Managerial Incentives and Digital Strategic Posture: A Contingent View

Completed Research

T. Ravichandran
Lally School of Management
Rensselaer Polytechnic Institute
ravit@rpi.edu

Liang Zhao
Lally School of Management
Rensselaer Polytechnic Institute
zhaol11@rpi.edu

Abstract

As digitization plays an important role in business success, CEOs are increasingly responsible for the digital strategy of their firms. However, limited studies have explored the antecedents of the digital strategic posture of firms. In this study, we conceptualize digital strategic posture in terms of the abnormal IT investments firms make and posit that this is influenced by the interplay between managerial incentives and firm contingencies. Specifically, we argue that the performance and risk incentives of CEOs will lead to a more proactive digital strategic posture when firms face performance shortfall and when they have slack resources. We test our hypotheses using data for 602 U.S. firms from 2008 to 2015. Our results provide support to our hypotheses and indicate that firm slack positively moderates the relationship between CEO risk incentives and digital strategic posture, and a decrease in performance induces CEOs with performance incentives to adopt a more proactive digital strategic posture. We discuss the theoretical and practical implications of our findings and draw guidelines for future research.

Keywords

Digital strategic posture, CEO incentives, firm slack, aspiration level.

Introduction

Digitization has been a major technological phenomenon that has transformed businesses and industries over the last three decades. This has fueled a growth in resources allotted to information technology (IT) by firms. At the macro level, IT investments grew at an annual rate of more than 20% throughout the 1990s, which is five times the growth of other industrial investments (Doms, 2004). In this decade, the IT investment growth rate has been around 5% except during the financial crises in 2001 and 2008. At the firm level, IT investments as a proportion of firm revenues nearly doubled to 7.6% in 1999 from 4.2% in 1996 (Meta Group Research Report, 2002) and have remained around 3% after a decline in 2000. In 2011, the number increased to 4.9%, and remained over 5% since then (SIM IT Trend Study, 2017).

As digitization plays an increasingly important role in business success, senior executives such as CEOs are directly involved in and responsible for the digital strategy in firms (Bharadwaj et al. 2013). They oversee and direct IT resource allocation as this is a critical strategic lever to shape digital strategies. While the evolving technological landscape offers firms novel opportunities to leverage IT to compete (Han and Ravichandran 2006, Ravichandran et al. 2017), they also escalate the resources firms commit to IT. In fact, long-term trends suggest that IT has become the largest capital investment firms make each year and has substituted for other investments such as R&D and plant & equipment (Mithas et al. 2012).

A critical question facing executives is: how much resources to allocate towards IT? Some firms invest more intensively in IT than others with significant variance seen in the intensity with which even firms in the same industry invest in IT. Research exploring these differences have argued that IT investment decisions are influenced by institutional pressures (Ravichandran et al. 2009), which can vary across firms. Others have argued that IT investments are an interplay between environmental determinism and
strategic choice where managerial interpretation of environmental demands influence the level of IT investments (Ravichandran and Liu 2011). Yet others have argued that firm’s strategic choices such as the level of diversification (Dewan et. al, 1998), vertical integration (Ray et. al, 2013) influence the resource commitments to IT. However, these studies assume a rationalist perspective and do not account for agency issues in managerial decisions. When R&D (Devers 2008) and other capital investment decisions (Devers 2008) are influenced by agency problems, it is reasonable to expect that IT investments would be subject to similar influences. In fact, given the risks associated with investing in IT (Dewan et al. 2007) and the time lags in realizing returns from investments (Brynjolfsson 1993), we could expect agency problems to have a more salient role in IT investment decision. Managers could be risk averse and shirk from committing adequate resources to IT because (1) the payoffs for IT investments are uncertain; (2) IT investments usually have lags of 3 to 7 years to payoff (Brynjolfsson 1993); and (3) IT failures could affect manager’s reputation. However, limited research has examined the effect of agency issues on IT investment decisions. To better align IT investment priorities with the long-term value for firms in the current wave of digitization characterized by analytics, IoT and artificial intelligence, one has to understand how the incentives for CEOs influence a firm’s digital business strategy.

