African Journal of Business Management Vol. 5(22), pp. 8918-8932, 30 September, 2011
Available online at http://www.academicjournals.org/AJBM
DOI: 10.5897/AJBM11.474
ISSN 1993-8233 ©2011 Academic Journals

Full Length Research Paper

The relationship between business model and performance of manufacturing small and medium enterprises in Malaysia

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Accepted 30 May, 2011

Business performance has been researched previously in relation to entrepreneurial orientation, market orientation, business strategy or strategic planning, and the characteristics of the owners/managers themselves. Recent studies initiated that the firm's business model plays significant roles in determining the firm's performance. However, not much has been done looking at the relationship between business model and performance of the firm, especially on manufacturing small and medium enterprises (SMEs) in Malaysia. A study has been conducted on manufacturing SMEs in Malaysia using mail survey questionnaire. Preliminary analyses conducted revealed that only competencies dimension of the business model has a significant direct impact on firm performance. The findings of this study suggest that in order to increase the firm's performance, one of the important factors to be emphasized is to have a practical business model. This research gives benefit to the SMEs, business owners, Malaysian government as well as the entire agencies and the academicians on the importance of the business model on SMEs' performance in Malaysia. Furthermore, the findings benefit entrepreneurs as well as the decision makers, and the outcomes from this research are expected to have policy implications for the future development of entrepreneurship and SME programs for current and future entrepreneurs and also for business owner/managers in Malaysia.

Key words: Business model, small and medium enterprise (SME), SME performance, Malaysia.

INTRODUCTION

The importance of small medium enterprise (SMES) to the nation's economy has been well established, in that SMEs are considered the most dynamic businesses in both the developed and developing countries. SMES also exert a strong influence on the economies of all nations and have been the source of employment creation worldwide (Ghobadian and Gallear, 1996; Ladzani and Van, 2002). In the United States, SMEs drive the economy and sustain the technological lead in the market place (Bovee et al., 2007). Over 60% of all new jobs created yearly in the United States as a result of SME entrepreneurs creating opportunities for their businesses and SMEs also represent 99.7% of all employer firms, and 45% of all private sector employees work for this sector (Bovee et al., 2007). SMEs also create new ideas and processes through innovation which adds vigor to the market place (Griffin and Ebert, 2006) and they are important to the large firms, not only in supplying their raw material needs, but also channeling the goods made by these firms to the target markets.

In the developing countries, SMEs' contributions include: (a) addressing poverty by creating jobs and increasing income, (b) dispersing economic activities in the countryside, and providing broad-based sources of growth, (c) serving as suppliers and providers of support services for large enterprises, (d) stimulating entrepreneurial skills among the populace, and (e) acting as incubators for developing domestic enterprises into large firms (Habaradas, 2008). SMEs are also very important in

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Malaysia, in that statistics show that 99.2% of the total businesses establishments in Malaysia are SMEs (Amry, 2009; Ang, 2010). Malaysian SMEs have been the backbone of economic growth of an economy in driving industrial development (Normah, 2007), and SMEs also are the backbone of the nation (StarBiz, 2009). Thus, SMEs in Malaysia continue to remain significant in the country's economy and this importance is even more significant as Malaysia moves towards realizing the objective of becoming the developed country status by the year 2020 (SMIDEC, 2008). The census of establishment and enterprise (Census) that was conducted in 2005 and based on the response of 550,704 business enterprises in the agriculture, manufacturing and service sectors, found that 99.2% or 546,218 of the business establishments were SMEs, of which 433,517 or about 80% were micro enterprises (Central Bank of Malaysia, 2006). The census results also showed that SMEs were a major source of employment, providing jobs of over 5.6 million workers and accounting for 56% of the total employment (Central Bank of Malaysia, 2006). SMEs also make up 95% of the average 40,000 new companies that registered with the companies' commission of Malaysia per year (Business Times, 2010). However, SMEs contributed only to 32% of the Malaysian gross domestic product (GDP) as compared to about 50% contribution to GDP in other countries, although SMEs account for the bulk of the business enterprises and employ 56% of the total workforce (Ang, 2010). In addition, they contributed only about 19% of the total export value. The Malaysian SMEs are thus, still a far cry from countries such as Italy with SMEs contributing 70% of employment and 42% of exports (Boey and Shamini, 2009). Nevertheless, the contribution of Malaysian SMEs to the GDP is targeted to increase to 37% in 2010 (Bernama, 2009). It is common to see the increasing number of companies, including SMEs, come into operation. However, the main challenge, as a point of fact, is running and keeping the business alive (Boey, 2009). So, the most important issue to deal with is actually how to make the companies stay alive or remain in the industry for several years and later on expand their current operation to a higher level. Establishing a new venture is risky because all new ventures operate in a highly tentative environment, that is, they deal with a new product/service, they do not know how to manufacture the product/service efficiently, and they do not know the customer who wants to buy the new product/service. Thus, it is common to hear that the success rate of new businesses is still low and some statistics suggest that the failure rate of small businesses in the first five years is more than 50% (Reiss, 2007). The national venture capital association in the US finds that the expected success rate for new ventures is very low, estimated at less than two in ten (Sarasvathy, 2001).

