

Surviving the Next Economic Crisis: Corporate entrepreneurship strategies of Thai automotive SMEs

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ABSTRACT

This paper examines the antecedents to corporate entrepreneurship (CE) in Thailand's auto-parts manufacturing industry in the post Asian financial crisis era using a mixed-method approach. There is a lack of research on CE strategies of SMEs in response to the Asian financial crisis in developing Asian countries. This paper presents a model based on existing CE theory where organizational strategy, culture and the environment impact on CE and organizational performance. Structural Equation Modeling was used to analyze data collected from 220 chief executives/deputy chief executives who participated in this research. The results suggest that environmental and organizational factors impact on CE which in turn influences firm performance in terms of both financial and non-financial aspects. Significantly, non-financial performance was found to influence financial outcomes. This paper demonstrates that CE is important not only for wealth creation but also for efficient processes and operations, all of which reflect on overall performance. As there is a dearth of empirical research in this area, this paper makes a useful contribution to knowledge by highlighting the CE initiatives of Thai SMEs to survive future crisis and stiff competition in the Asian region.

Keywords: *corporate entrepreneurship; financial crisis; emerging economies; antecedents; mixed-method research.*

INTRODUCTION

Entrepreneurship is an important feature of organizational and economic development as well as wealth creation (Antoncic and Hisrich, 2004). Researchers and practitioners have increasingly been interested in the concept because of the positive effect on revitalization and performance of firms (Antoncic and Hisrich, 2004).

In recent years globalization and advances in technology have forced Thailand to re-evaluate its economic strategies and policies (BOI 2006). Thailand suffered significantly during the Asian financial crisis in 1997 when about one-third of the Thailand's publicly listed companies were wiped out (Sebora, Theerapatvong and Lee, 2010). During the crisis, individual entrepreneurship and intrapreneurship or corporate entrepreneurship (CE) suffered significantly. In the aftermath of the crisis, entrepreneurs must now compete more intensely against foreign competitors in the Asian region such as China (Looney, 2004). Thailand aims to improve its productivity and up-skill from low-cost high-productive labour as an investment attraction to a knowledge-based economic system driven by innovation and cutting-edge technology. Given that Thailand is undergoing economic transformation, cultivating entrepreneurship and facilitating organizational transformation are therefore fundamental to economic growth and the well-being of many individuals (Pearce and Robinson, 2009). In Thailand, private business enterprises such as auto-parts manufacturing firms play an important role in economic development, contributing to

employment, production, and national income as well as providing opportunities to lessen poverty (Limsavarn, 2004). Thus, the focus on upgrading the capabilities of the Thai auto-parts manufacturing companies is critical. As such, exploring CE may be one way to increase awareness of the auto-parts manufacturing sector's competitiveness.

However, there has been very little research in antecedents and performance of CE in developing countries and emerging economies, particularly Thailand (Sebora and Theerapatvong, 2010; Sebora et al., 2010). Thailand is worthy of research in this area because it has one of the fastest growing economies in South-East Asia. In addition, CE-performance relationships have been examined mainly based on financial aspects, particularly growth and profitability, while non-financial criteria have not been explicitly examined (Mair and Rata, 2004). Further, the literature has a quantitative bias (Zahra, Jennings, and Kuratko, 1999) which gives rise to the possibility of enriching the body of knowledge with more qualitative research. This paper aims to fill these gaps in the literature using a mixed method approach. The paper attempts to address these problems by investigating and exploring both external and internal environments that stimulate entrepreneurship inside organizations, and entrepreneurial activities' outcomes in terms of both financial and non-financial performance.

THEORETICAL MODEL AND HYPOTHESES

CE is defined as entrepreneurship in an existing organization (Antoncic and Hisrich, 2001). CE is viewed as an internal process in an existing firm that leads to a variety of innovations such as the renewal of operations, and the creation of new products, services, processes and markets, resulting in sustain growth and competitive advantage (Yiu and Lau, 2008). Thus, CE has been highlighted as a key factor for economic transformation and development to foster innovation and wealth creation (Kontoghiorghes, Awbre, and Feurig, 2005). Zahra et al. (1999) argue that CE is a knowledge-creation process. Dess et al. (2003) support this view suggesting that CE promotes organizational learning and develops new knowledge. CE is therefore recognized as an effective means for emerging-economy firms to revitalize, reconfigure resources and transform into knowledge-based or innovation-oriented firms that are ready to compete in the global economy (Antoncic and Hisrich, 2004; Yiu and Lau, 2008). This suggests that the development and enhancing entrepreneurial mindset could also be of benefit to the Thai auto-parts manufacturing firms.

Antoncic and Hisrich (2001) developed a multidimensional CE construct by integrating previous research studies (Covin and Slevin, 1989; Knight, 1997) and found that their redefined measure of CE is more complete due to a combination of four dimensions in a single study and is more parsimonious in eliminating redundancy in the innovative dimensions, and is valid in a cross-cultural setting. Antoncic and Hisrich's (2001) study was conducted in the United States, a developed country and Slovenia, a transition economy. According to Antoncic and Hisrich, their research classified CE into four characteristics. First, new business venturing refers to the creation of new business within the existing company that are related to the firm's current products and markets. Second, innovativeness involves creation of new products, services, and technologies. Third, self-renewal refers to strategy reformulation, reorganization, and organizational change. Finally, pro-activeness reflects top management orientation to take risk and aggressively and proactively compete with industry competitors.