In this paper, we conceptualize digital strategic posture in terms of the abnormal IT investments firms make. Abnormal investments signify the deviation in IT investments from expected levels for a firm and is indicative of the strategic posture of a firm. Higher than normal investments signifying an aggressive and proactive posture while a lower than normal investments signifying a conservative and reactive posture. Synthesizing agency theory and the behavioural theory of the firm, we argue that the digital strategic posture of a firm will be influenced by the interplay between managerial incentives and firm contingencies. While incentives motivate executives to enact firm strategies, their actions and consequently firm behaviour, are also shaped by contingencies such as performance aspirations and the financial constraints faced by the firm.

We empirically test our hypotheses using archival data of US firms. Our data spans from 2008 to 2015 and is an unbalanced panel of over 600 firm-year observations. Our results indicate that firm slack positively moderates the relationship between CEO risk incentives and digital strategic posture, and a decrease in performance induces CEO with appropriate performance incentives to pursue an aggressive digital strategic posture. The rest of this paper is organized as follows. First, we develop our conceptual model and research hypotheses. Second, we describe the data and the operationalization of the variables. Finally, we present the empirical analyses and robustness tests, and discuss the theoretical and practical implications of our research.

**Theoretical Background**

**CEO Incentives and Digital Strategic Posture**

Agency theory suggests that the interests of managers diverge from those of shareholders and managerial goals need not automatically align with enhancement of firm value (Jensen and Meckling 1976), and these conflicts form the foundation for executive compensation (Eisenhardt 1989). Agency theorists draw on a central concept that managers tend to be more risk-averse than shareholders would like them to be (Eisenhardt 1989). Since senior executives, such as CEOs, have their wealth and reputations closely linked to firm performance (Milgrom and Roberts 1992), they tend to avoid risks. Shareholders, however, are relatively diversified in their holdings, and hence might be more willing to take risks. As Hall and Liebman (1998: 656) point out, “the most direct solution to [the] agency problem is to align the incentives of executives with the interests of shareholders by granting (or selling) stock and stock options to the CEO”. Prior studies have contributed greatly to understanding how equity pay shapes a firm’s resource allocation towards R&D and capital investments. CEO option pay could engender high level of investment outlays, but CEO stock pay may lead to risk-averse behavior. (Bebchuk and Fried 2003, Devers et al. 2008, Sanders and Carpenter 2003, Sanders and Hambrick 2007).

While past studies use long-term compensation elements such as option pay, to measure incentives (e.g., Devers et al. 2008, Sanders and Carpenter 2003, Sanders and Hambrick 2007, Ravichandran and Zhao 2018), the drawback of this approach is to mix up incentives for both performance improvement and for risk taking (Xue et al. 2017). In this paper, we follow the recent finance and IS literatures (Xue et.al, 2017) to treat performance incentives and risk incentives separately. Performance incentives tend to link CEOs’
wealth to firm’s performance and hence motivate CEOs to improve the firm’s performance while risk incentives are designed to motivate risk-reverse CEOs to take risky actions which benefit the principals.

Investment in IT aims to increase firms’ competitive advantages (Ravichandran and Lertwongsatien 2005), allows firms to mitigate the diseconomies of scale, and address diminishing returns to other strategic investments, such as R&D (Ravichandran et al., 2017). Firms that invest more in IT also tend to have higher profitability (Mithas 2012). Hence, CEOs with higher performance incentives may allocate more resources to IT. However, the long-term compensation contracts are complex. While some researchers have argued that the performance incentives in the long-term contract are substitutable incentives (Agrawal and Mandelker 1987, Jensen and Murphy 1990), others have found that some elements in performance incentives may affect risk behavior differently. For example, Bryan et al. (2000) demonstrated that while stock options are efficient incentives, restricted stock seems to increase CEO’s risk aversion. The different influence of equity pay elements implies that combining the pay elements into long-term packages may generate unclear effects on CEO’s IT investment behavior. These findings also question the traditional agency theory-based practice that use a single measure of incentive pay (Devers et al. 2008). Xue et al. (2017) propose that the positive relationship between performance incentives and proactiveness in IT investing is contingent upon the fact that the risk-exposing effect does not offset the effect of performance incentives.

Prior studies have found that risk incentives could motivate R&D expenditure (Coles et al. 2006) and resource exploration effort (Rajgopal and Shevlin 2002). Compared to other investments, such as plant equipment, IT investment have higher risk level and are more likely to encourage managerial risk aversion. Risk incentives could offset the effect of risk on CEO’s wealth and promote CEO to be risk-taking when making IT investment decisions.

