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The Managerial Factors Influencing the Retention of Firms' IT Capability, with Some Global Implications

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Abstract

Researchers have explored firms' IT capability and its effects on business performance, yet the factors influencing the long-term retention of this capability have not been fully investigated. Therefore, our study examines what managerial and financial factors influence the retention of firms' IT capability by utilizing survival analysis. The results show that IT executives' managerial power does not contribute to retaining the firms' IT capability. However, the change of IT managers can introduce fresh insights and expertise to an organization, enabling firms to maintain their IT capability, and the degree of retaining IT competency in firms can vary based on industry-specific features. This study can help firms build their global partnerships and consider hiring new IT managers due to their ability to introduce external knowledge.

Keywords: IT capability, Resource Based View, survival analysis, retaining IT capability

JEL Code: O32, O33

1. INTRODUCTION

IT capability, as a pivotal resource for building a company's competitive advantage, has been widely employed in research areas (Grewal *et al.*, 2001; Ilmudeen, 2022; Miles *et al.*, 1978). According to the resource-based view, a firm's IT capability brings sustainable advantages, but its development requires a significant investment of time and resources (Bharadwaj, 2000) both at individual and organizational levels (Figueiredo, 2002). Consequently, the

development of IT capability is likely crucial, showing more pronounced effectiveness when sustained over an extended period (Lim *et al.*, 2011, 2012, 2013). Additionally, a firm's IT capability can grow over time, and the extent of its growth can influence the business's overall performance (Bharadwaj, 2000; Figueiredo, 2002; Kim *et al.*, 2017).

The existing research has simply investigated factors that affect a firm's IT capabilities by considering only the presence or absence of the capabilities (Lim *et al.*, 2012, 2013). Scholars who research IT capability have determined that only firms that demonstrate the continuous performance of IT can be considered to actually possess this ability. Additionally, according to the concept of dynamic capability, IT capability should be embedded in a firm's processes, further highlighting the importance of maintaining this capability (Wang & Ahmed, 2007). Therefore, it is important for researchers to consider not only whether a firm possesses IT capabilities, as in previous studies, but also how continuously it maintains those competencies. Therefore, through this study, we aimed to investigate the factors that significantly influence the continuous possession of IT capabilities—especially the characteristics of managers and the industry.

Previous studies have shown that some companies continue to maintain IT capabilities over a prolonged period, while others have failed to retain IT capabilities for a long period of time (Lim *et al.*, 2012, 2013). To shed light on the reasons for this disparity, we addressed the following research question: "What managerial and financial factors influence the retention of firms' IT capability?" To examine this question, we utilized survival analysis, which considers the duration of time before a company's IT capability declines. Through our analysis, we explain the role of internal factors in the accumulation of IT capability within firms. The results of this study can help firms effectively construct their global partnerships by assessing their partners' sustainable IT capability and prompt international firms to consider hiring local IT managers to introduce various types of necessary external knowledge.

2. THEORY AND HYPOTHESIS

2.1. Theoretical Framework

2.1.1. IT Capability from RBV and KBV Perspectives

The resource-based view (RBV) model asserts that companies possess resources that are valuable, uncommon, difficult to replicate, and irreplaceable, granting them competitive advantages (Barney, 1991). The RBV proves beneficial in the

realm of information systems (IS) studies, as it aids researchers in revealing the connection between information systems, corporate strategies, and performance while also enabling an assessment of the strategic values of information systems resources (Aydiner, Tatoglu, Bayraktar, & Zaim, 2019; Wade & Hulland, 2004). According to the RBV, IT resources can serve as a critical means of increasing competitive advantage, differentiating a company from its competitors (Bharadwaj, 2000).

The KBV complements the RBV by expanding its focus beyond tangible assets to encompass intangible ones. Grant (1996) argued that knowledge represents the most valuable resource for firms and is generated by individuals rather than organizations. Companies can accumulate knowledge through their past experiences, learning processes, and ongoing business activities (Pavlou *et al.*, 2005).