This paper extends the CE literature by integrating previous research findings of researchers such as Antoncic and Hisrich (2001), Covin and Slevin (1991) and Zahra et al. (1999). Based on the works of these researchers, the rationale for the development of a theoretical model of CE antecedents and performance for the

auto-parts manufacturing sector in Thailand is detailed and the relationships are illustrated in Figure 1. The theoretical model is based on the simple premise that conditions in the environment and the organization influences entrepreneurial activities in the firm which affects organizational performance.

Figure 1: The theoretical model of CE antecedents and effects

ENVIRONMENTAL CONDITIONS

The external environment has historically been the focus as the predictor of CE (Covin and Slevin, 1991; Dess et al., 1997; Morris et al., 2008). Environmental conditions are viewed as a multidimensional concept (Zahra, 1993b), which provides initial conditions that either facilitate or constraint a firm's entrepreneurial behaviour (Kollmann and Stockmann, 2008; Zahra, 1993a).

Environment variables including dynamism, hostility and heterogeneity, based on Miller and Friesen's (1983) study, are widely used in literature and are found to influence CE (Covin and Slevin, 1989; Kollmann and Stockmann, 2008; Lumpkin and Dess, 2001). Dynamism refers to the perceived instability and continuing changes in the firm's market. Organizations often respond to challenging conditions found in dynamic or high technological environments by adopting an entrepreneurial posture (Antonicic and Hisrich, 2004). Hostility, on the other hand, represents the degree of threat to the firm posed by the intensity of the competition and the downswings and upswings of the firm's principal industry. It is more likely that firms will be entrepreneurial when competitors' products change rapidly or when customer needs fluctuate (Kollmann and Stockmann, 2008; Zahra and Garvis, 2000). Further, heterogeneity encompasses variations among a firm's markets that require diversity in production and marketing orientations. Firms operating in many different markets are likely to learn from their broad experience with competitors and customers. Thus, it is likely that entrepreneurial behaviour will follow (Entrialgo et al., 2001; Morris et al., 2008). Therefore, environmental dimensions are expected to be predictors of CE and the following hypothesis is put forward:

Hypothesis 1a: Environmental dynamism will have an impact on CE.

Hypothesis 1b: Environmental hostility will have an impact on CE.

Hypothesis 1c: Environmental heterogeneity will have an impact on CE.

ORGANIZATIONAL STRATEGY

The firm's strategy is another variable influencing CE. The literature is highly supportive of the use of the Miles and Snow's (1978) typology in both small and large companies, and confirms that their typology influences entrepreneurial activities (Moreno and Casillas, 2008). Miles and Snow's strategic orientation focuses on the direction and influence given by the top management to the firm's overall vision and direction. Four different strategies are identified based on organizational adaptation to the changing operating environment: Prospector, Analyzer, Defender, and Reactor.

The Prospector type frequently adds to and changes its products and services and markets, consistently attempting to be first in the market. Growth primarily arises from the development of new markets and the expansion of product offerings (Shortell and Zajac, 1990). Unlike the Prospector, the Defender type tends to emphasize maintaining market share through low cost and efficiency in narrowly defined market segments. Firms adopting this orientation are non-adaptive, defensive, non-innovative and risk-averse). Moreover, the Analyzer type is an intermediate hybrid, combining the strengths of both the Prospector and the Defender into a single system. Firms adopting this orientation protect existing products and markets through efficiency-oriented strategies while cautiously penetrating new markets through intensified product or market innovation. Finally, the Reactor type lacks a consistent strategy. Thus, because the Reactor strategy responds "inappropriately to environmental change and uncertainty, performing poorly as a result, and is then reluctant to act aggressively in the future" (Miles et al., 1978: 557) many researchers have tended to exclude the Reactor strategy (Conant et al., 1990; Kald et al., 2000; Matsuno and Mentzer, 2000). Thus, this paper uses only three feasible strategy types, Prospector, Analyzer and Defender, for evaluating the determinant effects on CE. The following hypothesis is therefore put forwarded:

Hypothesis 2a: Prospector strategy will have an impact on CE.

Hypothesis 2b: Analyzer strategy will have an impact on CE.

Hypothesis 2c: Defender strategy will not have an impact on CE.

ORGANIZATIONAL CULTURE

A general consensus in the literature is that corporate culture plays a critical role in shaping CE (Morris et al., 2008; Russell and Russell, 1992). Culture that supports innovation tends to stimulate organizational members to take CE initiatives (Kuratko et al., 2001; Russell, 1999).