Firm Contingencies: Performance Goals and Aspirations

According to behavioral theory of the firm, organizations are goal-oriented and use decision heuristics to adjust behavior in response to performance feedback (Cybert and March 1963). This typically manifest at many level in the organization including at the top management level where CEOs, pay attention to the deviations of firm performance from aspirational goals and adjust firm strategies. Performance relative to aspirations triggers organizational search (Cybert and March 1963). Research has established that aspiration levels are dependent upon past aspirations and feedback of actual performance (Lant 1992, Lant and Mezias 1992). The difference between actual performance and aspiration level is the “attainment discrepancy” (Lant 1992), which when negative triggers adaptation and reassessment of firm strategies and actions. By contrast, firms are less likely to engage in adjustments to their strategic posture when attainment discrepancy is positive (Greve 2003).

Given the established performance enhancing effects of IT investments (e.g., Mithas et al, 2012, Ravichandran and Lertwongsatien 2005, Ravichandran 2018), it is reasonable to expect CEOs to adjust their digital strategies in response to performance shortfalls. When performance incentives are high, CEOs are motivated to adopt a proactive digital posture. Under conditions of performance shortfall, this effect is likely to be higher. Hence, we propose:

Hypothesis 1a (H1a): CEOs will respond to performance incentives by increasing the proactiveness of digital strategic posture when firms underperform.

Hypothesis 1b (H1b): CEOs will respond to risk incentives by increasing the proactiveness of digital strategic posture when firms underperform.

Firm Contingencies: Financial Slack

Another key factor that may play a moderating role in the CEO incentives—digital strategic posture relationship is financial slack – the stock of excess financial resources in the firm. Extensive work on the determinants of risk-taking behavior suggests that managers tend to be risk seeking when firm has ample slacks and risk averse when the resources are limited (Audia and Greve, 2006; Voss et al., 2008).

The literature about organizational slack provides two opposite perspectives on the effect of slack resources on risk-taking behavior: the buffer argument and the waste argument (Nohria and Gulati 1996). As per the buffer argument, accumulation of organizational slack is the result of prior good performance
and offers the potential resources for innovative behaviors (Bourgeois, 1981). Hence, there is a positive relationship between firm slack and the proactiveness in digital strategic posture. On the other hand, some scholars argue that organizational slack might be a waste, which will lead to inefficient resource allocation (Leibenstein 1966, Nohria and Gulati 1996). Managers are likely to be less disciplined in terms of evaluation of potential opportunities (Nohria and Gulati 1996) leading to poor returns of investments. However, extra slack can stimulate investments irrespective of whether the project will generate net present values or not, because managers might become overoptimistic and overconfident when financial resources are abundant. Therefore, both the buffer argument and the waste argument anticipate a positive relationship between firm slack and digital strategic posture. The existence of slack provides incentivized CEOs with more resources to invest in IT. Moreover, abundant slack can cushion the firm from downside risks and potential losses because of risks inherent in IT investments. Therefore, we hypothesize:

Hypothesis 2a (H2a): CEOs will respond to performance incentives by increasing the proactiveness of digital strategic posture when financial slack is high.

Hypothesis 2b (H2b): CEOs will respond to risk incentives by increasing the proactiveness of digital strategic posture when financial slack is high.

Methods

Sample and Data

Our data was compiled from three primary resources, Computer Intelligence database (CI), EXECUCOMP, and COMPUSTAT. The CI database is a widely used database in IS research, which provides information about IT investment, IT stock, and payoff (e.g., Chwelos et al. 2010, Dewan et al. 2007). After combining data from these three resources, our samples consist of 2850 firm-year observations from 2008 through 2015.

Variables

Dependent Variable

Digital Strategic Posture. We conceptualized digital strategic posture as the level of abnormal IT investments of a firm. We measure this variable as the difference between the actual IT investment and the expected IT investment levels of a firm. Past studies have used the industry benchmarks of IT investment as a measure of expected investment levels and computed the firm’s digital strategic posture relative to this benchmark. In this study, we extend and enrich this measure by using both industry benchmarks and firm level factors. Drawing from the finance literature, we propose that the expected investment levels would be a function of prior investment levels, investment opportunity, firm’s ability and environmental factors. We use previous year IT investments, cash flow of the firm as a proxy for investment opportunity, Tobin’s q as a proxy for firm capabilities, and industry IT investment levels as a proxy for environmental factors to predict the IT investment levels in the current year. We take the difference between the predicted and actual IT investment levels to measure digital strategic posture. We used the total IT budget for each year as reported in the CI database to measure IT investment (Mithas et al. 2013). This includes the actual expenses on hardware and software, IT storage, IT services, and IT staff salaries and recruitment.

