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Sources of sustainable competitive advantage: the case of rice-milling firms in Thailand

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Abstract

Purpose – This paper aims to investigate the effect of several valuable resources (organizational reputation, human resource management (HRM) practices, networks, and vertical integration in production) in explaining the performance of rice-milling firms in Thailand.

Design/methodology/approach – Resource-based view (RBV) theory was used to explain that the particular bundle of firm resources can become the source of sustainable competitive advantage and thereby improve the business's performance. Semi-structured in-depth interviews and questionnaire were used to collect data from Thailand rice exporters. Then regression technique was employed for data analysis.

Findings – Results from a survey of rice mills involved in international export showed that organizational reputation, some HRM practices, and networks were significantly related to firm's performance, but vertical integration was not.

Originality/value – This study supports the basic assertion of RBV theory that a set of firm specific resources could be applied in ways that enhance sustainable competitive advantage.

Keywords Strategic management, Thailand, Competitive advantage, RBV, Rice mill

Paper type Research paper

Introduction

Agribusiness worldwide is facing the effects of market globalization, agricultural industrialization, and trade liberalization. Agribusiness production will experience rapid, fundamental change over the next decades, which will surpass the tremendous change that has already occurred over the past 50 years. To survive, agribusiness firms need to reshape their mission, goals, and purpose. The application of strategic management concepts will become increasingly important for these firms (Brester and Penn, 1999). Agro-industrialization is progressing at a particularly rapid rate in parts of the developing world, driving more change in organizational management, government structures, and accompanying strategic initiatives (Cook *et al.*, 2001).

Some research on strategy examines the question how firms can create and extend their competitive advantage. The resource-based view (RBV) of the firm could be used



to understand this issue in agribusiness; this theory is grounded in the assumptions that sustainable competitive advantage (SCA) of a firm should be generated not from only one, but rather from a bundle of firm-specific resources (Barney, 1991; Newbert, 2007; Smith, 2008; Nevo and Wade, 2010). A bundle of resources results from past managerial decisions and subsequent experience. It may be useless to analyze the impact of individual firm resources in isolation.

Much of the RBV discussion is conceptual, or oriented toward case studies. This detailed conceptual development, based on in-depth understanding of specific firms, is certainly essential before the theory can be widely applied. But so, too, is it important to demonstrate that the concepts apply broadly to the agribusiness sector before one could recommend that agribusiness firms pay more explicit attention to RBV concepts. It is not difficult to generate a simple model from the theoretical concepts of RBV (Lockett *et al.*, 2009), which could be used for analyzing the impact of key resource bundles under RBV.

This paper investigates the effect of intangible resources on firm performance in a competitive agribusiness environment by using qualitative and quantitative approach. Key resources examined here include firm reputation, human resource management (HRM) practices, networks, and vertical integration in production. As in much current literature, 'resources' are defined broadly to mean competencies as well as physical resources. "Capabilities and core competencies have been found to be far more significant in explaining competitive advantage and performance than resources." (Newbert, 2007, p. 137).

The specific agribusiness context of the study is Thai rice mills which export rice to the international market. Thailand is the leading exporter of milled rice, accounting for one-third of world rice exports (FAO, 2009, 2010). Thai rice-milling firms have pushed Thailand to the forefront in the international rice trade. Clearly, these firms provide a good context in which to examine elements contributing to sustainable competitive advantage; Thai firms are key players in the world rice market.

Theoretical background and hypotheses

The presence of some competitive advantage is normally inferred from sustained periods of above-average performance, broadly recognized as sustainable competitive advantage (SCA). RBV theory has often been employed to explain the effects of various resources on SCA (Wernerfelt, 1984; Barney, 1991; Amit and Schoemaker, 1993; Collis and Montgomery, 1995; Helfat and Peteraf, 2003; Tuan and Yoshi, 2010). A firm uses resources to develop, manufacture and deliver products or services to its customers (Barney, 1995). These resources could be seen as a strength (or weakness, particularly if lacking); and they may be tangible or intangible (Wernerfelt, 1984). The firm resource could be termed as driver (Storto, 2011) or factor (Avella *et al.*, 2001) in explaining their effect on firm competitiveness. To make this more comprehensible, this research work defines firm resource as driving factor (e.g. Beleska-Spasova *et al.*, 2011) that can be related to the competitive performance of a firm.

In order to allow a firm to gain superior performance in a competitive industry, the strategic resources that the firm possesses must be scarce, durable, but not easily traded and imitated (Amit and Schoemaker, 1993; Collis and Montgomery, 1995). The firm should identify, create and retain valuable resources which can support it in performing its activities and in improving its performance in ways that are better or

cheaper than competitors (Barney, 2001; Collis and Montgomery, 1995). Wernerfelt (1984) also suggested that a key condition for first mover advantage is that the firm employs resources which later firms will only be able to acquire at greater cost, or which later would only produce lower revenues. This situation is termed the ‘resource position barrier’.