Organizational culture characteristics such as management support, autonomy and work discretion, reward and reinforcement, time availability, and loose organizational boundaries (Hornsby, Naffziger et. al, 1993) are critical to foster an entrepreneurial culture in organizations (Antoncic and Hisrich, 2001, 2004; Antoncic and Scarlat, 2005). In Antoncic and Hisrich's (2001, 2004) studies, the organizational support dimension is measured by items from Hornsby et al. (1993), and the findings indicate that organizational support can be an important predictor of CE. In addition, Gray et al. (2003) also suggest that culture influences the management style and shapes entrepreneurial behavior of individuals and groups in the company at all levels. Based on this understanding, the following hypothesis is put forward:

Hypothesis 3: Organizational culture will have an impact on CE.

CORPORATE ENTREPRENEURSHIP AND FIRM PERFORMANCE

The literature highlights the importance of CE for improving a company's performance. The most common measures of performance in CE studies are growth and profitability and the research findings

support a positive association between CE and financial performance (Antoncic and Hisrich, 2001, 2004; Covin and Slevin, 1989; Wiklund and Shepherd, 2005; Zahra 1993b). On the other hand, measuring performance employing non-financial criteria has been recognized recently in the CE field and some researchers argue that non-financial criteria can be insightful in the early years of an entrepreneurial project (Dess et al., 2003; Zahra, 1993a). Thus, non-financial criteria such as customer satisfaction, employee satisfaction, quality of product and service and new product and service development can be useful in evaluating the performance of CE (Carton and Hofer, 2006; Dess and Lumpkin, 2005). Research findings support a positive association between CE and non-financial performance (Holt et al., 2007; Mair and Rata, 2004). Therefore, CE is expected to be related positively to performance. The following hypothesis is put forward:

Hypothesis 4a: CE will have a positive influence on financial performance.

Hypothesis 4b: CE will have a positive influence on non-financial performance.

METHODOLOGY

This paper employed a mixed-method research, where both quantitative and qualitative methods were used. The questionnaire survey was originally developed in English then translated into Thai and then back-translated into English (Brislin, 1970). The questionnaire was pre-tested with six CEOs of Thai auto-parts manufacturing firms (not included in the final sample) in order to ensure the integrity of the translation and to improve the understanding of the questions.

400 companies were randomly selected from the Thailand Automotive Industry directory 2006–2007. CEOs or their deputies of the sample firms were selected to participate as they would be most knowledgeable about the overall situation, activities and orientations of the firm (Fitzsimmons, Douglas et al., 2005). Although the generalizability of findings of single-industry-based studies is limited, a desirable feature of such studies is that they provide a greater degree of control over market and environmental characteristics (Snow and Hambrick, 1980).

220 questionnaires were returned with 207 useable responses, yielding a 52% response rate. The responses yielded 59.9 % small-sized to medium-sized enterprises (SMEs) and 40.1% were large companies. Firms below 200 employees were classified as SMEs and 200 and above employees as large companies. The firm size (number of employees) ranged from 12 to 27,500. The companies had been in business for between five and 56 years with a mean of 17.99 years ($SD = 10.80$) and a median of 16 years ($N = 207$). This shows that some of the companies covered in this study were not early start-up businesses but could be considered to be in the later stages of business development.

In addition to the quantitative data from the mail survey, 10 CEOs or their deputies who participated in the survey were selected for the interviews. Since quantitative and qualitative methods have different strengths and weaknesses, it has been argued that researchers should try to use multiple research methods to provide broader insights into issues being studied (Creswell and Clark, 2007). Therefore, in pursuit of broader insights in relation to CE in the Thai automotive industry both quantitative and qualitative methods were deployed in this study. The data was collected from February to November 2008.

MEASUREMENT

A seven-point Likert-type scale was used in the research and specific reference was provided for each measure. This is discussed below.

Environmental Conditions

13 items were used to measure environmental conditions. This instrument consisted of five items measuring environmental dynamism, five items measuring environmental hostility, and three items measuring environmental heterogeneity. This scale was developed by Miller and Friesen (1982, 1984).

Organizational Strategy

This measurement instrument for organizational strategy was developed by James and Hatten (1995) based on the Miles and Snow (1978) classification. Descriptions for Prospector, Analyzer, Defender and Reactor were used to measure organizational strategy. This approach enables firms to give an objective response and avoids any unnecessary bias, where firms might try to give preferable responses. The responses of the respondents were tabulated using three dummy variables. The Miles and Snow's typology was chosen in this study for three reasons. First, it is widely recognized in the theoretical and empirical research in the literature on strategy, strategic management and entrepreneurship (O'Regan and Ghobadian 2005; Vajanapoom, 2005).

The Prospector and Defender types classified by Miles and Snow exhibit similar attributes to strategy archetypes identified in other studies, including the entrepreneurial and planning mode (Mintzberg, 1973), the innovator and dominant type (Miller and Friesen, 1978), differentiation and cost leadership (Porter 1980), and build and harvest (Gupta and Govindarajan, 1984). Second, it is able to measure strategy at a level of abstraction sufficient to apply across a wide variety of organizations and industries, as research provides strong support for the perceptual measurement validity and reliability of Miles and Snow's strategic orientations (Shortell and Zajac, 1990). Moreover, the measurement instrument is logically appealing since top managers' perceptions largely define strategy, and it allows rapid collection of substantial data (James and Hatten, 1995). Third, it focuses on the dynamic process of adjusting to environmental change and uncertainty (Miles and Snow, 1978). Organizational adaptability corresponds to an entrepreneurial orientation (Miller and Friesen, 1983).