Even though there have been no comprehensive studies or accurate figures published so far in Malaysia's context, the estimated failure rate for SMEs was 60% (Portal Komuniti KTAK, 2006). Only 10% of the start-ups survived beyond the 10 years mark (Che et al., 2006). Boey (2009) stressed that businesses can be considered successful if they can survive at least 5 years of business, but unfortunately many do not even survive the 3 year mark. As being mentioned earlier, SMEs' contribution to the economy is relatively small. Their contributions should be increased to a higher level so that it will be more significant to the economic growth in Malaysia. Economic growth in developed countries such as Japan, Taiwan, Korea and many others, was significantly generated by SME activities (Normah, 2007). There are rooms for SMEs to improve their productivity and goes further than their current state of operation in view of the fact that SMEs have been targeted as the mechanism in generating domestic-led investment, stimulating economic expansion and increasing the job market for the country (Normah, 2007). Recent findings suggest that the firm's business model plays significant roles in determining the firm's performance (Malone et al., 2006; Zott and Amit, 2007). Malone et al. (2006) found that some models do have a better financial performance than others, such as Physical Creators and Physical Landlords, which have greater cash flow on assets. Zott and Amit (2007) focused on two business model design themes: (1) efficiency-centered, and (2) novelty-centered business model, taking into consideration the potentially moderating role of the environment. The study of Zott and Amit (2007) showed the novelty-centered business model design matters to the performance of the entrepreneurial firm.

However, not much has been done looking at the relationship between business model and performance of the firm, particularly in the Malaysian SMEs context. Studies on SMEs, especially in Malaysia, emphasize more on studying the entrepreneur's demographic features, business profile and motivation, problem faced by entrepreneurs, government assistance program, and process to start a business (Md Zabid, 1992; Mohd et al., 2002; Mohd et al., 2005; Nanthakumar et al., 2004; Norita et al., 2007). Since there is evidence proving that the design of the business model matters to firms' performance and SMEs' performance is important in enhancing the Malaysian economy, it will be useful to study SMEs' performance based on their business model. Thus, the objective of this paper is to investigate the relationship between business model and performance of manufacturing SMEs in Malaysia.

Small and medium enterprises (SMEs) in Malaysia

SMEs are very important in Malaysia. SMEs encourage private ownership and entrepreneurship, provide broad based growth whilst also acting as incubators for developing domestic enterprises into large corporations

Table 1. SMEs' contribution to the economy.

Performance of SMEs	2005 (%)
SMEs' contribution to GDP	32.0
SMEs' contribution to employment	56.4
SMEs' share of total exports	19.0

Source: Census of establishments and enterprises, 2005 (Bank Negara Malaysia, 2008).

(Bank Negara Malaysia, 2008). With SMEs representing 99.2% of total business establishments and employing greater than 5.6 million workers, developing a competitive, productive and resilient SME sector is an essential thrust to support the government's aim of achieving balanced economic development and higher standards of living at all levels of the society (Bank Negara Malaysia, 2008). Based on the census of establishments and enterprises in 2005, SMEs' contribution to the economy is as follows (Table 1). However, these figures are relatively small compared to other countries. In developed Asian countries, like Japan and PR China, SMEs' contribution to the GDP is already above 55% as compared to 32% recorded by Malaysian SMEs (Bank Negara Malaysia, 2008). For example, it was recorded in China that in the year 2004, 99% of the total number of firms established were SMEs, contributing to 75% of the total workforce and 56% of SME contribution to GDP, while her closest neighboring country, Indonesia, recorded 99.9% of SMEs contributing to 99.6% of the total workforce and 57% of SME contribution to GDP in the year 2006 (Habaradas, 2008). Furthermore, Korea recorded 50% of SMEs' contribution to GDP in the year 2003 and Thailand recorded 39% in the year 2002 (Habaradas, 2008).

The Malaysian government has accorded high priority to the development of SMEs, in order to fully realize their potential. The commitment of the government is reflected in the national development agenda. Both the Ninth Malaysia Plan (9MP) and third industrial master plan (IMP3) outlined key strategies for SME development for the 2006 to 2010 and 2010 to 2015 periods, respectively (Bank Negara Malaysia, 2008). SME definitions vary in different countries, including Malaysia. In Turkey, The Turkish small and medium Industry development organization defines manufacturing organizations employing 1 to 50 employees as small-sized enterprises, and those employing 51 to 150 employees as medium-sized enterprises (Gurbuz and Aioli, 2009). SMEs are defined differently by different agencies, based on their own criteria since there is no common or standard definition of SME. Usually, the benchmarking of SME definition are based on annual sales turnover, number of full-time employees or shareholders' fund (Secretariat to National SME Development Council, 2005). Common definition related SMEs as firms that employ less than 200 employees (Man and Wafa, 2007; Mohd, 1997; Salleh, 1990). This definition is similar to the one used by the World Bank (1984), United Nation Development Organization (1986) and the Asian development bank (1990) who defined small enterprises as firms employing fewer than 50 employees and medium enterprises as firms employing between 50 and 199 employees. However, on 9 June 2005, the National SME development council approved the common definitions of SMEs across economic sectors, for adoption by all government ministries and agencies involved in SME development, as well as financial institutions (Secretariat to National SME Development Council, 2005). According to National SME Development Council (NSDC), Malaysian SMEs can be grouped into three categories: micro, small and medium. These groupings are based on two criteria: (1) number of employees, and (2) annual sales turnover. An enterprise will be classified as an SME if it meets either the specified number of employees or annual sales turnover definition (Table 2). The definitions are applied for the following sectors:

(1) Primary agriculture.
(2) Manufacturing (including agro-based).
(3) Manufacturing-related services (MRS).
(4) Services (including information and communication technology).

Classification of economic activities are based on the Malaysian Standard Industrial Classification (MSIC) 2000 codes (Secretariat to National SME Development Council, 2005). For the purpose of this study, SMEs' definition was based on manufacturing (including agro-based) and manufacturing-related services which were employed between 1 and 150 full-time employees. This study did not use the annual sales turnover information since firm performance was measured using financial and non-financial self-reporting assessment by the respondent from each SME without taking into account the actual firm's annual sales turnover.

