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Full Length Research Paper

Core Technological Capabilities as Drivers of Sustainable Competitive Advantage in High-Tech Firms

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This paper fills the prior research gap through a questionnaire survey of 54 firms together with a number of interviews drawn from the Iranians information and communication technology (ICT) industry. The results suggest that capabilities of studding or utilizing technological opportunities, core technology capability, and independence of R&D decisions are important to firm reorganization in a competitive environment, whereas over duty's to survive technologies may limit a firm's reorganization especially in such environment. Moreover, different types of competitive environment need different types of technological capabilities to increase firm unusualness. This paper provides to the survive theory by examining the joint effect of technology capability and competitive environment on a firm's reorganization.

Keywords: Technology capability; Reorganization; Competitive environment; Active capability

INTRODUCTION

Technology capability is important in promoting a firm's competitive advantage (Dedrick and Kraemer, 1998; Hamel and Prahalad, 1994; Irwin et al., 1998; Peteraf and Bergen, 2003; Porter, 1985). Having a diversity of technological resources and capabilities is also important for developing a firm's technology capability (Miyazaki, 1995; Prahalad and Hamel, 1990; Teece et al., 1990). Number of sources of technology capabilities, including capabilities of studding technological opportunities, duty to survive R&D, organization capabilities, core technology, R&D work conditions such as independence of R&D decision, and finally the perspective of top management team (TMT) toward reorganization, may have the interaction effect with competitive environment on firm reorganization. Several studies support this view empirically (Baum and Wally, 2003; Klein et al., 1998; Ray et al., 2004; Walsh and Linton, 2002). Therefore, most of the above studies focus on the relationship between research and development (R&D) strength and reorganization. Thus, the main purpose of this paper is examining various sources of a firm's technology capabilities and its reorganization performance. Teece et al. (1997) provide an inclusive framework of active capabilities supporting how a firm's ability to accomplish new and unusual forms of competitive advantage in an active environment. Since then, active capability becomes the most popular research flow in strategic management research. Different scholars have different definitions on active capability (Eisenhardt and Martin, 2000; Winter, 2003), but these definitions of active capabilities are not without dispute (Wang and Ahmed, 2007). Apart from these dispute definitions, what is often missing from prior empirical research regarding active capability is the lack of inspection how a firm's active capabilities interact with the environmental factors. Therefore, leaving from the theory of active capability, this study attempts to examine how various sources of technology capability in a firm affect its reorganization in a competitive and active environment, which can discard some light for the future active capability studies. Results from this study show that some sources provide to the creating of technology capabilities which in turn influences the firm's reorganization performance particularly in a highly competitive environment. The findings of this research not only complement the current research on technology and reorganization studies, but also enlarge the active capability research. In order to

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meet the research purposes, this study uses a questionnaire survey of 54 Iranians information and communication technology (ICT) firms in 2011 to collect data and employs the negative binomial regression model to test the developed hypotheses.

Theoretical background

A firm's technology capability has a positive relation with a firm's reorganization performance. Previous studies use either R&D strength or the number of evident as measures of a firm's technology capabilities (Baum and Wally, 2003; Coombs and Bierly, 2006; Ray et al., 2004;Walsh and Linton, 2002).While prior studies discuss the effect of technology capabilities on firm performance (Coombs and Bierly, 2006; Miyazaki, 1995), such studies examine R&D strength or evident number rather than technology capabilities. To enjoy a lasting competitive advantage in active markets, firms must support the ability to innovate (Jacobson, 1992). How they do so is confusing given the somewhat segment list of factors identified as central in shaping a firm's technological capabilities; These include technological opportunities (Miyazaki, 1995; Tushman and Anderson, 1988); duty to R&D (Caloghirou et al., 2004; Sakakibara and Porter, 2001); organization capabilities (Doz et al., 2000; Filatochev et al., 2003; Narula, 2004); core technology (Miyazaki, 1995; Prahalad and Hamel, 1990); R&D work conditions such as independence of R&D decision (Kim and Lee, 1995); and the perspective of top management team (TMT) toward reorganization (Miyazaki, 1995). The present study combines these segment elements in evaluating a firm's reorganization performance. Prior studies argue that the adoption of reorganization by a firm has a positive correlation with the degree of competitive of the industry (Robertson and Gatignon, 1986). Teece et al. (1997) further provide an inclusive framework of active capabilities supporting how a firm's ability to accomplish new and unusual forms of competitive advantage in a changing environment. These active capabilities include organizational and managerial procedures such as organization and integration, specific advantage positions such as reputation advantages, and path dependencies such as a firm's history. Therefore active capabilities are a meta-capability, technology capabilities and active capabilities share some similar features. Reorganization has a positive relation with environmental activities (Kim et al., 1993). Robertson and Gatignon (1986) propose an enlarged study of technology diffusion by absorbing the effects of competitiveness on the diffusion procedure. This view might become more visible as technology becomes strategically more significant to the firm in the recreation of competitive advantage. Firms responding to technological opportunities expect that these opportunities will provide a competitive advantage in converting their products and/or their production procedures. Following Penrose (1959), underutilized resources create managerial motivations for new capability creation. The collection of capabilities therefore determines the possibility of responding to technological opportunities. As a result, the collection of technological capabilities, show through outputs such as evident, can refer to a firm's position in terms of active capabilities, which provides an ability to respond to technological opportunities. A period of trial, error, and learning is necessary before a new technology can reach its full potential (Miyazaki, 1995). Sakakibara and Porter (2001) state that R&D strength disclose the opportunity for a firm's active improvement and reorganization, and prior research suggests that R&D strength has a positive relationship with the output of reorganization (Caloghirou et al., 2004). Thus, this study expects that a firm with highly invested R&D can further increase the firm's capability of studding or utilizing technological opportunities in a more competitive environment, which in turn improve its unusualness.