In this study, we apply the RBV to evaluate the role of rice mill resources. Over the years, researchers have suggested many potential resources that can improve and sustain a firm’s performance, including firm reputation (Nachum, 1996; Carmeli and Cohen, 2001; Roberts and Dowling, 2002; Smith, 2008), HRM practices (Pfeffer, 1994; Stroh and Caligiuri, 1998; Chadee and Kumar, 2001; Ahmad and Schroeder, 2003; Guthrie *et al.*, 2009), networks (Dyer, 1996; Gulati, 1999), and vertical integration in production (Harrigan, 1985; Harrigan, 1986; Warren, 1992). Accordingly, this research proposes a model using the bundle of these four resources as constructs in predicting rice mill performance.

It is generally recognized that market share can be treated as a useful measure of firm performance (e.g. Venkatraman and Ramanujam, 1986). Market share has long been known to have a positive effect on firm profit performance (Buzzell *et al.*, 1975; Kurtz and Rhoades, 1992). There are two different measures of market share, the absolute market share measure which represents the ratio a business’s sales to total sales in the served market, and the relative market share measure which represents the ratio a business’s market share to the combined market share of its three largest competitors or largest competitors. The absolute measure of market share is usually more appropriate for studies that consider specific industries, whereas the relative measure of market share is often better in comparative studies across a number of different industries (Szymanski *et al.*, 1993).

Here, because we focus on a single industry, absolute market share is used to measure firm performance. Figure 1 schematically shows the simple conceptual model that will be used to test whether the RBV theory, with the set of resources examined here, works for Thai rice mills. The following paragraphs briefly describe the concepts in Figure 1, as well as justify the link between the resources and performance represented in the hypotheses. Details of how each concept was measured follow later in the section on methodology.

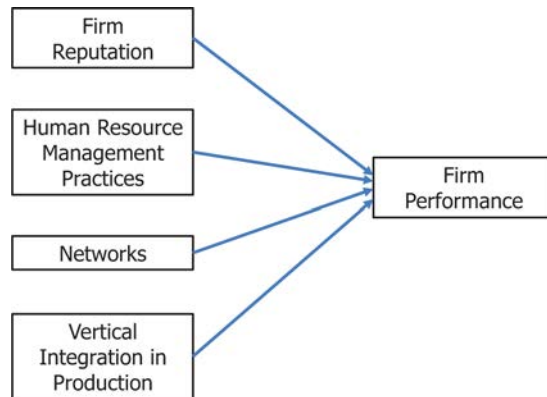


Figure 1.
Simple conceptual model

A number of studies have examined reputation as a source of superior performance (Carmeli and Cohen, 2001; Roberts and Dowling, 2002; López, 2003; Carmeli, 2004; Smith, 2008). The firm's reputation is an intangible asset, representing knowledge and emotion held by individuals. Reputation cannot be bought and takes considerable time to create. Reputation capital is difficult to substitute or imitate (Petrick *et al.*, 1999; Smith, 2008). It could be perceived as the outcome of a competitive process in which firms signal their key characteristics to stakeholders in order to maximize their socioeconomic and moral status (Fombrun and Shanley, 1990). A good reputation will develop when the firm's constituencies perceive that the firm is more attractive than other firms (Carmeli and Tishler, 2005). These conditions are likely to give some competitive advantage, and empirical results suggest a strong relationship between corporate reputation and firm performance (e.g. Roberts and Dowling, 2002; Sánchez and Sotorrió, 2007). The reputation can have a positive impact on organizational performance by converting the firm's growth into larger market share (Carmeli and Tishler, 2005). With high reputation gaining from the quality of their milled rice, the numbers of milling firms gain favorable market share over years. These arguments provide the basis for the following hypothesis:

- H1.* The reputation which the rice mill possesses positively affects the rice mill's performance.

HRM practices are the organizational activities that manage the pool of human skills, experience and knowledge in order to meet organizational goals (Wright *et al.*, 1994). To have an effect on firm performance, multiple practices should be bundled (Macduffie, 1995; Pfeffer, 1998). Thai milling firms adopt various practices to improve their competitiveness. The group of particular practices including employment insecurity, preferable compensation contingent on organizational performance, extensive training, status distinctions and barriers, and information sharing would be considered as intangible aspects that can affect economic performance through people (Pfeffer, 1995; Pfeffer, 1998; Guthrie *et al.*, 2009). The work of Ahmad and Schroeder (2003) showed that employment insecurity and status differences are negatively related to several HRM practices, and seem to block the development of other practices, which have positive correlations with organizational performance. Accordingly, the following hypothesis is offered:

- H2.* The bundle of HRM practices that the rice mill possesses, which are compensation contingent on organizational performance, extensive training, and information sharing positively affects performance, while employment insecurity and status distinctions negatively affect performance.