Firm performance

The ultimate dependent variable in the study of strategy is the performance of the firm. Performance, which reflects the perspective of strategic management, is considered to be a subset of the broader concept of organizational effectiveness (Venkataraman and Ramanujam, 1986). Many researchers have identified the importance of congruence or fit among various elements of corporate entrepreneurship in the explanation and prediction of firm performance (Burns and Stalker, 1961; Galbraith, 1977; Nadler and Tushman, 1997; Tosi and Slocum, 1984). There are many factors that affect firm performance and these factors can be attributed to the internal and external factors of the firm (Kotey and Meredith, 1997; Pearce and Robinson, 2002). Past studies have shown positive relationships between entrepreneurial orientation

Table 2. SMEs' definitions based on number of full-time employees and annual sales turnover.

Sector	Primary agriculture	Manufacturing (including Agro-based and MRS)	Services sector (including ICT)
Micro	Less than 5 employees or less than rm200,000 of annual sales turnover	Less than 5 employees or less than rm250,000 of annual sales turnover	Less than 5 employees or less than RM200,000 of annual sales turnover
Small	Between 5 and 19 employees or between RM200,000 and less than RM1 million of annual sales turnover	Between 5 and 50 employees or between RM250,000 and less than RM10 million of annual sales turnover	Between 5 and 19 employees or between RM200,000 and less than RM1 million of annual sales turnover
Medium	Between 20 and 50 employees or between RM1 million and RM5 million of annual sales turnover	Between 51 and 150 employees or between RM10 million and RM25 million of annual sales turnover	Between 20 and 50 employees or between RM1 million and RM5 million of annual sales turnover

Source: Secretariat to National SME Development Council (2005).

and firm performance (Smart and Conant, 1994; Wiklund, 2005; Yusuf, 2002). Apart from entrepreneurial orientation, market orientation (Kara et al., 2005; Narver and Slater, 1990; Pelham, 2000; Slater and Narver, 2000), strategic planning (Fossen et al., 2006) and innovation (Deshpande et al., 1993; Dwyer and Mellor, 1993; Prajogo, 2006; Salavou, 2002; Subramanian and Nilakanta, 1996) were also found to be the factors affecting firm performance. Recent studies suggest that business model plays significant roles in determining the firm's performance (Malone et al., 2006; Zott and Amit, 2007).

There are some different ways to approach measuring a firm's performance. Individuals with a capability-based view measure a company's performance in terms of stakeholder groups, including shareholders, employees, customers and communities (Atkinson et al., 1997). However, many researchers insist that financial measures are more reasonable in measuring a firm's performance than others (Cheng and McKinley, 1983; Dalton et al., 1980). The significant advantages of financial measures are their usefulness for practitioners (Cheng and McKinley, 1983).

Numerous researchers have posited that multiple dimensions of firm performance should be used in organization research (Lumpkin and Dess, 1996; Venkatraman and Ramanujam, 1986; Walker and Ruekert, 1987; Wiklund and Shepherd, 2005). Chakravarthy (1986) and Cameron (1978) insist that it is vital to recognize the multidimensional nature of the performance construct. Lumpkin and Dess (1996) suggest that entrepreneurial processes may lead to favorable outcomes on one performance dimension and unfavorable outcomes on another performance dimension. For example, a large investment of resources for a long-term project may detract from short-term performance. Murphy et al. (1996) suggest that multiple measures incorporating both financial and non-financial goals supporting the strategic plan should be utilized to allow for a broader, more comprehensive conceptualization of firm performance.

Business model

The discussion of business model has gained more attention from business scholars as well as practitioners since the emergence of the dot.com businesses. The term 'business model' has become increasingly popular within information systems, management and strategy literature (Hedman and Kalling, 2003). Information systems and business literature refer to the concept of the business model as the means of creating value for customers, and to the way in which a business turns market opportunities into profit through sets of actors, activities and collaboration (Rajala and Westerlund, 2007). Due to the importance of having a clearly articulated business model as early as possible in the new venture creation process (Barringer and Ireland, 2006), the business model is now being emphasized in the entrepreneurship literature. Creating a business model is quite similar to writing a good story – a story that explains how an enterprise works or operates (Barringer and Ireland, 2006; Magretta, 2002). Magretta (2002) argues that a good business model answers Peter Drucker's long standing questions regarding who is the customer and what does the customer value. It should also answer the most significant questions that every manager must ask:

(1) How do we make money in this business?
(2) What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost (Magretta, 2002)?

A famous story about business models relates to how Dell Inc. eliminates the middleman and builds its competitive advantage through their interesting business idea. While several other firms have attempted to imitate Dell's business model, no company has been able to come close to doing so (Barringer and Ireland, 2006). This is because in order to fully imitate Dell's business model, the company that intended to do so will have to change the entire process of doing business and this will

upset the current arrangement such as the relationships with retailers (middleman). By looking at Dell, the company's business model can be the source of competitive advantage that will differentiate it with others competing in the same industry. In other view, this shows that variation in part of the business model design exist even though Dell and its competitors are competing in the same industry and producing quite similar range of products. Even when entrepreneurial firms imitate the business models of existing organizations (Aldrich, 1999), they may have to adapt these designs to their own particular market niche (McGrath and MacMillan, 2000).

Numerous components of the business model are available in the literature. Shafer et al. (2005) review of the relevant literature uncovered 12 definitions in established publications during the year 1998 to 2002 from different perspectives (e-business, strategy, technology and information systems). Across the 12 definitions, they catalogued 42 different business model components, elements or building blocks. They developed an affinity diagram to categorize the business model components that were cited twice or more. Based on that, they identified four major categories, namely: (1) strategic choices, (2) creating value, (3) capturing value, and (4) the value network. Table 3 listed components of the business model discussed by several authors. A study by Abd Aziz et al. (2008) clustered the various business model components that were discussed in the literature to a common business model construct. They found in their study that there are four clusters of the business model construct, namely: stakeholders, competencies, value creation and value capture (Abd Aziz et al., 2008).