Hypothesis 1. In a competitive environment, a firm's capability of studding or utilizing technological opportunities has a positive relation with reorganization performance.

A firm's organization capability is another important factor influencing a firm’s capabilities. Miyazaki (1995) argued that internal communications between the teams working on technologies, elements, and systems are approving for a firm's capability. Organization capability is essential for a firm, not only to communicate with internal units, but also external groups, such as suppliers, buyers, or competitors (Hamel et al., 1989; Miyazaki, 1995). Better organization may reduce a firm's transaction costs (Williamson, 1975). Furthermore, a number of studies emphasize the importance of network resources toward a firm's reorganization activities (Doz et al., 2000; Filatochev et al., 2003; Narula, 2004). Thus, organization with external networks is important to firms. Active capability scholars suggest that better organization procedure allows it to respond to change environments (Teece et al., 1997). In a rapidly changing and technology detailed environment, the ability to coordinate varying capabilities, both inside and outside the firm, in reply to changing environmental conditions, technological capabilities and active capabilities become intertwined. As a result, firm owns a greater organizing capability with other sector or external players in a competitive environment can perform well in reorganization.

Hypothesis 2. In a competitive environment, a firm's organization capability has a positive relation with reorganization performance.

Hamel and Prahalad (1994) suggest that a firm's superior core technology can improve its core capability which in turn increases the competitive advantage. A firm

with a highly focused and long term participation in a core technology increases its reorganization. A firm needs to collect its core technology capability for a long period of time, which is difficult for competitors to copy and to learn. Therefore, when a firm is in a competitive environment, the firm owning superior core technology capability can perform better than its competitors with lower core technology capability due to its nature of imitation barriers.

Hypothesis 3. In a competitive environment, a firm's core technology capability has a positive relation with reorganization performance.

A number of researchers suggest that path dependency such as core technology might threaten the development of a firm's technology capability. Arthur (1988) suggests that when a firm begins to allocate resources to a particular technology, its capabilities evolve around this technological specialization and early technological choices may then limit future alternatives for technology opportunities. Leonard-Barton (1992) argued that a firm's duty to survive capabilities also threatens the firm's ability to obtain new resources or capabilities. Particularly in a competitive environment, technological discontinuities in external circumstances may make survive capabilities obsolete, and therefore core capabilities might become 'core very strict and difficult to change which is leads to a worse reorganization performance.

Hypothesis 4. In a competitive environment, a firm's duty to R&D has a negative relation with reorganization performance.

Tuominen et al. (2004) state a firm's changeable can drive firm unusualness. A higher degree of independence is one of determinants of changeability. This study defines the independence of R&D as the freedom to choose the problems on which to work and then to follow them independently of direction by researchers. Fischer and Behrman (1979) argued that supervised freedom of R&D results in more reorganization. Denison (1990) argued that firms owning a participative culture and a well-organized workplace outperform those that do not. Particularly, the changing technology movements and customer needs may reinforce the competition. Firms with the level of R&D independence in a competitive environment can adjust their R&D projects at once to changing technological development and customer preference. As a result, a higher degree of R&D independence in a more competitive environment can increase a firm's reorganization performance.