Networks are defined as complicated and strong relationships between firms (Jarillo, 1988; Gulati *et al.*, 2000; Trienekens, 2011). Evidence from the qualitative study showed the strong relationship the Thai milling firm created with its suppliers and buyers. Jap (1999) emphasizes the value of coordination efforts and idiosyncratic investments as two important factors which result from inter-firm relationships. A high level of coordination is needed to allow each firm in the network to share information, opportunities and processes. Idiosyncratic investments are intangible or tangible investments targeted at specific needs that are difficult to transfer to other relationships. These factors make inter-firm collaboration difficult to imitate because

of its dependence on the historical relationship and the social complexity which has developed. Jap's (1999) findings show that these factors help the related firms achieve higher performances and obtain SCA. Therefore, the third hypothesis is:

- H3.* Stronger networks, defined as relationships fostering coordination efforts and idiosyncratic investments with the rice mill's relevant partner, positively affects performance.

Vertical integration occurs when a firm operates vertically in two or more stages of the industry value chain (Ó hUallacháin and Matthews, 1994; Harrigan, 1985; Harrigan, 1986). The degree of vertical integration in production can be determined by the number of production stages in which the firm participates. Empirical studies have shown that successful firms were involved in more stages of vertical integration than unsuccessful firms (Harrigan, 1986). Many milling firms in Thailand's rice industry integrate altogether the rice milling and rice refining process in order to enhance their end product quality.

On the other hand, some research has shown no relationship between vertical integration and performance (e.g. Reed and Fronmueller, 1990). Perhaps firms can only achieve competitive advantage through vertical integration if they can control added administrative costs from putting two or more organizations together (e.g. D'aveni and Ravenscraft, 1994). Trienekens (2011) notes that technology may be changing the equation, gradually making stronger coordination possible without integration.

Nevertheless, generally vertical integration may improve a firm's competitiveness by reducing the power of suppliers or buyers, the influence of rivals, new entrants and substitutes (Warren, 1992). This integration 'resource' could strategically improve business performance and create competitive advantage for a firm. In line with these arguments, the hypothesis is proposed:

- H4.* Vertical integration positively affects rice mill performance.

Methodology

Qualitative data collection

Following the recommendations of many researchers working across cultures, initial qualitative pilot work was conducted to understand exactly how these concepts are understood in this context (e.g. for Thai adaptation of concepts to Thai context, Srijumpa *et al.*, 2004). The qualitative study was undertaken to provide the group of important resources within rice-milling firms and how they generate competitive advantage for those firms.

Construct validity was improved by developing its constructs through a literature review (Christie *et al.*, 2000). Extensive literature review was done to determine why and how some firm resources are important for the study. The causal relationships between variables and results were derived and also compared with previous studies in different contexts in order to enhance internal validity (Gibbert *et al.*, 2008). Semi-structured in-depth interviews were conducted with four rice milling firm owners, four rice milling firm executives, one local assembling firm owner and two farmers from Northeastern of Thailand to investigate the source of advantage of the rice-milling firms and reveal that the issues covered in the literature are relevant in this context (Table I).

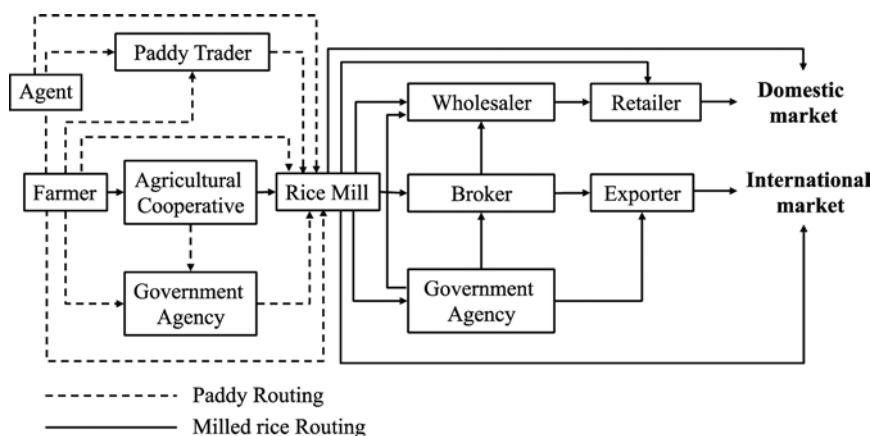
No.	Interviewee	Position	Organizational category
1	Owner	President	Rice milling firm
2	Owner	Managing Director	Rice milling firm
3	Owner	Managing Director	Rice milling firm
4	Owner	Managing Director	Rice milling firm
5	Executive	Marketing Manager	Rice milling firm
6	Executive	Partner Manager	Rice milling firm
7	Executive	Managing Director	Rice milling firm
8	Executive	General Manager	Rice milling firm
9	Owner	Managing Director	Local assembling firm
10	Rice field owner	Farmer	–
11	Rice field owner	Farmer	–