Entrepreneurship is traditionally considered as a proactive process influenced by the external environment. Thus, Miles and Snow's (1978) typology is useful for analyzing the ways in which organizations respond to changing environmental conditions; that is, the rate at which an organization changes its products or markets to maintain alignment with its environment, and the subsequent innovative-driven strategies it adopts. Miles and Snow's (1978) typology focuses on the direction and influence given by the top management to the firm's overall vision and direction. Four different strategies are identified based on organizational adaptation to the changing operating environment:

Prospector, Analyzer, Defender, and Reactor. This nature of this typology makes it appropriate for study of CE in developing countries which are transitioning from the use of inputs from resource mobilization to technical progress and efficiency.

Organizational Culture

12 items were used to measure organizational culture. Seven items measured management support, autonomy/work discretion, and reward/ reinforcement. These items were developed by Hornsby et al. (1993). One item that measured training was developed by Zahra (1993b), reflecting support activities for creativity and innovation. Another four items were participative decision making, being open and cooperative and teamwork. These items were developed by Christodoulou (1984).

Corporate Entrepreneurship

A 23- item instrument was used to measure corporate entrepreneurship. Four items measured new business venturing, eleven items measured self-renewal, three items measured pro-activeness and five items measured innovativeness. All these items were developed by Antoncic and Hisrich (2001) by integrating two key measures: ENTRESALE from Knight (1977) and the CE scale from Zahra (1993).

Firm Performance

An 8 item instrument measured financial performance. This instrument was developed by Hart and Quinn (1993) and consisted of three items measuring financial performance, three items measuring business performance and two items measuring organizational effectiveness. These scales addressed both financial and non-financial aspects, providing a more holistic conceptualization of performance. To capture different aspects of small and private enterprises' business performance, CEOs' perception of organizational performance compared to their main industry competitors over the past three years were used (Dess et al., 1997).

Analysis

Structural equation modeling (SEM) was used for the quantitative data analysis as it allows for simultaneous estimation of multiple and interrelated dependence relationships and provides a conceptually appealing way to test theory and assesses how well the theory fits reality as represented by data (Kline, 2005). SEM with AMOS 16 followed a two-step approach. Firstly, each of the measurement models was evaluated and refined by confirmatory factor analysis (CFA) prior to testing the full model. When the models were validated, the results suggested high validity and reliability of the measurement models. Then the assessment path analysis was performed to test relationships between CE and its antecedents as well as its effects. In addition, content analysis was employed for qualitative data analysis in the interpretative framework. Both data sets were integrated for the interpretation.

Results

Based on the CFA results, the problematic items were removed in order to improve the fitness of the model. 39 items were retained and these with the scale reliabilities are listed in Table 1. The results of the measurement models showed good fit for all the constructs as follows:

environment construct χ^2 (17) = 22.48, p = 0.17, SRMR = 0.03, RMSEA = 0.04, GFI = 0.97 and CFI = 0.99;

culture construct χ^2 (48) = 87.99, Bollen-Stine Bootstrap p = 0.18, SRMR = 0.05, RMSEA = 0.06, GFI = 0.93 and CFI = 0.97;

CE construct χ^2 (84) = 116.73, Bollen-Stine Bootstrap p = 0.13, SRMR = 0.05, RMSEA = 0.04, GFI = 0.93 and CFI = 0.98; and

firm performance construct χ^2 (8) = 18.15, Bollen-Stine Bootstrap p = 0.05, SRMR = 0.04, RMSEA = 0.08, GFI = 0.97 and CFI = 0.98.

Table 1: Confirmatory factor analysis results and scale reliability

Constructs and items	Factor Loadings	Alpha
Environmental Dynamism		0.73
Degree of change in technology	0.59	
Degree of change in product and service	0.72	
Degree of change in marketing practices	0.75	
Environmental Hostility		0.68
Government policies	0.79	