Stakeholders' dimension contains components relating to the firm's suppliers, stakeholders and stakeholder networks, as well as customer value and relationships with the customer. Competencies include components, such as: organizational characteristics, firm culture, management and the sources of resources required, infrastructure of the firm and infrastructure management, relation to organizational strengths, valuable resources and knowledge in the firm. Value creation contains elements on firm's value proposition - value proposition, value model, value creation and differentiation. Value capture contains elements related to firm's competitive strategy – competitors, competitive strategy, how the firm creates profits, as well as costs and cost structures. These constructs align with Shafer et al.'s (2005) compo-nents of the business model - strategic choices, value networks, value capture and value creation. Also, they support the business model frameworks of Morris et al. (2005), which identified six main aspects of the entrepreneur's business model, namely: value creation, target customer, core competencies, differentiation, revenue model, and the entrepreneur's aspirations concerning size, time and scope. The constructs also supported Hamel's idea on what are the components of a business model (Hamel, 2000) and were comparable to some of the business model components listed by Dubosson-Torbay et al. (2002).

MATERIALS AND METHODS

Development of hypotheses

Recently, business model emerges as an important determinant of business performance (Malone et al., 2006; Zott and Amit, 2007). Zott and Amit (2007) found a positive relationship between the design of the business model (novelty-centered and efficiency-centered business model design) and business performance (measured as stock market value). The empirical results show that novelty-centered business model design matters to the performance of entrepreneurial firms (Zott and Amit, 2007). Another study on business model design and performance was conducted by Malone et al. (2006). They defined four basic business models based on what assets' rights are sold (creators, distributors, landlord and brokers) and four variations of each based on what type of assets are involved (financial, physical, intangible and human).

They also analyzed the firms' financial performance in three categories, namely: market value, profitability and operating efficiency. Their study suggested that some models do have a better financial performance than others, such as physical creators and physical landlords having greater cash flow on assets. Thus, the evidence on the design of the business model is significant to the firms' performance; therefore, this study further enhance the knowledge on business model and performance of the firm by looking at the manufacturing SMEs in Malaysian context.

The business model in this study focused on four dimensions: stakeholders, competencies, value creation and value capture (Abd Aziz et al., 2008). "Stakeholders" factor contains components relating to the firm's suppliers, stakeholders and stakeholder networks, as well as customer value and relationships with the customer. Stakeholders were identified by Shafer et al. (2005) and Hamel (2000) through their value network factor. Consequently, this study examined the relationship between stakeholders, as one of the business model dimensions and firm performance. Thus, the following hypothesis is formulated.

H_1: Stakeholders in the firm's business model are positively related to the firm's performance.

The second dimension is "competencies". Competencies include components such as: organizational characteristics, firm culture, management and the sources of resources required, infrastructure of the firm and infrastructure management, relation to organizational strengths, valuable resources and know-ledge in the firm. Competencies were identified as strategic resources by Hamel (2000) and Morris et al. (2005) as internal capability factors. Therefore, we have the following hypothesis:

H_2: Competencies in the firm's business model are positively related to the firm's performance.

The third dimension is "value creation" and this factor was also identified by Shafer et al. (2005) as value creation, while the factors related to the offering and market factors were identified by Morris et al. (2005). Value creation contains elements of firm's value proposition, such as: value proposition, value model, value creation and differentiation. Thus, this study examined the relationship between value creation, as one of the business model dimensions and firm performances. As such, the following hypothesis is formulated:

H_3: Value creation in the firm's business model is positively related to the firm's performance.

Table 3. The business model components discussed by several authors.

Author(s)	Business model components
Timmers (1998)	Value network (suppliers), revenue/pricing, information flows, product/service flows
Hamel (2000)	Four major components: customer interface, core strategy, strategic resources, and value network. The subcomponents are as follows: 1) Customer Interface: Fulfillment and support, information and insight, relationship dynamics, and pricing structure. 2) Core Strategy: Business mission, product/market scope, and basis for differentiation. 3) Strategic Resources: Core competencies, strategic assets, and core processes. 4) Value Network: Suppliers, partners and coalitions.
Kim and Mauborgne (2000)	Cost, customer (target market, scope), value chain, pricing/revenue, capabilities, value proposition, profit and value network
Amit and Zott (2001)	Product, information, resources, capabilities, output (offering), value creation, business opportunities, transaction content, transaction governance and transaction structure
Dubosson-Torbay et al. (2002)	Four principal components: Product innovation, customer relationship, infrastructure management and financial aspects. The subcomponents are as follows: 1) Product Innovation: Value proposition, target market, and capabilities. 2) Customer Relationship: Get a feel for the customer, branding, and serving the customer. 3) Infrastructure Management: Resources/assets, activity and processes, and partner network 4) Financial Aspects: Revenue, cost, and profit.
Magretta (2002)	Economic logic, customers, profit, cost, value proposition
Vorst et al. (2002)	Value network (suppliers), value proposition, processes/activities, functionalities, infrastructure applications and specific characteristics
Hoque (2002)	Value network (suppliers), customer (target market/scope), resources/assets, competitors, strategy, branding, differentiation, mission, culture, environment, firm identity and firm reputation
Chesbrough and Rosenbloom (2002)	Market, value proposition, value chain, cost and profit, value network, competitive strategy, revenue/pricing, competitors, output (offering) and value creation
Hedman and Kalling (2003)	Value network (suppliers), resources/assets, capabilities/competencies, processes/activities, competitors, output (offering) and management
Morris et al. (2005)	Customer (target market/scope), value proposition, capabilities, cost, offering, strategy, value creation, economic logic, time, scope and size ambition, pricing and revenue sources

The fourth dimension is “value capture” and it contains elements related to the firm’s competitive strategy (competitors, competitive strategy, how the firm creates profits, as well as costs and cost structures). This dimension is also identified as ‘value capture’ by Shafer et al. (2005). Thus, it is hypothesized that value capture in the business model of a firm is significantly related to the firm’s performance. Therefore, the following hypothesis is suggested.