Table I.
Participants from
Northeastern Thailand

Qualitative study of rice-milling firms in Thailand

Thailand has been the world's largest milled rice exporter in terms of volume and value for the past decade, and in 2010 exported more than 9 million metric tons of milled rice according to USDA ERS (2011, Table XXIII). Thailand competes with relatively high quality rice; prices of Thai milled rice are among the highest on average for major rice exporters (FAO, 2011; USDA ERS, 2011; Tables 20, 21). Much of Thailand's rice production is from rain-fed agriculture, and thus, is tied to the pattern of rainy seasons. However, irrigated farming allows a second crop annually in many parts of the country. This second crop from irrigated land gives Thailand the high quality surplus needed for export, and constitutes the main exported rice (Vanichjakvong, 2002).

The rice marketing system has a number of players with different important roles, illustrated in Figure 2. As can be seen in this figure, rice mills are in the key intermediary position between production and market demand. Their processing of the rice determines the physical quality of the rice that moves to market (Vaiyarabutr, 2001; Wiboonpongse and Chaovanapoonphol, 2000). Most Thai rice mills sell their products on the domestic market, and only some firms have entered the international



Source: Adapted from Wiboonpongse and Chaovanapoonphol (2000)

Figure 2.
Structure of the rice
marketing system in
Thailand

market, which generally requires higher quality standards, at least at the level of the market in which Thai rice generally competes. The rigorous competition in the Thai rice milling industry has forced firms to upgrade many practices in order to sustain performance. Based on RBV, we can briefly assess the important driving factors – firm reputation, HRM practices, networks, and vertical integration in production – for rice-milling firms, before examining these elements in more detail to define our simple model.

We briefly note that the better Thai rice-milling firms follow good practice in terms of the four key resources examined here; justification for focusing on these four resources follows in a later section. The first factor, reputation, has an important impact on competitive advantage (e.g. Carmeli and Cohen, 2001; Carmeli and Tishler, 2005; López and Iglesias, 2010). Reputation is certainly a key element for building trust in B2B food supply chains (Hofstede *et al.*, 2010). The rice-milling firms which thrive in this competitive industry have gained a high reputation for the quality of their milled rice. They purchase paddy from specific areas, because even though rice can be grown in various parts of Thailand, milled rice with the highest quality can only be obtained from paddy in these particular areas. Then they practice rigorous quality control in handling and milling the rice (Siamwalla and Na Ranong, 1990).

Human resource management (HRM) practice is widely acknowledged as one of the most important capabilities for any firm (Pfeffer, 1994, 1995; Stroh and Caligiuri, 1998; Ahmad and Schroeder, 2003). In food processing, for example, effective HRM is a key factor in implementation of effective quality control systems (Fotopoulos *et al.*, 2011). To enhance competitiveness, Thai rice-milling firms require workers with high knowledge and skill to handle the production system. However, the supply of skilled workers is insufficient to serve demand of the industry. Thus, in addition to effective recruitment, many firms need effective HRM practice to develop and retain their workers with such policies as employment security, preferable compensation, good training, sharing of information, and equality (Pimpeng, 2007; Pinsuwan, 2007; Namuangrak, 2009).

The third potential firm resource is organizational networks (Dyer, 1996; Galbreath, 2002; Peyrefitte and Golden, 2004). Stable partnerships with suppliers and/or customers can help lower production and logistics costs (e.g. Ferreira and Serra, 2010), and idiosyncratic investment as a network can also facilitate operations to give advantage in other non-cost ways (e.g. Weitz and Wang, 2004). In agricultural supply chains, Martino and Polinori (2011) show the importance of networks for organizational learning in the poultry industry. Ziggers and Henseler (2009) show that inter-firm network capability affects both supplier and buyer performance. In the Thai food processing industry, stronger supplier linkages contribute to higher success rates in new product development (Suwannaporn and Speece, 2010). One of the large milling firms in Thailand built its networks in several forms. The firm helped its partner in Europe to design and set up the rice mill. The quality control was also supported. Subsequently, the continuity order of brown rice as a raw material for white rice production was made by that partner. Also, the trustworthy linkage with rice farmers in specific area have been created for many years by giving the farmers a numbers of Hom Mali rice seeds for cultivation in couple with technical training support without any regulated conditions. This leads to a stable quality and quantity

of paddy for the firm. Siamwalla and Na Ranong (1990) show that good mutual relationships between a rice milling firm and its farmers will result in high quality rice.

In addition, according to the relationship with middlemen, the milling firm needs paddy with good quality, it always offers a high price to regular paddy traders. Meanwhile, in order to obtain a preferable price, these traders must also be honest and try to maintain a high quality of paddy to meet the customer's requirement. In some cases, the buyer decided to make joint investment with the rice milling firm. Such a deal results in a closer relationship between the two parties. Subsequently, the rice-milling firms can get marketing information faster than before.