Constructs and items	Factor Loadings	Alpha
Environmental Dynamism		0.73
Degree of change in technology	0.59	
Degree of change in product and service	0.72	
Competition in product quality	0.65	
Environmental Heterogeneity		0.80
Degree of diversity of customers' buying habits	0.78	
Degree of diversity of competitors' activity	0.83	
Degree of diversity of required methods of production and service	0.66	
Management Support		0.78
Management encouragement for creative and innovative activities	0.83	
Support for small experimental projects	0.68	
Seeding money to get projects off the ground	0.69	
Training employees for creative and innovative activities	0.57	
Autonomy		0.87
Allowing employees to make decisions about their work processes	0.81	
Avoiding criticizing employees for making mistakes	0.94	
Reward		0.74
Recognition the ideas of innovative people	0.79	
Providing rewards contingent on performance	0.77	
Involvement		0.84
Participative decision-making processes in and between different organizational levels	0.66	
Widely communication of the company's mission, strategy and objectives to employees	0.72	
Communication and co-operation between different department	0.91	
Teamwork rather than individual contributions	0.79	
New business venturing		0.79
Broadening business lines in current industries	0.87	
Pursuing new businesses in new industries that are related to current business	0.80	
Finding new niches for products in current markets	0.32	
Entering new businesses by offering new lines and products	0.80	
Innovativeness		
Company's spending on new product development activities	0.74	
The number of new products added by the company	0.84	
Product lines	0.87	
Product changes	0.80	
Self-renewal		0.80
Revising the business concept	0.61	
Reorganizing units and divisions	0.83	
Coordinated activities among units	0.77	
Adopting flexible organizational structures	0.60	
Pro-activeness		0.84
Competitive posture ("undo-the-competitors" posture)	0.80	
Decision-making style (bold, aggressive posture)	0.86	
Risk-taking proclivity	0.74	
Financial Performance		0.82
Profit in comparison with the major competitors in last 3 years	0.88	
Cash flow in comparison with the major competitors in last 3 years	0.77	
Sales growth in comparison with the major competitors in last 3 years	0.70	
Non-financial Performance		0.82
New product/service development in comparison with the major	0.80	

Constructs and items	Factor Loadings	Alpha
Environmental Dynamism		0.73
Degree of change in technology	0.59	
Degree of change in product and service competitors in last 3 years	0.72	
Quality of product/service in comparison with the major competitors in last 3 years	0.84	
Employee satisfaction in comparison with the major competitors in last 3 years	0.70	
<i>Note: 39 items were retained and 17 items were removed during confirmatory factor analysis</i>		

The results of the measurement model showed that all the items are loaded in their specified constructs, with standardized loadings from a low of 0.32 to a high of 0.94. Most items were significant with strong evidence of convergent validity. Then discriminant validity was assessed where the construct are interrelated. Large correlations between latent construct (greater than 0.85) suggest a lack of discriminant validity (Anderson and Gerbing, 1988; Hair et al., 2006). All factor pattern coefficients and factor inter-correlations were significant, ranging from 0.41 to 0.52 for environment construct; from 0.50 to 0.84 for culture construct; from 0.37 to 0.74 for CE construct; and $r = 0.59$ for firm performance construct. Thus, all factors display discriminant validity.

After the acceptable convergent and discriminant validities of the measurement models were specified, the full structural model of CE antecedents and effects was tested. The model was found not to fit the data well, $\chi^2(82) = 228.85$, $p = 0.00$, $\text{CMIN/DF} = 2.79$, $\text{SRMR} = 0.07$, $\text{RMSEA} = 0.09$, $\text{GFI} = 0.88$ and $\text{CFI} = 0.89$. The χ^2 value, GFI and CFI were a less satisfactory fit. An inspection of the modification indices with theory justification suggested that adding structural paths from 'environmental hostility' to 'financial performance', 'Defender strategy' to 'non-financial performance' and 'non-financial performance' to 'financial performance' could improve the model, $\text{CMIN/DF} = 2.45$, $\text{SRMR} = 0.06$, $\text{RMSEA} = 0.08$, $\text{GFI} = 0.90$ and $\text{CFI} = 0.91$. Thus, the adjusted model is preferable, as shown in Figure 2.

Figure 2: Final model of CE antecedents and performance

The model accounts for 68 % of the variance in CE, 43 % of the variance in non-financial performance, and 33 % of the variance in financial performance. All antecedents are found to be

significant predictors of CE, and CE is a significant predictor of firm performance. The Analyzer strategy is the most important determinant of CE, followed by the Prospector strategy (H2a and H2b supported) and organizational culture (H3 supported). The standardized coefficients of all paths range from 0.53 to 0.67, $p < 0.001$. As expected, the Defender strategy does not have an impact on CE ($p = 0.06$) (H2c supported). The other paths found to be significant at the 0.05 level; environmental dynamism and heterogeneity have a significant impact on CE (H1a and H1c supported) but a negative effect on environmental hostility (H1b partially supported). In addition, CE has the most important impact on non-financial performance, with a standardized coefficient of 0.71 ($p < 0.001$) (H4b supported). CE was also found to have a significant influence on financial performance, with a standardized coefficient of 0.22 ($p < 0.05$) (H4a supported).

There are three additional results from the model. The study found non-financial performance to have a significant impact on financial performance. Furthermore, a significant result was that environmental hostility has a direct negative impact on financial performance and also perceived to have a negative relationship with CE as an intermediating construct to organizational performance. The Defender strategy was also found to be a significant factor influencing non-financial performance directly and has no influence on CE.

The findings of the qualitative study not only validate the results of the quantitative study but also uncover unanticipated findings (see Table 2 below) For example, shortage of skilled labour and customer satisfaction are found as variables that should be included in environmental hostility and non-financial performance respectively.