Independent Variable

Performance Incentive (Delta). In this study, we use delta to measure performance incentives. Delta is defined as the change of CEO’s option and stock value for 1% change in stock price. It reflects how the CEO’s compensation change with the market performance. Following the paper by Coles et al. (2006), we calculate delta by using Black and Scholes Model (1973), which is widely used in the literature (e.g., Low 2009, Xue et al. 2017).

Risk Incentive (Vega). We use vega to represent risk incentives. Vega is defined as the change in CEO’s option value for 1% change in the standard deviation of stock returns. The option value increases
when the stock is more volatile, and hence incentivize the risk-averse managers (Core and Guay 2002). Options with high \textit{vega} could motivate CEO to be risk-taking when making strategic decisions.

**Firm Slack.** Bromiley (1991) and Greve (2003) measure slack resources by using the following indicators: (1) absorbed slack, which is calculated as the ratio of selling, general, and administrative expenses to sales; (2) unabsorbed slack, which is measured by current ratio; and (3) potential slack, which is indicated by debt-to-equity ratio. In this study, we use unabsorbed slack (current ratio) and potential slack (DE ratio) because unlike absorbed slack, unabsorbed slack and potential slack are more flexible and more related to investment behaviors. Hence, they are critical for supporting IT investments.

**Performance Discrepancy.** Various measures can be used to evaluate financial performance, such as return on assets (ROA), returns on equity (ROE), and return on sales (ROS). Since ROE can be affected by the structure of equity and debt, we choose ROA as our measure of firm performance. Performance against aspiration levels may be determined by firm’s past performance (historical aspirations) and the performance of a typical firm in the industry. Following Cybert and March (1963), we calculate the firm’s attainment discrepancy.

\[
A_{t-1d} = \alpha_1 HA_{t-1d} + (1 - \alpha_1) IA_{t-1d}
\]
\[
HA_{t-1d} = \alpha_2 HA_{t-2d} + (1 - \alpha_2) P_{t-2d}
\]

**Control Variables**

Several variables are included in our model to control for CEO, firm, and industry characteristics. To control for possible individual level effects, we account for CEO age and gender as both have been shown to affect risk preference (MacCrimmon and Wehrung 1986). We also control for CEO cash compensation as cash compensation might affect the resource allocation between operating and long-term investment (Coles et al. 2006). Furthermore, we include four firm level control variables: firm size, and firm diversification, sales growth and R&D expenditure. Firm size is measured using log number of employees, and the firm diversification is obtained by calculating the Herfindahl index. Sales growth is measured to control for the effect of growth opportunities on IT investment decisions (Coles et al. 2006). R&D expenditure is used as a control because R&D could generate long-term benefits (Bharadwaj et al., 1999) and can substitute for IT investments (Ravichandran et al. 2017). We took a natural log of all the compensation measures to control for the skewness. In addition, we controlled for industry and year using dummies. All independent and control variables are logged 1 year behind the dependent variable.