The empirical study of Salazar and Górriz (2011) shows that those agricultural cooperatives which vertically integrate by including another phase in the internal production cycle obtain higher levels of efficiency. In addition, as shown by the case of Thailand's largest agribusiness conglomerate, a valuable resource in the firm's success amidst a changing environment is vertical integration in production (Goss *et al.*, 2000). The rice milling industry in Thailand can be divided into two main businesses: rice mills and rice-refining mills (Board of Investment, 2011). Rice-refining mills obtain milled rice as their input. The milled rice is refined by cleaning, whitening, polishing, sorting by color, and grading, after which it can be sold at a higher price to the market. Some rice mills integrate their production downstream by being involved in the rice refining stage, while some rice-refining mills integrate their production upstream by being involved in the rice milling stage. The benefits from this vertical integration in production include product quality improvement, and thus, stronger competitiveness.

Quantitative data collection and measurement of the variables

Consequently, quantitative approach was conducted. The data were collected through the questionnaire that most of questions were given the seven-point Likert scales to reflect degree of attitudinal favorableness. The respondents were required to answer by ranking each question and the scores were totaled to measure the respondents' attitude.

The measurement items for the concepts were taken from previous studies, but adapted to the context of Thai rice mills as necessary, based on this pilot work. Content validity of a questionnaire was assessed by submitting the questionnaire to the group of experts. Therefore, the initial draft questionnaire was then examined by ten industry experts and academics to ensure that the contents and structure were understandable and workable, and to verify whether potential respondents would be able to complete the questionnaire. The experts were debriefed through in-depth interviews, and a few minor adjustments were made. The following paragraphs simply report the final questionnaire items.

Reputation: The reputation variable (REPUTAT) was measured by using indicators based on the study of Schwaiger (2004). This variable was defined as personal appreciation of a mill and perception about its competency. The indicators include perceived comparative advantage of the firm, the degree of disappointment if the firm were to cease existing, whether respondents regard the firm as likable, respondent's perception of the firm's status as the top firm, belief that the firm is broadly recognized, and belief that the firm performs at a premium level. A seven-point Likert scale was used, where a rating of 1 represented 'strongly disagree', and 7 represented 'strongly

agree'. In the main survey, reliability was high for REPUTAT, with Cronbach alpha at 0.86.

HRM practices: The measures for HRM practices cover a set of practices, as noted above, and were adapted from Ahmad and Schroeder (2003). Employment insecurity (INSECURE) was simply measured as a ratio of laid off employees during the past five years compared to total number of current employees.

Compensation contingent on firm performance (CONTCOMP) was measured by whether the milling firm used group incentive plans and/or profit sharing plans. This was operationalized as two dummy variables, where CONTCOMP1 = 1 to represent use of both of these; CONTCOMP2 = 1 to represent use of only one of these plans. If neither was used, then both CONTCOMP1 and CONTCOMP2 = 0.

Extensive training (MULTIFUN) included five items that measure the extent to which employees are encouraged to learn to perform multiple tasks. Each item was assessed by a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Reliability of MULTIFUN was high, at 0.80.

Status distinctions (STATUS) were assessed with five yes/no questions. The questions asked whether parking was assigned based on rank at the mill, whether labor personnel wear uniforms, whether management and staff wear uniforms, whether wage and salary employees use the same cafeteria, and whether salary employees have their own restroom at the mill. Since there are a number of these questions, a simple sum could be treated as a (pseudo) metric variable ranging from 5 to 10, where higher numbers indicate greater status distinction.

Information sharing (FEEDBACK) evaluated how much effort was involved in communicating important information about strategy and operation performance to employees. A total of six items were used for this variable, and each item was evaluated on a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Reliability of FEEDBACK was high, with Cronbach alpha = 0.81.

Networks: As in Jap (1999), the coordination effort and idiosyncratic investments were used to assess the strength of networks or relationships between the firm and its partners. The coordination effort was represented by the variable COEFFORT, which consisted of three items: the milling firm and its partners work together on joint projects, cooperation in exploiting unique opportunities, and continuing effort to find synergy with its partners. The reliability on these items was 0.75. Idiosyncratic investment (IDIOSYNC) was also assessed with three items. One asked whether substantial knowledge could disappear if the relationship was terminated, one asked about loss of investment if either or both partners switched from cooperation to a more competitive stance, and one asked about the degree of investments the milling firm and its partners did in building their joint relationships. The Cronbach alpha was similar on these three items, at 0.76. All six items were measured on a seven-point scale where 1 represented 'strongly disagree' and 7 represented 'strongly agree'.

Vertical integration in production: (VIP_D) was simply a dummy variable indicating integration over two stages or not. The value 0 represented the non-integrated milling firm that handled either the standard rice milling stage or the rice-refining stage. The value '1' represented the integrated milling firm that engaged in both standard rice milling and rice refining process.