Table 2: Quantitative findings confirmation of qualitative findings

Factors	Dimensions	Indicator Variables	Quantitative Findings	Qualitative Findings
Environment	Dynamism	Degree of change in technology	✓	✓
		Degree of change in products and services	✓	✓
		Degree of change in marketing practices	✓	✓
	Hostility	Competition in product quality	✓	✓
		Government policies	✓	✓
		Skilled labor	-	✓
	Heterogeneity	Degree of diversity of customers' buying habits	✓	✓
		Degree of diversity of competitors' activity	✓	✓
		Degree of diversity of required methods of production and service	✓	✓
Strategy	Prospector	First in the market	✓	✓
		Broad product-market domain	✓	✓
		Rapid response to opportunity	✓	✓
		Aggressive product and market innovation	✓	✓
	Analyzer	Take calculated risks	✓	✓
		Monitor the actions of major competitors for new ideas	✓	✓
		Relatively stable product-market domain	✓	✓
		Careful new product development	✓	✓

Factors	Dimensions	Indicator Variables	Quantitative Findings	Qualitative Findings
	Defender	and market penetration only after their feasibility has been proved Risk-adjusted efficiency Limited and narrow product-market domain Tight control Emphasis on efficient operation for lower cost Risk-averse Seldom change their technology, structure, and production method	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓
Culture	Management Support	Management encouragement for creative and innovative activities Support for small experimental projects Seeding money to get projects off the ground	✓ ✓ ✓	✓ ✓ ✓
	Autonomy	Training Allowing employees to make decisions about their work processes Avoiding criticizing employees for making mistakes when being innovative	✓ ✓ ✓	✓ - -
	Reward	Recognition of the ideas of innovative people Providing rewards contingent on performance	✓ ✓	- ✓
	Involvement	Participative decision-making processes in and between different organizational levels Wide communication of the company's mission, strategy and objectives to employees Communication and cooperation between different departments Teamwork rather than individual contributions	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓
Performance	Financial	Profitability level/return on assets Cash flow Sales growth	✓ ✓ ✓	✓ - ✓
	Non-financial	New product/service development Quality of product/service Employee satisfaction Customer satisfaction	✓ ✓ ✓ -	✓ ✓ ✓ ✓

Note: Table 2 illustrates the confirmation of the quantitative findings by the qualitative results. The results confirm that the linkage between the constructs in Thai auto-parts manufacturing firms, measuring CE and performance, is well supported statistically and conceptually. They can be seen or considered to be key characteristics that help drive the Thai auto-parts manufacturing firms to cultivate and implement entrepreneurial processes and behaviors in order to achieve excellent performance and competitive advantage.

DISCUSSION

This paper tested a model of CE antecedents and performance in auto-parts manufacturing firms in Thailand. The interview findings of this research help clarify the role of determinant variables in entrepreneurial orientations and activities and the effects of these activities on firm performance. Therefore, data collection based on quantitative and qualitative approaches can help improve both the reliability and validity of CE research, and provide better understanding of the antecedents and performance of CE in Thai context.

The results of this paper from both qualitative and quantitative data showed that the external environment is an important determinant of CE. This affirms that from environmental management and entrepreneurship perspectives, the external environment cannot be separated from the entrepreneurial process (Dess et al., 2004; Zahra, 1993b). Environmental dynamism and heterogeneity offers opportunities that can be derived from the development of new products and technologies and from access to new markets. The findings from interviews support the arguments that entrepreneurial firms not only respond to the challenges in those environment variables but also create changes in such environments (Lumpkin and Dess, 2001; Miller and Friesen, 1982; Wheelen and Hunger, 2008). For example, changes in technology such as electronics systems require firms to commit to research and development and to develop new products and technology if they do not want to be surpassed by their competitors. Furthermore, consumer demands such as for smaller and energy efficient cars require firms to develop new products and technology. New product, market and technology added by the firms also create changes in the environments, since those leading firms create new competition in the market.

The Thai auto-parts manufacturing firms were found to become conservative rather than entrepreneurial in a hostile environment. The respondents in this research see a hostile environment as a threat rather than an opportunity for entrepreneurs. This has been the response of both the SMEs and the large companies. This is contrary to the arguments in the literature and findings reported in past research (Covin and Slevin, 1989; Zahra and Garvis, 2000). Industry and country specifics as well as measurement issues may be the reasons for different research findings reported in the literature. The interviews suggested that firms are more cautious in unfavorable conditions, such as unstable political conditions and complexities caused by the international financial crisis impacting both domestic and international markets. In a volatile environment, they emphasize marketing (e.g., strength of brand and image), customer service, product quality, and operational efficiency for survival rather than high growth and profit. The respondents perceive being innovative in hostile environmental conditions as too risky and involving high cost for any innovation and change; this is consistent with the argument of Russell (1999). Miller and Friesen's also support (1983: 223) this perception by suggesting that "extensive risk taking, forceful pro-activeness, and a strong emphasis on novelty can be very hazardous when competitive conditions are becoming more taxing."