Given the significance of IT knowledge as a corporate asset, researchers have applied the KBV framework to the field of information systems research (Armstrong & Sambamurthy, 1999; Pavlou *et al.*, 2005). As a crucial form of knowledge, IT capability can be acquired externally to aid firms in their survival within competitive markets. According to Link and Zmud (1987), in highly competitive markets, large corporations rely not only on their internal R&D resources but also on external sources of technological knowledge. By hiring new employees possessing external knowledge, companies can introduce fresh insights into their operations, thereby obtaining external knowledge (Cassiman & Veugelers, 2006).

2.1.2. IT Capability from a Dynamic Capability Perspective

As an extension of the resource-based view (RBV), the dynamic capability view (DCV), which emphasizes the importance of adaptability and change in response to shifting market demands, has gained significant attention from scholars (Teece, Pisano, & Shuen, 1997; Vogel & Güttel, 2013; Wang & Ahmed, 2007). This perspective enhances the RBV by recognizing the evolutionary nature of firm resources and capabilities in relation to environmental changes (Wang & Ahmed, 2007).

Dynamic capabilities allow firms to integrate, build, and reconfigure their resources and competencies in response to changing business environments (Teece *et al.*, 1997). Information technology can become a core means of fostering organizational agility based on the development of dynamic capabilities, including monitoring, supporting, learning, integrating, and reconfiguring abilities (Chen,

Sun, Helms, & Jih, 2008; L. Li, Tong, Wei, & Yang, 2022). Therefore, IT-enabled dynamic capabilities support firms in maintaining a competitive advantage by enabling them to quickly reposition themselves in response to changing conditions (T. C. Li & Chan, 2019; Mikalef & Pateli, 2017).

2.1.3. Retention of IT capability

From the perspective of dynamic capability, IT capabilities should be integrated into the processes of firms and carefully maintained over time (Wang & Ahmed, 2007). A firm can enhance its IT capability, and the aggregation of the capability can influence its overall business performance. Bharadwaj (2000) claims that Technical and managerial IT abilities usually develop over extended periods as experience accumulates. Further, in the form of skills, knowledge, and experiences, IT capability can be dispersed to other organizations after being accumulated in a particular organization (Figueiredo, 2002; Foss & Pedersen, 2002). Therefore, the degree of accumulation of IT capabilities is considered an important factor to explore in IS research. For example, to show the influence of IT capabilities on firms' performance, some scholars have considered that only companies that have continuously demonstrated IT capabilities for a certain number of years actually have such capabilities (Bharadwaj, 2000; Kim *et al.*, 2017; Lim *et al.*, 2011, 2012, 2013).

As previous studies have shown, it is important not only to have IT capabilities but also to maintain them continuously. Therefore, we have developed a new construct, *retention of IT capability*, as an extension of the existing concept of IT capability (Bharadwaj, 2000). In this paper, *retention of IT capability* is defined as a firm's ability to retain or maintain its IT capability for a certain period of time. The longer a firm keeps its IT capabilities, the higher its retention of IT capability is considered to be.

2.2. Research Hypotheses

2.2.1. IT Managers and Retention of IT Capability

According to the theory of dominant coalition (Cyert & March, 1963), firms' business performances are influenced by top management teams as well as CEOs. It has been proven that the various characteristics of these teams affect the performance of their companies (Tihanyi *et al.*, 2000). In particular, the upper echelons theory (Hambrick & Mason, 1984) emphasizes a strong connection between the traits of strategic leaders and a company's innovation strategies (Elenkove *et al.*, 2005).

Several studies emphasize that the role of IT executives is becoming important in the top management team. IT leadership is not only important in strategic planning but also plays a very important role in achieving the company's long-term goals (Byrd *et al.*, 2006; Tripathi & Khazanchi, 2018). Additionally, investors view the capabilities and characteristics of a firm's IT manager as important considerations when measuring the firm's market value.

