B., King, M. & Hussin, H. (2002). IT alignment and firm performance in small manufacturing firms. *Journal of Strategic Information Systems, 11*, 109-132.

Daft, R. L. & Lengel, R. H. (1986). Organisation information requirements, media richness and structural design. *Management Science, 32*(5), 554-571.

Davis, M. (1997). Transforming your firm: Tools for successful technology consulting. *The Practical Accountant*, Boston, *30*(8), S-3.

DeLone, W. H. (1988). Determinants of success for computer usage in small business. *MIS Quarterly, 12*(1), 51-61.

Duncan, I. (1993). Making the accounting system all that it can be. *CMA Magazine, 67*(5), 30.

Duncan, R. B. (1972). Characteristics of organisational environments and perceived environmental uncertainty. *Administrative Science Quarterly, 17*, 313-327.

Egelhoff, W. G. (1982). Strategy and structure in multinational corporations: An information processing approach. *Administrative Science Quarterly, 27*(3), 435-458.

Egelhoff, W. G. (1991). Information-processing theory and the multinational enterprise. *Journal of International Business Studies,* Third Quarter, 341-368.

El Louadi, M. (1998). The relationship among organisation structure, information technology and information processing in small Canadian firms. *Canadian Journal of Administrative Sciences, 15*(2), 180-199.

Elliot, R. K. (1992). The third wave breaks on the shores of accounting. *Accounting Horizons, 6*(2), 61-85.

Ewusi-Mensah, K. (1981). The external organisational environment and its impact on management information systems. *Accounting Organizations and Society, 6*(4), 301-316.

Foong, S. Y. (1999). Effect of end-user personal and systems attributes on computer-based information system success in Malaysian SMEs. *Journal of Small Business Management*, July, 81-87.

Fuller, T. (1996). Fulfilling IT needs in small businesses; a recursive learning model. *International Small Business Journal, 14*(4), 25-44.

Gable, G. G. (1991). Consultant engagement for computer system selection: A pro-active client role in small businesses. *Information & Management, 20*(2), 83-93.

Gable, G. G., & Raman, K. S. (1992). Government initiatives for IT adoption in small business: experiences of the Singapore small enterprise computerization programme. *International Information Systems, 1*(1), 68-93.

Galbraith, J. R. (1973). *Designing Complex Organisations.* Addison-Wesley, Reading, Mass.

Galbraith, J. R. (1977). *Organisation Design.* Addison-Wesley, Reading, Mass.

Galliers, R. D. (1991). Strategic information systems planning: Myths, reality and guidelines for successful implementation. *European Journal of Information Systems, 1*, 55-64.

Goldsworthy, A. W. (1996). The IT professional: The I, the T or neither? *Australian Accountant, 66*(9), 68-71.

Gordon, L. A. & Narayanan, V. K. (1984). Management accounting systems, perceived environmental uncertainty and organisation structure: an empirical investigation. *Accounting, Organisations and Society, 9*(1), 33-47.

Gordon, L. A., Larcker, D. F. & Tuggle, F. D. (1978). Strategic decision processes and the design of accounting information systems. *Accounting, Organizations and Society, 6*(4), 203-213.

Gul, F. A. (1991). The effects of management accounting systems and environmental uncertainty on small business managers' performance. *Accounting and Business Research, 22*(85), 57-61.

Gul, F. A. & Chia, Y. M. (1994). The effects of management accounting systems, perceived environmental uncertainty and decentralisation on managerial performance: A test of three-way interaction. *Accounting, Organisations and Society, 19*(4/5), 413-426.

Holmes, S. & Nichols, D. (1989). Modelling the accounting information requirements of small businesses. *Accounting and Business Research, 19*(74), 143-150.

Holmes, S., Lindsay, N. J. & Shepherd, B. (1990). Computerised accounting systems and the performance of small business, in *The Growing Small Business: Proceedings of the 5th National Small Business Conference*. In Renfrew, K.M. & McCosker, C. Newcastle, New South Wales: Institute of Industrial Economics, University of Newcastle, 325-343.

Hongren, C. T., Sundem, G. L. & Stratton, W. O. (1999). *Introduction to Management Accounting*, 11th (ed.). Prentice-Hall, New Jersey.

Huber, G. P. (1990). A theory of the effects of advanced information technologies on organisational design, intelligence, and decision making. *Academy of Management Review, 15*(1), 47-71.

Hussin, H., King, M. & Cragg, P. B. (2002). IT alignment in small firms. *European Journal of Information Systems, 11*, 108-127.