Further, this paper found that environmental hostility has a negative impact on financial performance. The effect of external environment on performance is consistent with the strategic management theory and market-based view, where the external environment plays an important role in explaining an organization's financial performance (Dess et al., 2004; Ricceri, 2008). The interviews suggest that when environmental hostility intensifies, profits might decline because the cost of a firm's operations can increase due to its attempts to build a stronger market position, establish its brand name recognition, and develop customer loyalty, as was found in past research (Zahra, 1993b; Zahra and Garvis, 2000).

Furthermore, the results from the interviews indicate that a lack of skilled labor impedes the

development of entrepreneurial projects. The qualified workforce, particularly technicians, engineers and management personnel, are insufficient to meet the needs of the Thai auto-parts manufacturing companies. The scarcity of labor has not been widely measured in past research. However, this finding is consistent with studies of Miles and Friesen (1982) and Zahra and Garvis (2000), which measure labor as an environmental hostility construct.

In relation to the impact of organizational strategy on CE, interestingly, the Analyzer strategy exhibits a slightly greater impact on CE than the Prospector strategy; however, a high degree of similarity between the Prospector and Analyzer strategies in determining CE was revealed. This high degree of similarity is consistent with past research (e.g., Matsuno and Mentzer, 2000; Shortell and Zajac, 1990), indicating that the Prospector and Analyzer strategies are similar to each other but are significantly different to the Defender strategy. Furthermore, Matsuno and Mentzer (2000) suggest that firms that adopt the Analyzer strategy may engage in an equally high level of market orientation to avoid falling too far behind companies that pursue the Prospector strategy. The Analyzer strategy has potentially greater applicability to CE firms in this paper since competitive advantage in the auto-parts industry is determined by lower cost, high quality and innovation. The interviews supported that the global competition has intensified the need for cost-based strategy whilst advances in technology are requiring Thai auto-parts manufacturing firms to become innovative. This result corroborates the argument of Dess et al. (1999) suggesting that a combination of low cost and innovation is an important aspect of successful strategies in the context of CE and is becoming common management practice of the world's leading companies, such as IBM and Procter and Gamble (Wheelen and Hunger, 2008).

In contrast, the Defender strategy does not have an impact on CE. Results from the interviews indicated that the firms embracing the Defender strategy are more likely to rely on more traditional products in their industry, rather than emphasizing newer technology and product types. They focus on overall low cost by improving the efficiency of their existing production and operations while maintaining quality. These firms, particularly SMEs, do not have resources and access to modern machines and new technologies. This outcome is consistent with prior studies stating that firms using the Defender strategy show a tendency to avoid risk in favor of protecting the company's market (Kald et al., 2000; Miles and Snow, 1978; Miller and Friesen, 1982). Such firms tend to be non-entrepreneurial (Brown et al., 2001).

This paper found additional insights into the effect of the Defender strategy on non-financial performance. Miles and Snow (1978) suggest that any of the three strategic styles (Defender, Prospector and Analyzer) tend to perform equally well if they respond consistently to the challenges in all areas of operation. The findings of Conant et al. (1990) supported this notion. Although the influence of the Defender strategy on market competencies is comparatively weak, overall performance is comparatively favorable. Conant et al. found that the Defender strategy possesses distinctive operational competencies such as 'knowledge of customers' and 'effectiveness of cost control'. They further explain this finding regarding the concept of equifinality suggested by Hrebiniack and Joyce (1985) and propose that the same outcomes can be accomplished in multiple ways with different resources, diverse transformation processes, and various methods or means.

In terms of influence of culture on CE, the variables, including management support, autonomy, reward and involvement are found to facilitate organizational members to engage in entrepreneurial initiatives and efforts. This finding corroborates the previous study (Antoncic and Hisrich, 2004; Cohen, 2002; Russell, 1999; Covin and Slevin, 1991). This paper supports that a firm's success in engaging in CE occurs when the spirit of entrepreneurship permeates every part of the organization (Dess et al., 2004).

Furthermore, findings from the quantitative and qualitative data of this paper showed that CE has positive and significant influences on both financial and non-financial performance. CE has greater direct impact on non-financial performance than on financial performance, which is consistent with the study of Mair and Rata (2004). Mair and Rata suggest that performance measurement based primarily on financial performance measures lacks the focus needed for internal and management control. Thus, there is a strong need for the multidimensional nature of the performance construct when exploring the CE–performance relationship (Kollmann and Stockmann, 2008). Some CE ventures require extensive investments and may take several years before they pay off. It is possible that short-term profitability may suffer from engaging in entrepreneurial activities in the early phase of a project (Kollmann and Stockmann, 2008; Wiklund and Shepherd, 2005). Therefore, the primary advantage of using non-financial performance measures in conjunction with financial performance measures is when they provide information about opportunities that have been created, but not yet financially realized (Carton and Hofer, 2006).