IT executives play a crucial role in strengthening a company's IT capabilities and contribute to the increase in the company's performance through these capabilities (Feeny & Willcocks, 1998). In particular, the greater the power of an IT manager within an organization, such as an IT manager holding a C-level position, the greater the positive influence of the organization's IT capabilities on company performance (Lim *et al.*, 2012, 2013). Higher-ranking IT executives who have more managerial power enhance firm performance by fostering the development of IT capability. Due to the potential for the accumulation of IT capability over an extended period (Bharadwaj, 2000; Figueiredo, 2002), we anticipate that IT executives with increased managerial power will help firms retain their IT capability:

H1. The managerial power of IT executives is positively associated with the retention of IT capability.

As previous studies have shown, the top management team has a significant influence on a company's performance and strategy (Hambrick & Mason, 1984), so the replacement of members of this team can affect organizational change and performance. The change of managers not only improves the company's performance (Parker *et al.*, 2002) but also affects the company's strategic changes and organizational restructuring choices (Sakano & Lewin, 1999).

Shen and Cannella (2002) show that a company's return on assets (ROA) would increase further if executive managers were replaced after a CEO succession. They argue that a CEO possessing specialized knowledge about the company can mitigate poor replacement decisions and recruit new senior executives who align with the organization's goals while displaying loyalty and competence. In addition, the newly hired IT manager would bring new knowledge and experience to the organization (Caloghirou *et al.*, 2004; Lee & Allen, 1982). Therefore, we expected that the newly replaced IT manager would contribute to the retention of the company's IT capabilities based on the experience and knowledge that he or she would bring:

H2. The replacement of IT executives is positively associated with the retention of IT capability.

2.2.2. Industry and the Retention of IT Capability

Since each industry has various characteristics, industry type is one important consideration in IS research. The characteristics of industries affect a company's commitment to R&D, since businesses within the same industry tend to adopt similar competitive strategies in terms of allocating resources for technology and marketing investments (Mauri & Michaels, 1998). Several studies have shown that a company's IT capabilities may differ depending on the industry to which it belongs (Chae *et al.*, 2018; Stoel & Muhanna, 2009). In addition, the characteristics of industries can affect various IT-related factors, including IT impacts, use, and practices (Chiasson & Davidson, 2005). Due to the different levels of information intensity in each industry, a firm's IT capabilities are affected by its industry type (Broadbent *et al.*, 1996). Therefore, we assumed that the retention of a firm's IT capabilities will be affected by the type of industry it belongs to:

H3. The degrees of retention of IT capabilities vary depending on the characteristics of the firm's industry.

3. RESEARCH METHODS

3.1. Samples

Our study focused on companies listed in the InformationWeek 500 (IW 500) rankings spanning the years 2005 to 2013. After eliminating duplicate entries, we identified approximately 1,700 distinct companies within the IW 500 list during this timeframe, with nearly half of them being privately held. Since previous studies have considered companies that appear in succession on the list as having IT capabilities, our approach also involved selecting companies with IT capability only if they had appeared in the IW 500 rankings for a minimum of three consecutive years. As a result, our dataset includes 295 companies with 2,655 firm-years.

3.2. Variables and Measurement

3.2.1. Retention of IT capability

The annual rankings presented in the IW 500 list have been widely used in research to identify firms with superior IT capabilities (Bharadwaj, 2000; Chae *et al.*, 2014; Kim *et al.*, 2017). Some researchers treated a firm as having IT capability if it appeared in the IW 500 list for at least two years of a four-year

research period (Bharadwaj, 2000; Santhanam & Hartono, 2003; Chae *et al.*, 2014). Kim, Song, and Stratopoulos (2017); Lim, Stratopoulos, and Wirjanto (2012, 2013) considered that a firm possesses IT capability if it appeared in the IW 500 list consecutively for a certain number of years. Since firms that have exhibited IT capability for three to five years are likely to maintain that capability in the subsequent years (Kim *et al.*, 2017), we treated companies listed on the IW 500 for at least three consecutive years as having IT capability. Therefore, we chose companies that had been on the list for more than three years and used their number of consecutive appearances on the list as an indicator of retention of IT capability, which serves as a measure of a firm's ability to maintain IT capability over the years.