H_4: Value capture in the firm’s business model is positively related to the firm’s performance.

Procedure and sample

In this study, a quantitative research approach was utilized, while a cross-sectional research design was adopted. Cross-sectional design involves the collection of information, only once, from any given sample of population elements (Malhotra, 1996). This study also employed the survey method, which makes use of a questionnaire. The survey method was chosen because it is an approach that uses several basic procedures to obtain information from people in the natural environment (Graziano and Raulin, 2004). Survey is considered to be best suited for measuring attitudes and obtaining personal and social facts, as well as beliefs (Babbie, 1990). Survey was also conducted with the specific intent of generalizing the results to the population (Girden, 2001). The survey method has also relatively high levels of validity since questions can be posed directly addressing the underlying nature of a construct (Lyon et al., 2000). Respondents selected for this study were owners/managers of the firms. Owners and managers were

targeted in the survey because they are the persons who are involved in the running of the firms. It has been found that the business owners or top executive in small entrepreneurial firms often represent the views of the entire firm (Brush and Vanderwerf, 1992; Chandler and Hanks, 1994). A total of 1000 questionnaires were mailed, along with a cover letter and self addressed stamped return envelope. The paper used was plain white, as it has been found that the use of coloured paper does not significantly improve response rates (Newby et al., 2003). Respondents were asked to complete the questionnaire and return it. The mail questionnaire survey was chosen since this is one of the methods of collecting data that can cover-up a wide geographical area (Sekaran, 2003) with less amount of money spent on travelling. The mailed questionnaire is considered an appropriate approach for surveying organizational processes in the settings where they naturally occur allowing for minimal intrusion by the researcher (McGrath, 1982). However, it is known that this method also has a low response rate, and any doubts that the respondents might have cannot be clarified (Sekaran, 2003). The advantages of choosing this method are: anonymity is high, wide geographic regions can be reached, token gifts can be enclosed to seek compliance, respondents can take more time to respond conveniently and the questionnaire can be administered electronically, if desired (Cavana et al., 2001). The population of this study refers to all Malaysian manufacturing small and medium-sized enterprises (SMEs), including agro-based and manufacturing-related services which were employed between 1 and 150 full-time employees. They were chosen based on the availability of data from the online databases. SME Business Directory (accessible online at www.smeinfo.com.my) was used as reference for the sampling frame of the study. The online database helps in providing the firms' addresses in order for the survey to be sent. A systematic sampling technique was used in this study. Under this technique, a sample is chosen by selecting a random starting point and then picking every Kth element in succession from the sampling frame (Malhotra, 1996). Similar to the simple random sampling, each element in the population has a known and equal chance of being selected. However, the accuracy of systematic sampling can exceed that of simple random sampling when the ordering of the elements is related to the characteristics of interest because the sample will be more representative of the population (Aaker et al., 1998). In this study, every 7th name was automatically selected from the list in the sampling frame. For example, the sample included the 7th name, the 14th, the 21st, and so forth.

Roscoe (1975) rule of thumb proposed that the sample size which is larger than 30 and less than 500 is appropriate for most studies. According to Saunders et al. (2007), for a population of around 10000, the appropriate sample is 370. Thus, for a population of 7340 SMEs, a total of 370 firms were chosen to participate in this study. After taking into account the low feedback rate in Malaysia (Sany Sanuri, 2007) and to overcome the probability of not getting the appropriate response, the numbers of survey questionnaires sent out were tripled than the intended sample needed. A total of 1000 names were selected from the list of more than 7000 SMEs. Data collection was carried out from July to November 2009. After five months of data collection, 202 (20.2%) owners/managers of manufacturing SMEs responded to this study.

Measurement

Data were collected through the use of fully structured and closed-ended questionnaires. The use of closed-ended questionnaire gives a uniform frame of reference for respondents to decide their answers (Weisberg and Bowen, 1977). All constructs included in this study were measured using established measures drawn from previous studies. Some of the questions used were slightly modified to make them more relevant to the purpose of this study. Self-report technique was used to gather data on SMEs' firm performance. Several previous researchers also employed this technique in order to obtain data on firm performance (Dess and Robinson, 1984; Gupta and Govindarajan, 1984; Lumpkin and Dess, 1996). Several studies have employed the subjective assessment for business performance (Curkovic et al., 2000; Forker et al., 1996; Tan et al., 2002; Tracey et al., 2005; Yamin et al., 1997), and have shown that the method can yield useful insights. Since most of the firms in this research were expected to be closely held, it was expected that owners/managers would be unwilling to provide full accounting data. Thus, subjective assessment was used in this study.

This study utilized four items to measure firm's growth: sales growth rate, employment growth rate, sales growth relative to competitors and market value growth relative to competitors. Financial performance was measured using three items: gross profit, return on asset (ROA) and return on investment (ROI). This study also employed the usage of "overall performance" item to measure business performance. "Overall performance" item has been utilized in order to ensure and verify respondents' answers to the other business performance items (Lumpkin and Dess, 1996). All these items were measured using a five-point Likert scale ranging from 1 (much lower performance) to 5 (much higher performance). Respondents were asked to answer their firms' performance based on the previous three years record. According to Covin et al. (2001), an average record of three years was used in order to reduce the decision variation impact of the annual firms' financial report. It is also appropriate to illustrate the current financial performance of SME firms. Business model instrument was adapted from the study of Abd Aziz et al. (2008). The list consisted of 54 distinct components of the firm's business model. This business model consists of four dimensions: stakeholders, competencies, value creation and value capture. Respondents were asked to rate the importance of that particular component to their firm's business model on a five-point Likert scale ranging from 1 (not being important) to 5 (being extremely important). The survey questionnaire also has several questions on respondents' background such as age, gender and highest education level. It also has several questions to capture firms' background such as years of establishments, number of employees, and firm's type and structure of ownership.