Importantly, the findings of this paper indicate that non-financial performance has a positive and significant effect on financial performance, which support the argument of Atkinson, Waterhouse and Wells (1997: 28), asserting that “a company’s success is created by monitoring and managing its performance on the secondary objectives, since success in achieving performance on the primary objectives follows from the secondary objectives.” The primary objective of a firm is usually financial aspects relevant to maximizing shareholders’ wealth such as profit, whereas the secondary objectives are usually non-financial aspects and involve process performance such as quality, product and process innovation, customer and employee satisfaction (Dess et al., 1999; Venkatraman and Ramanujam, 1986). In regard to this approach, this paper therefore suggests that a company must focus on both results and causes.

Furthermore, the findings from the interviews reveal that customer satisfaction is very important regarding non-financial performance. The interviews indicate that customer satisfaction is the primary justification resulting from entrepreneurial initiatives. Customer satisfaction reflects the overall performance because it can impact on financial performance in terms of profitability and growth. This confirms prior studies suggesting that all relevant stakeholders such as satisfied customers and satisfied employees are prerequisites for a firm’s performance (Atkinson et al., 1997; Mair and Rata, 2004; Zahra et al., 1999; Seborá et al., 2010).

CONCLUSION

This paper tested empirically the impact of environmental and organizational factors on CE as well as the relationship between CE and firm performance in the auto-parts manufacturing firms in Thailand, a developing country. This paper suggested that both external and internal environments influence CE. Internal organizational factors, particularly strategy and culture, have a greater impact on CE than external environments, suggesting that internal environments of firms are the main drivers of CE. CE is a complex phenomenon that involves the entire firm, rather than exclusively individuals or parts of firms, acting in entrepreneurial ways. Therefore, clear and effective strategies for innovation from top management and an entrepreneurial culture shared among organizational members tend to cultivate CE successfully. Although external environmental conditions have less impact on CE, they are also important because external forces influence a company’s choice of direction and action and, ultimately, the firm’s internal process. Moreover, the results of this paper demonstrated that CE is a good direct predictor of firm performance in terms of both financial and non-financial aspects. This paper enriches CE literature by showing that CE is important not only for wealth creation but also for efficient processes and operations, all of which reflect on overall

performance. Therefore, CE is an effective means by which Thai auto-parts manufacturing firms can improve their performance and achieve competitive advantage. Thailand's economic growth has been built on the use of inputs from resource mobilization rather than technical progress and efficiency (Seebora and Theerapatvong, 2010). This weakness can only be overcome by continuous innovation and creation of new ideas. Building Thailand's long run competitiveness and increasing efficiency would lead to more sustainable growth for this country in the Asian region.

This paper makes several contributions to the CE literature. First, the findings of this paper, contributes to the theory development of CE and provide a foundation for further research in this field in developing countries. Second, the results of this paper support theoretical and empirical evidence from the US and other developed countries that CE is an effective means for superior performance in the Thai context. In addition, this paper empirically tests CE–performance relationships, which include various aspects of financial and non-financial performance, which may be necessary to represent the overall performance construct as well as contribute to a better understanding of complex CE–performance relationships. Finally, this paper provides insights into the impact of non-financial performance on financial performance as it is found in the adjusted model. To the authors' best knowledge there is no existing empirical research in this area in CE.

The findings of this paper support the management and strategic management theories that non-financial performance may be a critical factor in improving financial performance. Non-financial outcomes may be useful in assessing short-term outcomes, and could then be used with longer-term financial measurements to assess potential causal relationships (Carton and Hofer, 2006; Dess et al., 1999; Zahra, 1993a). Thus, this paper helps distinguish the two performance constructs and delineates the relationship between them in CE. Also, the results in this paper establish new ground for further research to study the relationship.

This paper offers some implications that inform managerial practice. Top management should shape and activate CE; especially to improve performance in a rapidly changing business environment and uncertainty in the global economy. In 1997, Thailand was among the countries worst affected by the Asian financial crisis. Consequently, growth, particularly growth via innovation, is viewed as the key priority for Thai SMEs long-term survival and prosperity. CE is viewed globally as a key driver of sustainable growth and competitive advantage in companies and of economic development in nations. It is therefore crucial that for Thai SMEs to understand the forces that drive CE.

LIMITATIONS AND FUTURE RESEARCH

Since this study focuses only on one industry, future research would be useful to test the model of the antecedents to and effects of corporate entrepreneurship in other industries in order to validate measures, test hypotheses, and develop theories. Moreover, future researchers need to explore the stability of the results, how environmental and organizational factors affect the rates and types of firm-level entrepreneurship and the resultant outcomes of entrepreneurial activities by collecting data from other countries.

Secondly, a survey research design that relies on a single informant per organization has reliability concerns, one being common method bias. The use of multiple informants and multiple methods should be considered in the future to enable researchers to examine closely the extent to which such a bias is present (Matsuno and Mentzer, 2000) so that greater measurement accuracy might be achieved and the validity of findings confirmed (Bierly and Daly, 2007). Further, perceptions of senior managers obtained from self-reported questionnaires create functional biases and an inability to identify sources of variation

in responses. Top management team members from different functions such as production, marketing and finance might perceive the dimensions of corporate entrepreneurship differently (Lyon et al., 2000). As such, different views might lead to inconsistent findings when corporate entrepreneurship is assessed using perceptual measures.

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