3.2.2. IT Executives' Managerial Power and IT Executive Replacement

Because the structural power of IT managers in C-suite positions acts as a precursor to their firm's capacity to cultivate exceptional IT capabilities, we also assumed that IT managers in C-suite positions have more managerial power to enhance their firms' retention of IT capability. In the IW 500, IT executives' official titles are used for measuring their managerial power. Next, the replacement of an IT manager is recorded as "1" in the year that the manager left the company and "0" in other cases.

3.2.3. Industry

We used the Standard Industrial Classification (SIC) division codes to examine the effect of the industry types on the retention of IT capabilities (Moeller *et al.*, 2004). We classified each firm based on its industry code and integrated some industry groups to distribute the appropriate number of samples. As a result, we obtained a total of six industry types and applied them to the analysis model as dummy variables (Table 1).

3.2.4. Control Variables

We included firm size, return on assets, and market-to-book value as control variables, as they are important financial variables related to IT capability (Lim *et al.*, 2011, 2012, 2013). According to Chae *et al.* (2014), the size of a company closely relates to the company's IT resources. Therefore, we used a firm's total assets with natural log applied to indicate firm size. Next, we considered ROA to be an indicator of a company's performance (Bharadwaj, 2000; Peng & Luo, 2000). Lastly, we included market-to-book value, which represents a firm's

Table 1: Number of Samples by Industry Groups

Industry Groups	*Industry Titles*	*# of Samples*
I1	Manufacturing	103
I2	Transportation, Communications, Electric, Gas, and Sanitary Services	45
I3	Wholesale Trade Retail Trade	23
I4	Finance, Insurance, and Real Estate	47
I5	Services	67
I6	Agriculture, Forestry, and Fishing Mining Construction	10

reputation, as a control variable (Lim *et al.*, 2013). We acquired this data from the COMPUSTAT database.

3.3. Research Model

3.3.1. Survival Analysis and Retention of IT Capability

Survival analysis is a statistical method used to analyze data by focusing on the time required for a specific event to occur (Altman & Bland, 1998; Klein & Moeschberger, 2006; Kleinbaum & Klein, 2010; Xie & Giles, 2011). This method has been applied in various fields, including medicine, business, and research. The events of interest can encompass a wide range of outcomes, such as death, disease, marriage, divorce, manufacturing failures, or customer churn (Cox, 2018; Kim, 2020). Initially developed for medical research, survival analysis has found application in business studies, where it has been used to investigate topics like corporate longevity and failure (Audretsch & Mahmood, 1995; Chen & Lee, 1993; Laitinen, 2005; Parker *et al.*, 2002; Turetsky & McEwen, 2001).

Survival analysis offers two significant advantages over the traditional binary logistic analysis commonly used in research. First, it effectively handles censored observations, which occur when the study duration is limited. For instance, in an examination of firms' retention of IT capability from 2005 to 2013, some firms may never lose their IT capability during this period even though they ultimately may lose it after the study period. Survival analysis accommodates such cases by considering the censored data. Second, survival analysis incorporates time as a variable, allowing researchers to analyze the time until a

specific event, such as a firm's loss of its IT capability. In contrast, standard logistic regression models only consider binary outcomes (e.g., bankruptcy or avoidance of bankruptcy). By using a time variable to measure how long a firm remains on the IW 500 list, researchers can investigate how independent factors, such as managerial and financial factors, influence the duration of the retention of IT capability.

3.3.2. Kaplan-Meier estimate, logrank test, and Cox proportional hazards model

In survival analysis, researchers frequently employ the Kaplan-Meier curve, logrank test, and Cox proportional hazards regression to investigate the time until a specific event occurs. The Kaplan-Meier (KM) method is a widely used nonparametric approach for estimating survival function (Efron, 1988). It has applications in various fields, such as bankruptcy prediction for firms and studies of unemployment (Allen & Rose, 2006; Meyer, 1990; Orbe *et al.*, 2001). This technique allows one to make predictions about the likelihood of a firm retaining its IT capability beyond a specific point in time by visually comparing KM survival curves for two or more groups (Rich *et al.*, 2010).