Hypothesis 5. In a competitive environment, a firm's independence of R&D decision has a positive relation with reorganization performance.

METHOD

Sample firms of this research were Iranians manufacturing firms in the information and communication technology sector. Due to dissimilarities between manufacturing firms and trade-only firms, are chosen as a sample selection. Moreover, this study included firms with five or more years into the sample population. Based on the above selection this research selected 138 sample firms on the basis of the stock code compiled by the Iran Stock Exchange Corporation (ISEC). The questionnaire asked respondents to evaluate a firm's technology capabilities and competitive environment between 2007and 2011. Recipients of the survey package were CEOs or senior managers of sample firms. Meanwhile, recognizing a higher reply rate stimulated by face-to-face interviews, we attended three trade exhibitions related to the information and communication technology industry in Iran between 2010 and 2011. The numbers of respondents for the first mail survey, the second mail survey, and face-to-face survey, were 27, 19, and 10 respectively, making the final total number of 56. After excluding two invalid respondents, a total number of valid sample firms was 54, making 44% of reply rate for this study. I then used the one-way ANOVA to examine the difference among the three sub-samples in terms of sales. The result showed the three sub-sample groups were not significantly different ($F=1.689$, $p> 0.1$), suggesting that sample collection was valid. This study collects secondary data, such as number of evident or R&D strength, via the official government publications or governmental agent database maintained by the MOEA as well as via corporate financial statements. The prior literatures and a series of interviews with five senior managers drawn from ICT firms in Iran guided the construction of a detailed questionnaire consisting of 7 items evaluating a firm's technology capabilities and competitive environment. We used industry experts to trial the questionnaire which were agreed or disagreed with a series of statements standardized on a five-point Likert scale. Previous studies use several intermediate research outputs or performance measures,(Baum et al., 2000; Kotabe and Swan, 1995, Lerner et al., 2003), to measure a firm's reorganization performance. However, due to different purpose of studies, they hire these measures to measure different stages of reorganization procedure. Among these measures, evident is a widely acceptable measure in prior research (Miyazaki, 1995). Particularly for the manufacturing firms, evident in terms of procedure improvement can protect their unusual manufacturing procedures. Thus, this study used total number of applied

Table 1. Constructs and measurement

Variable name	Measurement method
Invested In R&D	Secondary database
Organization capability	Questionnairesurvey
Core technology capability	Questionnairesurvey
Responsibility to R&D	Questionnairesurvey
Independence of R&D decision	Questionnaire survey
Competitive environment	Questionnaire survey

evident between 2007 and 2011 as a measure for firm reorganization performance. Since firms usually have used such technologies or sold products as they apply for evident, such un-granted but applied evident are also the consequences of reorganization. From the prior argument, several builds are important in measuring a firm's technology capabilities as follows: (1) invested R&D, (2) organization capability, (3) core technology, (4) duty to R&D, and (5) independence of R&D decision. These builds including of a varying mix of perspective. As for the rest of builds, we used a five-point Likert scale questionnaire to collect. Tables 1 and 2 summarize the measurement for technology capabilities in this study. This research then uses confirmatory factor analysis (CFA) to verify the validity of items for each construct. The results show that the factor loadings were all above 0.6, which was acceptable. Zahra (1993, p.319) states: 'When competition is aggressive, companies must innovate in both products and procedures, survey new markets, find new ways to participate, and examine how they will differentiate themselves from competitors'. Thus, extreme competitive environment may affect unusual activities of firms. This study attempts to study how competitive environment affects the relationship between a firm technology capabilities and reorganization performance. According to Baker and Sinkula (1999), this study uses five point Likert scale questions, (1="lower", 5="higher"), to evaluate a firm's competitive environment. Freeman (1982) suggests that large firms are more effective in conducting industrial research. Thus, this research controlled firm by measuring the logarithm of a firm's total employee number in 2011.

Negative binomial regression model

Since the dependent variable in this research, reorganization performance (measured by evident), is a compute variable and has a nonnegative integer value, prior research normally suggests to use the Poisson regression to deal with such the dependent variable (Hausman et al., 1984). However, Poisson regression assumes that the mean and variance of the computes are equal. If the variance goes beyond the mean, it results in the problem of over-dispersion, which tends to discrimination downward the calculated standard errors (Haunschild and Beckman, 1998; Kogut and Zander, 1992). Therefore, the negative binomial (NB) regression model is suggested by prior studies (Keil et al., 2008), which can overcome the over-dispersion problem and also compute for excluded variable discrimination. This research followed their suggestions by using the negative binomial regression to examine the hypotheses. This study builds three regression models to test the moderating effect. We used the first and second regression models to examine the main relationships between reorganization performance and technology capabilities as well as competitive environment. Finally, this study used the third regression model to study whether the interaction effects of technology capabilities by competitive environment on reorganization performance.