Ibrahim, A. B. & Goodwin, J. R. (1986). Perceived causes of success in small business. *American Journal of Small Business, 11*(2), 41-50.

Igbaria, M., Zinatelli, N., Cragg, P. B., & Cavaye, A. L. M. (1997). Personal computing acceptance factors in small firms: A structural equation model. *MIS Quarterly*, September, *21*(3), 279-305.

Kagan, A., Lau, K. & Nusgart, K. R. (1990). Information system usage within small business firms. *Entrepreneurships: Theory and Practice, 14*(3), 25 -38.

Kaplan, R. S. (1994). The evolution of management accounting. *The Accounting Review, LIX*(3), 390-418.

King, M., Lee, R. A., Piper, J. A. & Whittaker, J. (1991). Information technology and the changing role of management accountants, in *Issues in Management Accounting*, Ashton, D., Hopper, T. & Scapens, R.W. (Eds). Prentice Hall International, Hemel Hempstead, 294-311.

King, J. L., Gurbaxani, V., Kraemer, K. L., McFarlan, F. W., Raman, K. S., & Yap, C. S. (1994). The institutional factors in information technology innovation. *Information Systems Research*, *5*(2), 139-169.

Lai, V. S. (1994). A survey of rural small business computer use: Success factors and decision support. *Information & Management, 26,* 297-304.

Lederer, A. L. & Smith, G. L., Jr. (1989). Individual differences and decision making using various levels of aggregation of information. *Journal of Management Information Systems, 5*(3), 53-69.

Lee, A. S. (2001). Research in information systems: What we haven't learned. *MIS Quarterly, 25*(4), v-xv.

Lesjak, D. (2001). Are Slovene small firms using information technology strategically? *Journal of Computer Information Systems, 41*(3), 74-81.

Levy, M. Powell, P. & Yetton, P. (2001). SMEs: aligning IS and the strategic context, *Journal of Information Technology, 16*, 133-144.

Magal, S. R. & Lewis, C. D. (1995). Determinants of information technology success in small businesses. *Journal of Computer Information Systems*, 35(3), 75-83.

Mak, Y. T. (1989). Contingency fit, internal consistency and financial performance. *Journal of Business Finance & Accounting, 16*(2), 273-300.

Malone, S. C. (1985). Computerising small business information systems. *Journal of Small Business Management*, April, 10-16.

Marriot, N. & Marriot, P. (2000). Professional accountants and the development of a management accounting service for the small firm: Barriers and possibilities. *Management Accounting Research, 11*, 475-492.

Mauldin, E. G. & Ruchala, L. V. (1999). Towards a meta-theory of accounting information systems, *Accounting, Organizations and Society, 24*, 317-331.

McCarthy, W. E. (1982). The REA accounting model: A generalised framework for accounting systems in a shared data environment. *The Accounting Review, 57*, 554-578.

McIntosh, J. C. (1998). A comparison of patterns of information technology use among American, Korean, and Swedish global manufacturers, *4th Americas Conference on Information Systems*, Baltimore.

McMahon, R. G. P. (2001). Business growth and performance and financial reporting practices of Australian manufacturing SMEs. *Journal of Small Business Management, 39*(2), 152-164.

McMahon, R. G. P. & Davies, L. G. (1994). Financial reporting and analysis practices in small enterprises: Their association with growth rate and financial performance. *Journal of Small Business Management, 32*(1), 9-17.

Mia, L. (1993). The role of MAS information in organisations: an empirical study. *British Accounting Review, 25*, 269-285.

Mia, L. & Chenhall, R. H. (1994). The usefulness of management accounting systems, functional differentiation and managerial effectiveness. *Accounting, Organisations and Society, 19*(1), 1-13.

Miles, R. E. & Snow, C. C. (1978). *Organisational Strategy, Structure and Process.* New York, McGraw Hill.

Mitchell, F., Reid, G. & Smith, J. (2000). *Information system development in the small firm: the use of management accounting*, CIMA Publishing.

Montazemi, A. R. (1987). An analysis of information technology assessment and adoption in small business environments, *INFOR*, 25(4), 327-340.

Nayak, A. & Greenfield, S. (1994). The use of management accounting information for managing micro businesses, in Hughes, A., Storey, D. J. (Eds). *Finance and the Small Firm*, London, Routledge.

Nolan, R. L. (1973). Managing the computer resource: A stage hypothesis. *Communications of the ACM, 16*(7), 399-405.