The logrank test is used for comparing survival functions among multiple groups, assessing treatment effects by comparing a treatment group to a control group (Bland & Altman, 2004). Essentially a large-sample chi-square test, it derives its results from comparing observed and expected event counts at specific time points, allowing for an overall comparison of survival rates (Kleinbaum & Klein, 2010). The Kaplan-Meier method is used to estimate and visualize survival curves, and the logrank test is employed to determine whether two or more Kaplan-Meier survival curves show statistically significant differences.

3.3.3. Cox Proportional Hazards Model

Both the KM method and logrank test are not useful to simultaneously analyze the relationships of multiple variables on the survival time. One alternative is the Cox proportional hazards model (Cox, 1972), or the Cox model—one of the widely used regression techniques for survival models (Fox, 2002; Li *et al.*, 2010). To test the effect of corporate managers and financial factors on the retention of IT capability, we used a Cox proportional hazards model. Based on the work of Lim *et al.* (2012), we employed financial variables and built our statistical model as follows:

$$\lambda(t|\boldsymbol{X}) = \lambda_0(t)\ \exp(\beta_1\ IT_C + \beta_2\ IT_R + \beta_3\ SIZE + \beta_4\ ROA + \beta_5\ MV + \beta_6\ I_2 + \beta_7\ I_3 + \beta_8\ I_4 + \beta_9\ I_5 + \beta_{10}\ I_6), \quad (2)$$

where $\lambda(t|\boldsymbol{X})$ denotes the hazard function, $\lambda_0(t)$ is an unspecified baseline hazard at time t, and IT_C is IT executives' managerial power and is coded as "1" when *IT* managers hold C-suite positions and "0" otherwise. IT_T represents the replacement of *IT* managers, assigned "1" when a firm undergoes a change in *IT* managers while retaining its *IT* capability and "0" otherwise; *SIZE* is the natural logarithm of total assets; *ROA* is the return on assets; *MV* is the market-to-book-value ratio; and I_2 ... I_6 are dummy variables representing the industry categories.

In the model, the dependent variable is the time until a firm loses its IT capability and the independent variables are IT_C, IT_R, *SIZE*, *ROA*, *MV*, and I_2 ... I_6. The exponential component, referred to as the hazard ratio, estimates the effect of predictors on the hazard function. A hazard ratio of greater than 1 suggests a positive association between a predictor and the likelihood of the event occurring, indicating reduced likelihood of survival. Conversely, a hazard ratio of less than 1 indicates that a predictor is linked to improved likelihood of survival. In our model, survival means the retention of IT capability, and the event of interest is the occurrence of IT capability loss.

4. RESULTS

To investigate the influence of executive leadership and financial variables on the retention of IT capabilities, we utilized survival analysis techniques, including the Kaplan-Meier method (Efron, 1988), logrank tests (Bland & Altman, 2004), and the Cox proportional hazards model (Cox, 1972). Descriptive statistics for the variables in our models can be found in Table 2.

Table 2: Descriptive Statistics

Variable	*Mean*	*SD*
	0.479	0.500
	0.642	0.479
SIZE	9.021	1.890
ROA	0.044	0.090
MV	1692.273	7013.457

Notes: SD is standard deviation; is IT executives' managerial power; is IT executive change; SIZE is natural log of total assets; ROA is Return on Asset; and MV is market to book ratio.