RESULTS AND ANALYSIS

All variables showed satisfactory levels of reliability (Table 2), as showed by the composite reliabilities as 0.6 or above. Convergent validity, which measures construct identity (Campbell and Fiske, 1959), was dependent on the item loadings. Each loading for the multi-item variables of the technology capabilities and competitive environment was significantly related to its underlying factor. All standardized item loadings were well above the cutoff of 0.60 (Hildebrandt, 1987), supporting convergent validity. Table 3 shows the mean values, standard deviations, and correlations for all the measured variables in this study. Table 3 provides the description statistics for 54 firms in this study. The mean of reorganization performance (measured by Iranians evident) was 45.65.The mean for invested in R&D (measured by R&D strength) was 4.68. Table 3 also presents the correlation matrix among the variables. The correlation results show that there were low correlations among the variables, but this multicollinearity problem should not significantly influence the stability of the parameter calculates. As shown in Model 1, a number of technology capabilities have positive relations with reorganization performance. Invested in-house R&D has a positive relationship with reorganization performance

Table 2. Reliability and Validity

Construct/indicator	Cronbach alpha	Standardized loadings
Organization capability	0.63	
1. Respondents were asked to calculate the frequency of communication in your own division		0.84
2. Respondents were asked to calculate the frequency of communication with your customers (Nobel and Birkinshaw, 1998)		0.84
Core technology capability	0.63	
1. Your firm is among the first to introduce new products to the market		0.84
2. Your firm is well known for introducing type of products (Zahra, 1996)		0.64
Responsibility to R&D	0.69	
1. In your firm, the R&D section receives the most attention		0.80
Independence of R&D decision	0.56	
1. The final decision on the adoption is made by the top management (Zain et al., 2002)		0.75
Competitive environment	0.59	
1. The level of competitive strength in your principal served market segment		0.75

Table 3. Descriptive statistics and correlations table.

Variables	Mean	S.D.	1	2	3	4	5	6
Reorganization performance	40.32	256.23	1.00					
Invested in R&D	4.68	8.02	−0.21**	1.00				
Organization capability	3.54	0.72	0.11	0.17*	1.00			
Core technology capability	2.74	0.97	0.03	0.19**	0.l7*	1.00		
Responsibility to R&D	3.41	0.96	−0.06	−0.20**	0.24**	0.12	1.00	
Independence of R&D decision	2.88	0.82	0.12	0.11	−0.01	0.17	−0.02	1.00
Competitive environment	3.29	0.86	0.11	0.09	−0.14*	−0.17*	−0.14*	−0.00

* p< 0.05.

** p< 0.01

(B=0.565, p<0.01) while duty to R&D by TMT also has a positive relation with reorganization performance (B=0.56, p<0.1). Moreover, organization capability has a positive relation with reorganization performance (B=0.298 p<0.05). However, capabilities, such as core technology capability, and independence of R&D decision, have no direct effect on reorganization performance in Model 1. As further testing the effect of competitive environment in Model 2, the result shows that competitive environment has no direct relation with reorganization performance (p>0.1). This suggests that competitive environment has no direct effect on a firm's unusualness. In order to survey the moderating effects of competitive environment, this study uses the negative binomial regression model with interaction term (Model 3). As Table 4 shows, competitive environment interacted by invested in R&D has a more strongly positive relationship with reorganization performance (B=0.398, p<0.01), which supports Hypothesis 1. The result shows that competitive environment further increase the effect of a firm's capability for studding technology opportunities on reorganization. Moreover, competitive environment interacted by core technology as well as by independence of R&D decision has a negative relation with reorganization performance (B=0.398, p<0.01 and B=0.299, p<0.05), which reject Hypotheses 3 and 5. The results show that in the competitive environment, both levels of core technology capability and independence for R&D decision can further improve a firm reorganization performance. Competitive environment interacted by duty to R&D has a negative relation with reorganization performance (B=−0.179, p<0.1), which supports Hypothesis 5. This result shows that in the extreme competitive environment, too much duty to R&D will lessen a firm's flexibility on R&D, which in turn becomes very strict and difficult to change of reorganization. Finally, competitive environment interacted by organization capability as well as by unusual positioning has significant effect on reorganization performance, which does support Hypotheses 2.