FINDINGS AND DISCUSSION

Sample profile

Two follow-ups had been carried out in order to increase the response rate of the data collected using mail survey. Follow-up procedure to the non-response rate was carried out using email and phone call. After two follow-ups, completed surveys were returned by 202 of the 1000 (20.2%) owners/managers of the manufacturing SMEs. Of the 202 respondents, males accounted for 62.4% (126) of the sample population, while females accounted for 37.6% (76). Still, it is common to see that males dominate the business world, while the number of women participating in business (as the owner/manager) is increasing. In terms of their age, 22.3% (45) of the respondents were below 30 years old, 39.6% (80) were in the range of 31 to 40 years, 23.3% (47) were in the range of 41 to 50 years, 11.4% (23) were in between 51 and 60 years, and 3.5% (7) were 61 years old and above. It can be concluded that majority of the owners/managers that participated in this study were in their thirties. In relation

Table 4. Respondents' profile.

Variable	Frequency	Percentage
Gender:		
Male	126	62.4
Female	76	37.6
Age (years):		
Below 30 years old	45	22.3
31 – 40 years old	80	39.6
41 – 50 years old	47	23.3
51 – 60 years old	23	11.4
61 years and above	7	3.5
Highest education level:		
Secondary school	48	23.8
Diploma	49	24.3
Degree	85	42.1
Master	15	7.4
Ph.D	5	2.5

to the highest education obtained by these owners/ managers, majority of them that participated in this study holds a degree qualification (42.1%), followed by diploma (24.3%), secondary school (23.8%), Masters' degree (7.4%) and PhD (2.5%). Table 4 summarizes these respondents' profile. Majority of the manufacturing SMEs are made up of small firms (64.4%), reflected by the number of full-time employees working with the firms. Regarding years of establishment, 21.3% (43) firms were established less than 5 years ago, 26.7% (54) were established 5 to 0 years back, 27.7% (56) were established 11 to 15 years, 7.4% (15) were established 16 to 20 years ago and 16.8% (34) firms were established more than 20 years ago.

The manufacturing sector in Malaysia comprises several sub-sectors. The survey was designed to capture the firm's type (in this case, the sub-sectors). Majority (81 = 40.1%) of the firms that participated in this study were in food and beverages sub-sectors, while 62 (30.7%) firms were in other sub-sectors. Others comprise pharmaceutical, cosmetics, giftware, craft, printing and traditional / herbal medicines. It was observed that 17 (8.4%) of the responses were from textiles and apparels and 10 (5.0%) were from rubber and plastics. However, the full firms' profile is presented in Table 5.

Descriptive statistics

A summary of means and standard deviations for the independent and dependent variables of this study is shown in Table 6. Results showed that among four dimensions of business model, stakeholders had the highest mean (4.0845), followed by value creation (3.9884), competencies (3.9835) and value capture (3.9607). However, the mean score of dependent variables (namely performance) was 3.4412.

Goodness of measure

Goodness of measure was checked using validity, reliability and correlations. In relation to validity, factor analyses were conducted. Factor analysis is a data reduction technique that summarizes a large set of variables into a smaller set of factors or components (Pallant, 2007). The primary purpose of this analysis is to determine the underlying structure among the variables in the analysis (Hair et al., 2006). All measurement tools for the present study were adopted from previous studies and the variables were factorized; however, this study reaffirmed the previous findings by conducting another exploratory factor analysis. The data in this study were initially submitted for exploratory principal component factoring (PC) with varimax rotation via simplification of a large number of items to a few representative factors or dimensions, to test the patterns of correlation among the items of variables, and to establish the goodness of measures for testing the hypotheses (Hair et al., 1998, 2006; Tabachnick and Fidell, 2007). There were 54 items altogether used to measure the business model. According to the study of Abd Aziz et al. (2008), there were four business model constructs or dimensions, namely stakeholders, competencies, value creation and value capture. Based on their initial findings, stakeholders' dimension consists of 13 items, competencies consist of 15 items, value creation consists of 12 items, and value capture dimension consists of 14 items altogether (item

Table 5. Firms' profile.

Variable	Frequency	Percentage
Number of employees		
Less than 5 employees	29	14.4
5 – 50 employees	130	64.4
51 – 150 employees	43	21.3
Years of establishment		
Less than 5 years	43	21.3
5 – 10 years	54	26.7
11 – 15 years	56	27.7
16 – 20 years	15	7.4
More than 20 years	34	16.8
Firm's type		
Textiles and Apparels	17	8.4
Wood and Furniture	9	4.5
Food and Beverages	81	40.1
Chemicals	4	2.0
Transport Equipment	3	1.5
Metal Products	7	3.5
Electrical and Electronics	9	4.5
Rubber and Plastics	10	5.0
Others	62	30.7

Table 6. Descriptive statistics for the main variables of the study.

Variable	Mean	Standard deviation
Competencies	3.9835	0.54930
Stakeholders	4.0845	0.55661
Value creation	3.9884	0.55140
Value capture	3.9607	0.55066
Performance	3.4412	0.65887

loadings of 0.3 and above for each factors). This study also came out with four business model dimensions, which explained 54.94% of the variance in the responses. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value for the items were 0.942, indicating that the items were interrelated and they shared common factors. Meanwhile, the measure of sampling adequacy (MSA) values for individual items ranged from 0.895 to 0.968 and they denoted that the data matrix was suitable for factor analysis. For business performance, eight items were used to measure business performance. Only one factor was extracted for this variable. As such, the KMO measure of sampling adequacy value for the items was 0.934; implying that the items were correlated and they shared common factors. Meanwhile, the MSA values for individual items that ranged from 0.903 to 0.953 also denoted that the data matrix was appropriate for factor analysis. Besides, the factor analysis that resulted in one factor with eigenvalue greater than 1 explained 74.668% of the variance in the data. This one factor accounted for 74.668% of the total variance with an eigenvalue of 5.973. Factor loading for items in this factor ranged from 0.805 to 0.909. This factor consisted of eight items relating to business performance. Reliability test was conducted to examine the internal consistency of the instruments. Consistency indicates how well the items measuring a concept come together as a set (Cabanas et al., 2001). Cronbach's alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another and is computed in terms of the average intercorrelations among the items measuring the concept (Cavana et al., 2001). It was chosen due to its versatility with the use of continuous variables (Huck, 2004). The reliability coefficient as indicated by the Cronbach's alpha values reflected the reliability of the instruments. This coefficient can hold a value of zero to 1

Table 7. Results of reliability analysis.