4.1. Hypotheses Test Results of the Kaplan-Meier Method and Logrank Test

First, we visualized and compared the survival rates of each group using the Kaplan-Meier method and tested whether the difference is statistically valid using the logrank test. Figure 1 demonstrates the KM survival curves and the results of the logrank tests for companies that maintained IT capability for a minimum of three years between 2005 and 2013. The horizontal axis denotes the successive years in which a company remained on the IW 500 list, while the vertical axis shows the estimated probability of a company maintaining its IT capability. These graphs allow us to see and compare the survival rate progression for each group, representing these curves as step functions that start with a survival probability of 1 and gradually decrease over time. The p-values in each graph come from a logrank test that contrasts survival rates. A p-value below the designated significance level (for example, 0.05) suggests that enough statistical evidence exists to discard the null hypothesis. This means the survival distributions exhibit significant differences.

Figure 1.a shows the comparison of the survival rates of companies that have experienced the replacement of their managers and those that have not. Since the chart reveals a minor difference in the KM survival curves between companies led by C-suite IT professionals and those led by non-C-suite IT professionals, the retention of a firm's IT capabilities seems unaffected by the managerial power of its IT leaders. The logrank test also supports these results. A p-value of 0.87 suggests that, at a significance level of 0.05, there is insufficient statistical evidence to confirm a difference in survival probabilities between these groups.

Figure 1.b presents the KM survival curves for two groups: one that saw IT manager change and another that did not. Notably, the curve for the group experiencing change is higher than that of the other. This clear distinction in the curves suggests pronounced differences in their retention of IT capabilities. Therefore, we can infer from Figure 1.b that replacement in IT management can positively affect the retention of IT capabilities of firms. The result is supported by the logrank test with a p-value of 0.00.

Lastly, we assessed the retention of IT capability across different industry sectors. Since not all six sectors showed statistical variance, our tests focused on those with significant differences. Figure 1.c illustrates the KM survival curves and the results of the logrank test for three groups—businesses in

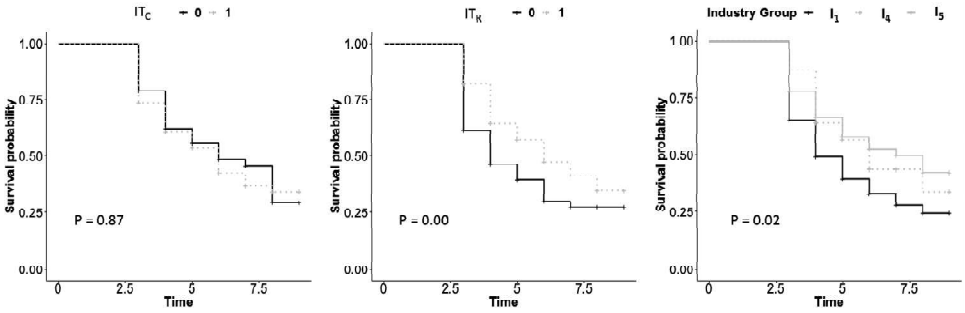

Figure 1: Results of Kaplan-Meier curves and logrank test

a. IT executives' managerial power. b. IT executive replacement. c. industry categories

manufacturing (I_1), finance (I_4), and service (I_5)—that indicate statistical significances. The derived p-value from the logrank test is 0.02, highlighting that the disparities between these industry groups are statistically significant. The KM survival curves for finance (I_4) and service (I_5) businesses outpace that of manufacturing (I_1), which means that a firm's industry type can influence its ability to retain its IT capability.

4.2. Hypothesis Test Results of Cox Proportional Hazards Model

In the subsequent phase of our hypothesis examination, we employed the Cox proportional hazard model to determine whether IT managerial roles and financial factors have a significant effect on the retention of firms' IT capabilities. We incorporated the influence of the IT executive's managerial power, changes in IT executive, and financial factors as predictor variables within this model.

Table 3 describes the results of the Cox proportional hazards model investigating the influence of the company's internal factors on the retention of IT capabilities. The first column displays the variables employed for prediction in the model. The second column represents the coefficients of each variable, where a negative figure suggests a lower degree of hazard. In the third column, the hazard ratio shows the exponential value of the estimated coefficient values.