DISCUSSION

The NB regression results in this research show that a number of technology capabilities influence a firm's

Table 4. Negative binomial regression results (Dependent variable)

Variables	Model 1	Model 2	Model 3
Predictor variables			
Invested R&D	0.565***	0.650***	−0.420
	(0.172)	(0.164)	(0.366)
Organization capability	0.298**	0.345***	−0.309
	(0.128)	(0.124)	(0.622)
Core technology capability	0.144	0.148*	−1.110***
	(0.091)	(0.088)	(0.373)
Responsibility to R&D	0.153*	0.176*	0.835**
	(0.096)	(0.101)	(0.387)
Independence of R&D decision	0.167	0.132	−0.756**
	(0.114)	(0.113)	(0.354)
Moderator			
Competitive environment		0.150	−2.100**
		(0.101)	(0.911)
Interactions			
Competitive Environment ×			0.398***
Invested R&D			(0.122)
Competitive environment ×			0.132
Organization capability			(0.172)
Competitive environment ×			0.380***
Core technology capability			(0.110)
Competitive Environment ×			0.051
Competitive environment ×			−0.179*
Responsibility to R&D			(0.101)
Competitive environment ×			0.299**
Independence of R&D decision			(0.112)
Wald chi-square	380.828	376.101	412.222
Log pseudo likelihood	−566.978	−564.855	−543.763

Wald Chi-Square significance: ***p<0.01; **p<0.05; *p<0.1. Coefficients are reported with standard errors in parentheses.

reorganization performance, including the direct effect of organization capability and duty to R&D as well as the interaction effect of competitive environment by invested in R&D, core technology capability, duty to R&D, and independence of R&D decision. The results in this research which supporting previous studies suggesting that R&D strength is an important measure of a firm's reorganization activities (Hagedoorn and Duysters, 2002; Hall and Bagchi-Sen, 2002). The regression result suggests that the higher R&D strength can increase a firm's reorganization performance. The suggestion is that a firm is capable of promoting its technology capability by accumulating the better capability of studding or utilizing technological opportunities, which is steady with Sakakibara and Porter's (2001) state that R&D strength disclose the opportunity for a firm's active improvement and reorganization. Particularly, in a competitive environment, this capability becomes more important. In this study, the results show that in a highly competitive environment, higher R&D strength can further increase a firm's reorganization performance. This supports the hypothesis that firms with better capability of studding or utilizing technological opportunities can better improve their reorganization in a highly competitive environment. Prior studies suggest that a firm's superior core technology can improve its core capability which in turn increases the competitive advantage (Hamel and Prahalad, 1994). We further argue that this core technology capability can further increase firm reorganization in a highly competitive environment. Since a firm needs to collect its core technology capability for a long period of time, this core technology capability is difficult for competitors to copy and to learn. As a result, as in a competitive and changing environment, firms owning superior core technology capability can better respond to technological change or preference change, and then accomplish a better reorganization performance. 3.98. Duty to survive R&D in competitive environment a firm's core business can influence the direction and speed of reorganization. More specifically, highly focused and long-term focus in a core business increases the firm's technology capability and then reorganization performance. Other studies have also found that over duty to survive capabilities may threaten

Table 5. Influence of competitive strength or market activities on technological competencies (Dependent variable).

variables	Model 4	Model 5	Model 6	Model 7
Predictor variables				
Invested in-house R&D	0.667*	−0.678**	0.628	0.322
	(0.400)	(0.325	(0.401)	(0.832)
Organization capability	0.376**	0.598	0.321*	−0.950
	(0.188)	(0.613)	(0.166)	(0.678)
Core technology capability	0.155	−0.301	0.144	−1.144**
	(0.176)	(0.412)	(0.165)	(0.433)
Responsibility to R&D	0.155	0.554	0.186	0.912**
	(0.132)	(0.434)	(0.144)	(0.434)
Independence of R&D decision	0.147	−0.543	0.134	−0.442
	(0.154)	(0.413)	(0.152)	(0.367)
Moderator				
Competitive strength	0.101	−0.645		
	(0.110)	(0.789)		
Market activities			0.080	−2.121
			(0.131)	(1.487)
Interactions (Model 5/Model 7)				
Competitive strength/Market		0.520***		0.121
Activities × Invested in-house		(0.147)		(0.338)
R&D				
Competitive strength/Market		−0.081		0.341*
Activities × Organization capability		(0.143)		(0.215)
Competitive strength/Market		0.143		0.389***
Activities × Core technology capability		(0.121)		(0.144)
Competitive strength/Market		0.061		−0.012
Competitive strength/Market		−0.085		−0.196*
Activities × Responsibility to R&D		(0.110)		(0.120)
Competitive strength/Market		0.304		0.191*
Activities × Independence of R&D decision		(0.123)		(0.119)
Wald Chi-Square	377.665	412.844	387.732	428.342
Log pseudo likelihood	−578.055	−574.977	−566.522	−567.178