Nolan, R. L. (1979). Managing the crisis in data processing. *Harvard Business Review, 57*(2), 115-126.

Otley, D. (1980). The contingency theory of management accounting: achievement and prognosis. *Accounting, Organisations and Society, 5*(4), 413-428.

Perren, L. & Grant, P. (2000). The evolution of management accounting routines in small businesses: A social constructive perspective. *Management Accounting Research, 11*, 391-411.

Porter, M. (1980). *Competitive* Strategy. The Free Press, New York.

Raymond, L. (1990). Organisational context and information systems success: A

contingency approach. *Journal of Management Information Systems*, *6*(4), 5-18.

Raymond, L. (1992). Computerisation as a factor in the development of young entrepreneurs. *International Small Business Journal*, *11*(1), 23-34.

Raymond, L. & Pare, G. (1992). Measurement of information technology sophistication in small manufacturing businesses. *Information Resources Management Journal*, *5*(2), 4-16.

Raymond, L., Pare, G. & Bergeron, F. (1995). Matching information technology and organisational structure: An empirical study with implications for performance. *European Journal of Information Systems*, *4*, 3-16.

Reid, G. C. & Smith, J. A. (2000). The impact of contingencies on management accounting system development, *Management Accounting Research*, *11*, 427-450.

Rhee, J. H. (2001). Does digitisations enhance firm competitiveness? E-business strategies based on information processing theory. *Journal of E-Business,* 1(1), 1-12.

Robinson, R.B. Jr. & Pearce, J.A. II (1984). Research thrusts in small firm strategic planning, *Academy of Management Review*, *9*(1), 128-137.

Seyal, A. H. Rahim, M. M. & Rahman, M.N.A. (2000). An empirical investigation of use of information technology among small and medium business organisations: A Brunei scenario. *The Electronic Journal of Information Systems in Developing Countries*, *2*(7), 1-16.

Shin, N. (2001). The impact of information technology on financial performance: the importance of strategic choice. *European Journal of Information Systems*, *10*, 227-236.

Teo, T. S. H. & King, W. R. (1997). Integration between business planning and information systems planning: An evolutionary-contingency perspective. *Journal of Management Information Systems*, *14*(1), 185-214.

Thomas, J. & Evanson, R. V. (1987). An empirical investigation of association between financial ratio use and small business success. *Journal of Business Finance and Accounting*, *14*(4), 555-571.

Thong, J. Y. L. (1999). An integrated model of information systems adoption in small business. *Journal of Management Information Systems*, *15*(4), 187-214.

Thong, J. Y. L. (2001). Resource constraints and information systems implementation in Singaporean small business. *OMEGA International Journal of Management Science*, *29*, 143-156.

Thong, J. Y. L. & Yap, C. S. (1995). CEO characteristics, organisational characteristics and information technology adoption in small businesses. *OMEGA International Journal of Management Science*, *23*(4), 429-442.

Thong, J. Y. L., Yap, C. S., & Raman, K. S. (1994). Engagement of external expertise in information systems implementation. *Journal of Management Information Systems*, *11*(2), 209-231.

Thong, J. Y. L., Yap, C. S. & Raman, K. S. (1996). Top management support, external expertise and information systems implementation in small businesses. *Information Systems Research*, 79(2), 248-267.

Tushman, M. L. & Nadler, D. A. (1978). Information processing as an integrating concept in organisational design. *Academy of Management Review, 3*, 613-624.

Van de Ven, A. H. & Drazin, R. (1985). The concept of fit in contingency theory. *Research in Organisational Behavior, 7*, 333-365.

Venkatraman, N. (1989). The concept of fit in strategy research: toward verbal and statistical correspondence. *Academy of Management Review, 14*(3), 423-444.

Welsh, J. A., & White, J. F. (1981). A small business is not a little big business. *Harvard Business Review, 59*(4), 18-32.

Xiao, Z. Dyson, J. R. & Powell, P. L. (1996). The impact of information technology on corporate financial reporting: A contingency approach. *British Accounting Review, 28*, 203-227.

Yap, C. S. & Thong, J. Y. L. (1997). Programme evaluation of a government information technology programme for small businesses. *Journal of Information Technology, 12*, 107-120.

Yap, C. S., Soh, C. P., & Raman, K. S. (1992). Information systems success factors in small business. *OMEGA International Journal of Management Science, 20*(5/6), 597-609.

Yap, C. S., Thong, J. Y. L., & Raman, K. S. (1994). Effect of government incentives on computerization in small business. *European Journal of Information Systems, 3*(3), 191-206.