In our first hypothesis, we anticipated that the managerial power of IT executives will positively correlate with a firm's consistent IT capability development. However, our findings do not offer support for this hypothesis. Even though the managerial power of IT executives helps firms earn IT capabilities (Lim *et al.*, 2012), the p-value of 0.50 in column 5 indicates that this managerial power does not assist in the maintenance of IT capability. This

Table 3: Result of Cox Proportional Hazards Regression

	Coefficient	*Hazard Ratio*	*SE*	*P-value*	
	–0.14	0.87	0.20	0.50	
	–0.46	0.63	0.18	0.01	**
SIZE	–0.01	0.99	0.06	0.82	
ROA	–1.27	0.28	0.68	0.06	*
MV	0.00	1.00	0.00	0.64	
	–0.19	0.83	0.23	0.42	
	–0.11	0.89	0.33	0.73	
	–0.74	0.48	0.33	0.03	**
	–0.53	0.59	0.25	0.03	**
	–0.25	0.78	0.43	0.57	

Note: *** p<0.01, ** p<0.05, * p<0.1

result aligns with the outcomes from both the Kaplan-Meier estimate and the logrank test based on the IT_C, as shown in Figure 2.a. We suspect that while the managerial power of IT executives initially plays a pivotal role in attaining IT capability (Lim *et al.*, 2012), its influence may stagnate, failing to promote the continued retention of IT capabilities.

The test results for the second hypothesis show whether the replacement of IT managers affects the retention of a firm's IT capabilities. Through this test, we confirmed that the change of IT managers positively influences the retention of the company's IT capabilities. A p-value of 0.01, as seen in column 5, indicates that leadership changes in IT can be positively associated with a company's technological competencies. The hazard ratio from column 2 compares the risk of an IT leadership change with the risk of no change. The ratio value of 0.63 means that companies with IT capability are 0.63 times more likely to lose the retention of their IT capabilities if they experience changes in their IT leadership. Consequently, Hypothesis 2 is supported. We believe that for firms equipped with IT capability, leadership transitions bring in fresh insights and experiences that reinforce their IT capacity (Caloghirou *et al.*, 2004; Lee & Allen, 1982). Given the rapid evolution of IT, the expertise of new IT leaders can prove crucial for expanding a company's technological competencies.

For Hypothesis 3, we examined the influence of industry characteristics on a firm's retention of IT capability and found support for this hypothesis. In

our analytical model, the industry variable I_1 is set as a reference category and the remaining industry variables are compared to I_1. Among the industrial variables, the p-values of I_4 and I_5 are both 0.03, showing significant results. This aligns with findings from the Kaplan-Meier method and the logrank test. Thus, the characteristics of the industry play a pivotal role in determining a firm's retention of IT capability.

Apart from hypothesis tests, the results of testing the effect of financial factors on the retention of IT capability are as follows. There is a slight negative relationship between ROA and the risk of a company losing its IT capability. ROA has a close-to-significant level of 0.5, with a p-value of 0.06 and a hazard value of 0.28, which signifies a 28% chance that a firm will lose its IT capability when ROA changes by one unit value, assuming other factors remain unchanged. Drawing from the work of Lim *et al.* (2013), which suggests that a company's performance can shape its IT capability, this result indicates that a firm's business performance plays an important role in retaining IT capability.

5. DISCUSSION

Our study uses a survival analysis approach to examine how IT managers' positions and their replacements affect the retention of firms' IT capabilities. This reveals that although the managerial power of IT executives has no effect, the replacement of IT managers and a firm's industry type have an influence on retaining IT capabilities. Our research contributes to the information systems (IS) research area in two ways.

First, this study applies survival analysis to the field of IS research. Survival analysis is a common method of study in fields like medicine, economics, engineering, and social sciences (Li *et al.*, 2010). However, its application in IS research has been limited. Most business-oriented studies employing this method primarily explore firm longevity. In our research, we shift the focus toward the retention of IT capability, allowing us to address censored observations and incorporate time as an influential factor.