Wald Chi-Square significance: ***p<0.01; **p<0.05; *p<0.1. Coefficients are reported with standard errors in parentheses.

its ability to obtain new resources or capabilities (Leonard-Barton, 1992). The results in this research show that the interaction effect of duty to R&D by competitive environment has a negative relation with firm reorganization. This suggests that too much focus on survive technologies may threaten a firm's ability to obtain new resources or capabilities particularly in a highly competitive and changing environment. Technological discontinuities in external circumstances may make survive capabilities outdated, and therefore survive technologies might become very strict and difficult to change, which leads to a lower level of reorganization performance. The regression results show that organization capability has a positive relation with reorganization performance but significant relationship with the interaction effect of organization capability by competitive environment. This view suggests that organization capability is approving to a firm's unusualness, which is steady with prior research suggesting that both internal communications between the teams working on technologies, elements, and systems (Miyazaki, 1995) and external communication with suppliers, buyers, or competitors (Hamel et al., 1989; Miyazaki, 1995). However, the result does support the hypothesis that the interaction effect of organization capability by competitive environment further improves firm reorganization. The above results suggest that although a better organization with internal units and external actors can improve a firm's reorganization, such the capability can increase reorganization performance in a highly competitive environment. Since this study measured competitive environment with two dimensions, competitive strength and market activities, this study further examine whether these two dimensions separately influence the effect of technological capabilities on firm unusualness. Table 5 shows the empirical results. As shown in Model 5, the results show that if a firm faces an industry in a highly competitive strength, higher R&D strength can assure to increase the firm's unusualness (B=0.489, p<0.01). However, the other perspective of technological capabilities cannot improve a firm's unusualness as facing an industry with

highly competitive strength. On the contrary, if a firm faces an industry with highly market activities, the results show that the firm with higher organization capability, more advanced core technologies, and more independence of R&D decision can increase its reorganization performance (B=0.341 p<0.1, B=0.389, p<0.01, and B=0.191, p<0.1 respectively). Therefore, if a firm accomplish to current R&D too much as facing a highly active market, the firm had a worse reorganization performance (B=−0.196 p<0.1) since the firm may lose its flexibility of responding the market change. The above discussions further improve our understanding that firms require specific types of technological capabilities to improve unusualness in different circumstances of competitive environment, such as competitive strength and market activities. Freedom of R&D supervision may results in more reorganization (Fischer and Behrman, 1979). The results in this research enlarge the dispute that particularly in a highly competitive environment; firms with higher level of R&D independence can adjust their R&D directions in responding to such the changing technological development and customer needs, and then further improve their reorganization. In a highly competitive and changing environment, researchers, such as engineers and scientists, can more correctly approach information regarding technological movements or customer needs. The more independence of R&D choices for these researchers allows firms to straightly respond to the competitive environment

CONCLUSION

Empirical results from this study provide to our understanding of the relationships between a firm's technology capabilities and reorganization performance in a competitive environment. A number of significant findings and suggestions stalk from the empirical results in this research. First, adopting a more holistic view by combining the possible sources of technology capabilities have afford new view. I attempt to identify several capabilities as important for an Iranian ICT firm's reorganization performance in a highly competitive environment. The findings show that technology capabilities including capabilities of studding or utilizing technological opportunities, core technology capability, and independence of R&D decisions are important to firm reorganization in a competitive environment. However, over duty's to survive technologies may limit a firm's reorganization especially in the highly competitive environment. More importantly, when facing different competitive environment (e.g. competitive strength and market activities), firms need to obtain different technological capabilities to increase firm unusualness. The findings of this research can enlarge and complement the most recent and popular research capability flow of active using the theory of technology capabilities. Firms are essentially reacting to environmental events rather than seeking to proactively change the environment that they operate in. This result suggests that the market prospects of these firms will be inherently limited by the decisions and actions of firms that are technologically more positive. The character of the technology capabilities in the factors of competitive environment that appear from this research is an unconfirmed.

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