Firm performance: absolute export market share (PERF) was the indicator used to measure firm performance. This was based on data from the Rice Audit Committee of



the Thai Chamber of Commerce. The firm's absolute export market share for each year (2002-2004) was calculated by dividing the firm's rice export volume with total rice export volume of all firms in that year. Then the value for the PERF variable of each firm was calculated as the average of absolute export market share over the three years (2002-2004).

Quantitative sampling

The target population for this study was rice mills that own standard rice processing or rice refining facilities, or both, and export some non-trivial volume. The sampling frame was taken from a list of Thai rice exporter firms prepared by the Rice Audit Committee of the Thai Chamber of Commerce. Firms on the list were screened to include only those which had exported continuously over the 2002-2004 period, with a total export volume during the period of not less than 10,000 tons. Initially, 73 firms qualified, but follow-up phone calls to each of them only confirmed that 63 firms actually fit the profile; some did not, and some were actually subsidiaries of firms on the list, so could not be considered independent firms.

Subsequently, each of the 63 firms was contacted, and questionnaires were delivered to three managers in each (one in charge of human resource management, another in charge of production management, and the last one in charge of general management). Thus, 189 questionnaires were distributed. When questionnaires were returned, they were examined (especially the questionnaires from the same firm) and four questionnaires which had the same answer were excluded. A total of 79 usable questionnaires from 42 firms were obtained, representing a 41.8 percent response rate.

Results

Table II shows summary statistics of the metric variables in the study. A check of correlations among the metric dependent variables found few significant correlations, and none that reached as high as 0.5, indicating that there were no problems with multicollinearity between variables. The high standard deviation of employment insecurity (INSECURE) indicated that the mills had broad range of employee layoff rate.

Variable (VARNAME)	Mean	SD
Reputation (REPUTAT)	5.71	0.95
<i>HRM practices</i>		
Employment insecurity (INSECURE)	38.44	141.37
Extensive training (MULTIFUN)	5.69	0.90
Status distinctions (STATUS)	5.18	0.77
Information sharing (FEEDBACK)	4.32	1.16
<i>Networks</i>		
Coordination effort (COEFFORT)	5.05	1.21
Idiosyncratic investments (IDIOSYNC)	4.40	1.46
Performance, export market share (PERF)	0.023	0.045

Note: Compensation (CONTCOMP1, CONTCOMP2) and vertical integration (VIP_D) are categorical dummy variables

Table II.
Means of the metric variables

Table III shows the frequencies for the two questionnaire items that constitute ‘compensation’, and the items that are used to construct ‘vertical integration’. Out of 79 firms, the 18 milling firms use only group incentives plan, nine firms use profit sharing and seven firms use both practices to motivate their employees. There are 45 firms using neither of these practices. According to the vertical integration in production, seven of the 79 firms operating only rice milling process. The 39 firms handle only rice refining process and the 33 firms obtain both processes.

Multiple regression was used to test the set of hypotheses, as summarized in Table IV. Results showed that reputation was significant at the level $p \leq 0.1$ in predicting performance, as measured by absolute export market share. This clearly indicated the positive effect of organizational reputation on the firm’s performance. Therefore, *H1* was supported.

Among the HRM practices, only employment insecurity and status distinctions were significant. The positive relationship between INSECURE and PERF was found with the statistical significance at the level 0.05 ($p < 0.05$). The significant relationship was also found between STATUS and PERF at the level 0.01 ($p < 0.01$). Status

Table III.
Frequencies of
categorical variables

Variable (VARNAME)	Yes (count)	%
<i>HRM practices</i>		
Group incentive plan only	18	22.8
Profit sharing only	9	11.4
Both	7	8.9
None	45	56.9
<i>Vertical integration (VIP_D)</i>		
Rice milling	7	8.9
Rice refining	39	49.3
Both	33	41.8

Table IV.
Regression results

Variable (VARNAME)	Coefficient	Significance
Reputation (REPUTAT)	0.200 *	0.056
<i>HRM practices</i>		
Employment insecurity (INSECURE)	0.251 **	0.032
Compensation (CONTCOMP1)	0.133	0.218
(CONTCOMP2)	0.170	0.123
Extensive training (MULTIFUN)	0.003	0.981
Status distinctions (STATUS)	-0.336 ***	0.002
Information sharing (FEEDBACK)	-0.128	0.304
<i>Networks</i>		
Coordination effort (COEFFORT)	0.239 **	0.042
Idiosyncratic investments (IDIOSYNC)	0.210 *	0.096
Vertical integration (VIP_D)	-0.157	0.188

Notes: $R^2=0.336$; Adjusted $R^2=0.237$; $F=3.388$ ***. Level of significance: * $p \leq 0.1$; ** $p \leq 0.05$; *** $p \leq 0.01$



distinctions negatively influence performance, as expected from the literature. However, employment insecurity has a positive impact, which is opposite of some previous results (e.g. Ahmad and Schroeder, 2003). This may be characteristic of this specific industry, which has seasonality in supply, and to some extent, in demand. Firms which expand and contract their labor force accordingly are probably able to deal with this seasonality better.