Using survival analysis allows researchers to delve into various firm characteristics, including financial, operational, and marketing capabilities. This method can be employed to study the influence of marketing activities on sustained revenue growth or the effects of IT capability on bankruptcy risks. Historically, survival analysis has been used to research corporate lifespan and failures (Audretsch & Mahmood, 1995; Chen & Lee, 1993; Laitinen, 2005; Parker

et al., 2002; Turetsky & McEwen, 2001). In future research, IT capability can be examined as a determining factor influencing a company's long-term survival.

Second, our study proposes the retention of IT capabilities by extending the existing concept of IT capabilities. Even though IT capability accumulates over time (Bharadwaj, 2000; Figueiredo, 2002), the conventional research of IT capability, focusing merely on isolated instances, does not accurately capture its cumulative impact. While previous studies primarily assessed a firm's possession of IT capability, they overlooked its long-term effect. In contrast, the concept of retention of IT capability that we have introduced provides a holistic view, tracking the evolving nature of IT capability and illustrating the influence of IT executives on its development.

Researchers can further enhance their studies by utilizing this new construct, which elaborates on the concept of the retention of IT capability, facilitating the measurement of a firm's aggregated IT capability over time. This analysis enables a more detailed examination of the influence of IT capability on a company as its circumstances evolve. For instance, prior studies on the effects of firms' IT capability on business performance (Bharadwaj, 2000; Lim *et al.*, 2012, 2013) can be expanded to explore how this relationship alters over time with the accumulation of capability.

5.1. Implications

The concept of retention of IT capability empowers managers to prioritize the longevity of their firms' IT abilities, enhancing business performance. It also aids them in building business strategies that assist in retaining their IT capability. The findings from our research highlight how the introduction of novel IT knowledge, brought in by changes in IT management, can strengthen an organization's IT capacity. The study suggests that the replacement of IT management can enhance the retention of IT capabilities by bringing new perspectives to the organization. Therefore, If IT executive changes, firms can see this as an opportunity to acquire new knowledge and expertise from new members and continue accumulating IT capabilities.

Companies targeting global markets in connection with various partners around the world can benefit from this study. First, enterprises with global supply chain networks can use the insights from this research to evaluate the long-term IT capabilities of their partners, which might involve different environments, cultures, and legal systems. This understanding can help such

firms develop an effective strategy to manage global partnerships. Second, this study points out that turnover in IT managers acts as a critical factor in sustaining IT capability because it brings outside knowledge and experience into an organization. If a firm operates in multiple locations, it can leverage this finding by ensuring that it has an opportunity to introduce various types of knowledge and experience from locally hired IT managers to the organization (Chen *et al.*, 2023; Hsieh *et al.*, 1999).

5.2. Limitations and Future Research Directions

While our research has highlighted the key managerial and financial factors shaping the retention of IT capability, the effect of such capability on business performance remains an untapped area of study. This underscores the need to delve into another question: "How does the retention of IT capability affect a firm's performance relative to traditional IT capability?" To embark on this line of inquiry, we can broaden current studies focusing on the role of IT capability in company performance (Bharadwaj, 2000; Muhanna & Stoel, 2010; Santhanam & Hartono, 2003) by incorporating the idea of retention of IT capability.

This paper focuses primarily on how IT management and several financial variables may serve as potential influencers of continuous IT capability. This limitation leads to a new research question: "Apart from IT management and financial factors, what influences the retention of IT capability?" Since various internal components might influence the retention of IT capability, it will be crucial to include a diverse set of predictor variables in the study's framework.

6. CONCLUSION

To understand the long-term retention of IT capability in firms, we used survival analysis to assess factors affecting the loss of IT capability. The results of this research show that IT executives' managerial power does not contribute to retaining the firms' IT capability. However, the change of IT managers can introduce fresh insights and expertise to an organization, enabling firms to maintain their IT capability, and the degree of retaining IT capability in firms can vary based on industry-specific features. These insights can help companies effectively build and operate global partnerships and allow them to view the employment of IT managers in other countries as an opportunity for an influx of diverse knowledge and experience within the organization.

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