Instrument	Number of item	Cronbach's alpha	Cronbach's alpha based on standardized item
Stakeholders	13	0.845	0.847
Competencies	15	0.887	0.892
Value creation	12	0.846	0.847
Value capture	14	0.900	0.904
Business performance	8	0.944	0.944

Table 8. Correlations of the study.

	CS	SH	VP	VC	PERF.
CS	1.00	0.721* (0.000)	0.712* (0.000)	0.723* (0.000)	0.434* (0.000)
SH	0.721* (0.000)	1.00	.690* (0.000)	0.712* (0.000)	391* (0.000)
VP	0.712* (0.000)	0.690* (0.000)	1.00	0.673* (.000)	0.404* (0.000)
VC	0.723* (0.000)	0.712* (0.000)	0.673* (0.000)	1.00	0.395* (0.000)
PERF.	0.434* (0.000)	0.391* (0.000)	0.404* (0.000)	0.395* (0.000)	1.00

*Correlation is significant at the 0.01 level (1-tailed); Note: CS = Competencies; SH = Stakeholders; VC = Value Creation; VP = Value Capture; PERF = Performance.

(Cavana et al., 2001). Generally, an alpha coefficient of 0.8 or higher is accepted (Bryman and Cramer, 1990), although Nunnally and Bernstein (1994) recommended that the reliability acceptance level should be set at a minimum of 0.70. Results of reliability testing in this study are presented in Table 7. All constructs used in this study have achieved the acceptable level of reliability (Hair et al., 2003; Murphy and Davidshofer, 2005). Correlation analysis was performed to determine if there was any correlation between the business model dimensions (namely: value creation, value capture, stakeholders and competencies) and the dependent variable of this study (business performance). The Pearson correlation coefficients (r) were used to identify the magnitude and direction of the relationships between variables. For example, the value can range from -1 to +1, with a +1 indicating a perfect positive relationship, 0 indicating no relationship, and -1 indicating a perfect negative or reverse relationship (as one grows larger, the other grows smaller). Table 8 shows the correlation coefficients for variables used in this study. The correlation measure indicates that a relationship exists between variables; however, it does not indicate that any one variable causes the other (Pallant, 2005).

Testing of hypotheses

In order to test the direct effect of hypotheses, multiple regression analysis was utilized. Several assumptions, such as normality, linearity, homoscedasticity, multicollinearity, outlier and error-term free, need to be fulfilled in relation to using multiple regression analysis. To select the appropriate statistical techniques to test hypotheses of this study, a normality test was extremely desirable. As a general rule when the sample size is at least 30, the sampling distribution of the mean will be assumed to be approximately normal (Berenson et al., 2004). Since the respondents in this study are 202, it is assumed that the assumption of normality may be met in this study. However, it is prudent to use some techniques to provide sufficient evidence to support this assumption. Normal probability plot is applied to test the normality as suggested by Coakes and Steed (2003). The results of normal probability plots showed that all the cases fall more or less in a straight line. Thus, normality was

assumed for all the variables in this study. The next assumption is linearity. Linearity is important for regression analysis because one of the underlying assumptions of this technique is that the relationship between independent and dependent variables is linear. Linearity was examined by looking at residual plots, while standardized residuals were plotted against predicted values using SPSS PLOT. Most of the residuals were scattered around zero points and they had oval-shapes, which suggested that the assumption of linearity was met (Tabachnick and Fidell, 2007).

Further analysis was conducted to fulfill the assumption on homoscedasticity. The assumption of homoscedasticity is that the variance of the dependent variable is approximately the same at different levels of the explanatory variables (Hair et al., 1998). In other words, the error terms in a regression model have constant variance. Homoscedasticity is, therefore, examined by visual inspection of the scattered plot of regression residuals. An examination of residual plots for explanatory variables indicated that the assumption of homoscedasticity was supported. The next assumption is multicollinearity. Multicollinearity refers to the degree to which explanatory variables are highly correlated with one another. The multiple regression procedure assumes that no explanatory variable has a perfect linear relationship with another explanatory variable (Tabachnick and Fidell, 2007). Intercorrelations of greater than 0.8 are considered to be evidence of high multicollinearity (Berry and Feldman, 1985). The assumption of multicollinearity was examined by comparing the bivariate correlations between all explanatory variables in the equation. An examination of the results of these tests (with regards to goodness of measure) indicated that multicollinearity was not a problem. To detect univariate outliers, inspection through extreme cases in boxplot analyses was carried out (Tabachnick and Fidell, 2007) for each variable in this study. There were several outliers detected. However, the outliers were not too obvious. Given the fact that the values were not too different from the remaining distribution, the cases were retained in the data file (Pallant, 2007). Here, the relationship between the business model in the context of value creation, value capture, stakeholders, competencies and business performance was reported. Four hypotheses were developed to test the direct relationship between the business model dimensions (stakeholders, competencies, value creation and value capture) and performance of the firm. As such, multiple regression analysis was used to test these relationships. The first hypothesis stated that there is a positive relationship between stakeholders and firm performance. Hypothesis 2 stated that competencies in the business model of a firm are positively related to the firm's performance. Hypothesis 3 stated that value creation in the business model of a firm is positively related to the firm's performance. Hypothesis 4 stated that value capture in the business model of a firm is positively related to the firm's performance.