Neither of the two dummy variables representing compensation elements was significant, indicating that these compensation policy issues had no impact on performance for Thai rice mills. Nor did extensive training or information sharing have any significant impact. Taken together, these results suggest that prior research on how for these HRM practice elements influence performance is not very applicable to this particular context. Clearly, more work needs to be done to understand how the strategic impact of HRM practice on performance works in some non-Western contexts. Thereby, *H2* was not confirmed.

Network issues do have an impact on rice mill performance. Coordination effort was significant (at $p \leq 0.05$), showing the positive impact of strong coordination with partners. Idiosyncratic investments was also significant (although marginally, at $p \leq 0.1$). Thus, *H3* was supported. These findings suggest that a robust relationship between the milling firm and its partners positively influences organizational performance.

According to *H4*, vertical integration should have an impact on performance. However, the results here show no significant relationship. Thus, there was no difference in rice mill performance between the non-integrated and integrated milling firms.

Discussion

This research has explored a set of specific resources from RBV theory that could support sustainable competitive advantage to see how they apply in the context of Thai rice mills. The findings provide empirical support for the theoretical insights of the RBV. One finding is that mill reputation could be a source of SCA, which is in line with the perspective of a number of researchers (as noted in sections above). In the context of Thailand, individual sentiments of how a firm is, what it does, and perception about its competence are encouraged by the quality of a firm's product. The mill's reputation comes from rice quality, which makes employees proud and earns the trust from customers over a long period of time. The rice quality was established by searching for good paddy from specific areas. Then the paddy was processed and refined with modern machinery. The rice had quality inspection in every step of the production process. Consequently, the mills' reputations contributed to a larger market share and persistent profitability.

Looking at some interesting effects of HRM practices, the positive relationship between 'employment insecurity' and firm performance contradicted the findings of some earlier research. This implies that the firms might benefit from high employee turnover, which is counter to most prior research. Some work, however, points out that 'insecurity' (or 'security') may depend to some extent on labor market conditions, as well as on the policies of specific companies (e.g. Saundry and Turnbull, 1999). Turnover can stimulate employees to increase their effort. The high performance will probably help them to avoid being laid off (Staufenbiel and König, 2010). In addition,

the poor performing employees who may behave in forms such as absence, apathy and even sabotage will be coped with turnover mechanism. This process will invite new creative and energetic employees to the firm (Dalton and Todor, 1979). Thus, to replace a poor performer with a better one could possibly improve firm performance.

As noted above, Thailand's rice industry has some seasonality, so a mill may not be operated at full capacity year-round, and retaining all workers year-round could lead to excessive costs. Although there is a shortage of skilled labor available to Thai rice mills, a well-managed turnover policy might not demoralize workers, and it could also help control costs because most of turnover rate depends largely on unskilled workers. For example, seasonal work is likely to be attractive to unskilled workers whose families own farms, since they are needed on the farm during the planting and growing season. Sometimes they may be needed for longer periods and may not return to a mill job in a particular year. If mills have policies for later rehire of unskilled workers, even after some time away, higher turnover rates may not necessarily indicate 'insecurity' for workers in the sense of demoralizing worry about jobs. In addition, unskilled workers have little effect on the quality of rice because only skilled workers are assigned to take care of quality of rice purchased and milling process control.

However, we did not explicitly examine this issue because we did not anticipate it, but we do note that occasionally authors have pointed out the need for research to see if the HRM impact on competitive advantage works the same way when agribusiness operations are seasonal rather than year-round (e.g. Mugeru and Bitsch, 2005).

Our empirical evidence shows a negative impact of status differences on organizational performance, which is consistent with past research (discussed above). Otherwise, the HRM elements did not affect performance in this case. More extensive training in multiple functions did not significantly relate to firm performance. Nor did more extensive sharing of important information with employees have an impact in explaining firm performance. Finally, the performance-based elements of compensation similarly had no impact. These results all suggest the need for more research on how HRM practices affect firm competitive advantage in different contexts; prior findings do not appear to work across-the-board. As just noted, the seasonality and the nature of the workforce in rural areas probably have some impact here.

Networks were found to be a valuable resource in promoting superior firm performance, with both dimensions of the network measures significant. The coordination effort in stable partnerships with suppliers and/or clients does improve performance of rice mills, as does the use of idiosyncratic investments within the network. These mutual relationships could be viewed as horizontal and vertical business relationships among a milling firm and its partners. Networks entail information flow, technical know-how and financial support to the firm, thereby improving firm performance. Thus, a rice milling firm which can effectively build relationships and extend beyond firm boundaries in unique ways may realize an advantage over competing firms who are unable or unwilling to do so.