The results of the multiple regression analysis conducted revealed that only competencies' dimension was found to be significant, while the others (stakeholders, value creation and value capture) were not significant predictors of firm's performance. Therefore, only Hypothesis 1 was accepted. Table 9 presents the complete results of the multiple regression analysis conducted. From the table, the multiple regression model of all the business model dimensions significantly explained 19% of the variance in business performance. However, only competencies' dimension was found to be the significant predictor in business model and performance relationship ($\beta = 0.453$, $t = 2.114$, $p < 0.1$). Table 10 presents the results summary of all hypotheses tested in this study.

DISCUSSION

The primary goal of this study was to assess the relationships between business model dimensions (stakeholders, competencies, value creation and value capture) and performance of manufacturing SMEs in Malaysia. Four hypotheses on the direct relationship of the business model dimensions (stakeholders, competencies, value creation and value capture) and performance were developed. The first hypothesis, developed to examine this relationship, stated that there is a positive relationship between stakeholders and firm performance. The second hypothesis stated that competencies in the business model design of a firm are positively related to the firm's performance. The third hypothesis stated that value creation in the business model design of a firm is positively related to the firm's performance. The fourth hypothesis stated that value capture in the business model design of a firm is positively related to the firm's performance. Overall, the multiple regression models of all the business model dimensions significantly explained 19% of the variance in business performance. Findings also revealed that only competencies dimension was found to be a significant predictor in this relationship, while other dimensions (stakeholders, value creation and value capture) were not significant.

In general, the significant result of the competencies' dimension of the business model shows that business model can be considered as one of the important predictors to the success of a firm, since it is related to performance. These findings are similar to those of Zott and Amit's (2007) study on two business model designs: efficiency-centered and novelty-centered business models that have a positive relationship with performance (measured as stock market value). Even though only competencies' dimension of the business model was a significant predictor in the relationship of business model and performance, it is also valuable to enhance the knowledge in this area since the study has been conducted on manufacturing SMEs in Malaysia. These findings

Table 9. Multiple regression analysis of business model dimensions and performance.

Independent variable	Firm performance		
	β	t-value	p-value
Competencies	0.453	2.114	0.036
Stakeholders	-0.075	-0.401	0.689
Value creation	-0.019	-0.103	0.918
Value capture	-0.074	0.450	0.653
R^2		0.190	
Adjusted R^2		0.173	
Sig. F.		11.516	
Durbin-Watson Index		1.558	

Table 10. Results summary of all hypotheses.

Hypothesis	Description	Results
H_1	Stakeholders in the firm's business model are positively related to the firm's performance.	Accept
H_2	Competencies in the firm's business model are positively related to the firm's performance.	Reject
H_3	Value creation in the firm's business model is positively related to the firm's performance.	Reject
H_4	Value capture in the firm's business model is positively related to the firm's performance.	Reject

provide a valuable addition to the literature in terms of demonstrating that firm performance and business model are positively related. Apart from that, studies on business model dimensions available in the current literature were conducted on more established firms, particularly on big companies and also public listed companies outside Malaysia (Western countries), such as studies by Zott and Amit (2007) and Malone et al. (2006). This study however was conducted on manufacturing SMEs in Malaysia, which was different from the previous settings. The study further contributes by extending the theory's application, specifically, to a population that has not been reported to have studied the manufacturing SMEs before now.

Although the response rate is acceptable, the implication for this study could have been enhanced if the response rate had been higher. Response rates for mailed surveys in small business research have historically been lower than response rates for research on large businesses or the general population (Bartholomew and Smith, 2006). Nearly one-third of articles, using a mailed survey in entrepreneurship or small business journals, reported a response rate of less than 25% (Aldrich and Baker, 1997). The alternative approach to mail survey is to conduct interviews for these owners/managers. However, this approach will incur higher costs to the survey and the questionnaire has to be kept within an appropriate length. In addition, this research investigates the relationships of business model and performance at a particular point in time. The richness of the study is restricted by the 'snapshot' taken in the study. According to Sekaran (2003), one of the limitations of the cross-sectional study is the restriction to prove the cause-effect relationship amongst the variables. This study's framework only described how business model and performance relates, but did not provide many insights into how firms evolve amidst changing internal and external dynamics. In addition, cross-sectional data can only provide a 'snapshot' of one point at a time. While useful and informative, assertions based on temporal snap shots were limited to the time frame, when the data were collected.

Conclusion

In conclusion, business model in the context of competencies has a significant direct impact on firm performance. It is suggested that in order to increase the firm's performance, one of the important factors to be emphasized on is to have a practical business model. The findings of this study would be useful to the policy makers and practitioners especially in designing the future development of entrepreneurship programs for current and future entrepreneurs in Malaysia. Since business model is considered an important thing in managing business, some knowledge and exposure to these concepts should be included in the training syllabus or programs. The findings would also have implications for SME owners/managers by providing an empirically tested model to better understand the effects of variables on business performance. This would help them to

develop better strategies regarding the development of business model to gain potential benefits and competitive advantages. Future researches should consider a longitudinal design in studying the effect of firm performance, and overcoming the inherent limitation of using cross-sectional data that lead to more specific and accurate assessments. Furthermore, the longitudinal study would help future researchers to validate the findings gathered from the cross-sectional study, since the business model of a firm would change over time.

Moreover, additional empirical study is needed to enhance the understanding of the relationships between business model and its effects on performance. Future researches should examine, in more detail, the nature of these relationships, looking for possible causal and medium patterns of relationships that affect firm performance. Also, they are needed to determine other measures of firm performance, such as productivity, and should consider developing a more complex but palatable measure and control for other influences on performance. In order to increase the response rate, future researches should offer either incentive for all respondents or attractive prizes for early respondents. A web version of the questionnaire can also be developed to give participants an option to complete the survey.

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