In the same industry, while the firms enjoy the relationships developed with their customers over years, they also benefit from vertical integration in manufacturing process (Ferreira and Serra, 2010). Karantininis *et al.* (2010) empirically investigated the effects of networks as well as vertical integration in the agri-food industry. The

findings showed that both resources were significant determinants of firms' innovative performance.

However, the significant correlation between networks and vertical integration was not found in this research. As the analysis of Ferreira and Serra (2010), these governance forms are contradictory and their effects on firm performance vary upon two conditions – the transaction costs the firms involved and the importance of firms' activities. In this research finding, the vertical integration in production did not show significance in predicting firm performance. As noted above, prior research has shown conflicting results, and our results support those who have argued and shown that vertical integration has little impact. We suspect that Trienekens (2011) has the best explanation, as noted earlier. With good application of technology in the supply chain (possible because of the strong networks, which do have an impact on performance), things work together smoothly and efficiently without centralizing operations under one ownership.

Managerial implication

The results of this research suggest several ways in which rice mills can actively manage their critical resources to generate sustainable competitive advantage. Reputation is indeed a valuable resource, one which will benefit the firm over a long period of time. Reputation is linked with past actions, the emotions of stakeholders, and its development depends on stable and long-term investments. These are not short-term issues, and top management should not expect returns on organizational reputation within a short time period. They take long-term, consistent work.

As to the networks, the findings showed that cooperative and specialized investment in specific assets among partners could aid the firm in achieving a sustainable competitiveness. Paradoxically, strong relationship building may entail high initial costs, while beneficial strategic outcomes cannot always be gained over a short period of time. Thus, a challenging task for managers is to rid themselves of a sense of short-term individual-firm advantage in order to realize synergy from coordination with other partners. Managers should find opportunities to cultivate close and strong relationships. Additional expenditure stemming from the relationship-making efforts should be considered as a specific investment that will create additional value in the future.

Our qualitative interviews in the pilot work indicated that many managers believe vertical integration gives competitive advantage, and even that using modern technology in the manufacturing processes makes vertical integration necessary. However, our data suggests that this is not always the case. Certainly, it may help in some specific cases, but it does not seem to be a general rule in Thailand's rice milling industry. Vertical integration often requires expensive investment to acquire and/or update technology, and to train employees to use it well, but it may not generate enough competitive advantage to replay this investment. Management must weigh the trade-offs between cost of vertical integration and beneficial outcomes very carefully, rather than just assume that it will give competitive advantage. As noted, close coordination throughout the supply chain may give most of the advantages of vertical integration without such heavy costs.

Conclusion

As is frequently the case in such research, some caution should be used in generalizing the research findings. Rice milling is a mature industry, and some observers have suggested that some of the elements in RVB theory may depend partly on industry characteristics (e.g. Ferreira and Serra, 2010). Things may work somewhat differently in other industries with different characteristics than rice milling in Thailand (e.g. Ahmad and Schroeder, 2003).

In addition, it may well be that the unit of analysis needs to account for a broader range of the value chain than an individual company to accurately assess performance, particularly if performance is measured by metrics that are not wholly about the individual firm. Figure 2 clearly shows that rice mills are only one member of the value chain that moves rice into export markets. While mills engage in some export directly, most export goes through the downstream members of the value chain (e.g. Maneechansook, 2011). Export performance will depend to some extent on the exporter, the broker, and the government agency in Figure 2, as well as on the rice mill.

This observation is not new; for example, Gulati *et al.* (2000, p. 212) assert that “traditional strategy research has viewed firms as autonomous entities seeking to build resources and stake out market positions that lead to sustainable competitive advantage”. However, “performance of firms can be more fully understood by examining the network of relationships in which they are embedded” (Gulati *et al.*, 2000, p. 203). While networks are well recognized as a key resource in RBV theory, research on their impact rarely adopts this approach, which implies that the network itself may be the relevant unit of analysis if the network is well integrated. Thus, it is relatively easy to understand that networks may significantly impact performance, but that many other firm-level measures of resources may not, as in our results.

Finally, this study measured firm performance using an operational performance measure (market share ratio), while financial performance was omitted. Of course, researchers must work with what data they are able to collect (Thai firms are very reluctant to disclose internal financial data). Nevertheless, “the selection of performance measures ... can influence the conclusions about the strategy-performance relationship” (Jusoh and Parnell, 2008, p. 8). It would be interesting to investigate various aspects of firm performance both in financial and non-financial paradigms.

Despite these limitations, this research does show that RBV theory at least partially works in this context. There is a link between some strategic intangible resources – reputation, some HRM practices, and networks – and organizational performance. These resources are valuable assets which allow the firms to gain and maintain sustainability of competitive advantage.

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