**Results**

Table 1 presents the descriptive statistics of and correlation among the variables.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSP</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta</td>
<td>0.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vega</td>
<td>0.12</td>
<td>0.52</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO Age</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO Gender</td>
<td>-0.01</td>
<td>-0.02</td>
<td>0.03</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash Comp</td>
<td>0.08</td>
<td>0.11</td>
<td>-0.17</td>
<td>0.06</td>
<td>0.00</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales G</td>
<td>0.00</td>
<td>0.07</td>
<td>0.00</td>
<td>-0.02</td>
<td>0.04</td>
<td>-0.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>0.23</td>
<td>0.31</td>
<td>0.39</td>
<td>0.06</td>
<td>-0.09</td>
<td>0.37</td>
<td>-0.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHI</td>
<td>-0.03</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>0.19</td>
<td>0.19</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D Invests</td>
<td>0.12</td>
<td>0.47</td>
<td>0.38</td>
<td>0.05</td>
<td>-0.02</td>
<td>0.07</td>
<td>0.35</td>
<td>0.35</td>
<td>-0.09</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unabsorbed Slack</td>
<td>-0.08</td>
<td>-0.04</td>
<td>-0.05</td>
<td>0.01</td>
<td>0.03</td>
<td>-0.02</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.13</td>
<td>-0.01</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Slack</td>
<td>0.03</td>
<td>0.02</td>
<td>0.01</td>
<td>0.06</td>
<td>0.05</td>
<td>0.05</td>
<td>0.02</td>
<td>0.05</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.05</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance above Aspirations</td>
<td>-0.01</td>
<td>0.09</td>
<td>0.03</td>
<td>-0.03</td>
<td>0.02</td>
<td>-0.01</td>
<td>-0.03</td>
<td>-0.03</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.09</td>
<td>-0.01</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Performance below Aspirations</td>
<td>0.06</td>
<td>0.13</td>
<td>0.10</td>
<td>0.03</td>
<td>-0.00</td>
<td>0.08</td>
<td>0.16</td>
<td>0.16</td>
<td>0.04</td>
<td>0.03</td>
<td>-0.10</td>
<td>0.00</td>
<td>0.37</td>
<td>1.00</td>
</tr>
<tr>
<td>Mean</td>
<td>1.32</td>
<td>397.7</td>
<td>201.0</td>
<td>56.3</td>
<td>0.96</td>
<td>6.78</td>
<td>7.11</td>
<td>0.31</td>
<td>0.12</td>
<td>3.64</td>
<td>0.51</td>
<td>1.51</td>
<td>2.20</td>
<td>-1.14</td>
</tr>
<tr>
<td>S.D.</td>
<td>7.85</td>
<td>686.9</td>
<td>412.5</td>
<td>6.75</td>
<td>0.19</td>
<td>0.77</td>
<td>13.1</td>
<td>0.77</td>
<td>0.11</td>
<td>11.3</td>
<td>0.83</td>
<td>1.78</td>
<td>2.80</td>
<td>2.43</td>
</tr>
</tbody>
</table>

Notes. Correlation figures are boldfaced if significant at 5% level.

**Table 1. Descriptive Statics and Correlations**
Table 2 reports the main results. Model 1 reports the control variable effects. Model 2 and Model 3 report the effect of CEO incentives on digital strategic postures, and Model 4 and Model 5 show the results of the interaction terms.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Control</th>
<th>Main Effects</th>
<th>Interaction Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-3.1502 (4.2828)</td>
<td>-6.0260 (3.9680)</td>
<td>-4.2957 (4.2828)</td>
</tr>
<tr>
<td>CEO Age</td>
<td>-0.0176 (0.0216)</td>
<td>-0.0292 (0.0210)</td>
<td>-0.0235 (0.0217)</td>
</tr>
<tr>
<td>CEO Gender</td>
<td>0.1261 (0.7795)</td>
<td>-0.1306 (0.7717)</td>
<td>-0.0891 (0.7797)</td>
</tr>
<tr>
<td>Cash Compensation</td>
<td>0.4560 (0.1952)</td>
<td>0.8503*** (0.0263)</td>
<td>0.6654*** (0.2022)</td>
</tr>
<tr>
<td>Sales Growth</td>
<td>-0.0097 (0.0115)</td>
<td>-0.0099 (0.0109)</td>
<td>-0.0070 (0.0115)</td>
</tr>
<tr>
<td>Firm Size</td>
<td>0.8784*** (0.2053)</td>
<td>0.6742*** (0.2012)</td>
<td>0.6684*** (0.2120)</td>
</tr>
<tr>
<td>HHI</td>
<td>-3.6113** (1.6278)</td>
<td>-3.3802** (1.5135)</td>
<td>-3.3263** (1.6263)</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>0.0580*** (0.0135)</td>
<td>0.0416*** (0.0142)</td>
<td>0.0412*** (0.0143)</td>
</tr>
<tr>
<td>Unabsorbed Slack</td>
<td>-0.4458*** (0.1833)</td>
<td>-0.3599*** (0.1641)</td>
<td>-0.4045*** (0.1831)</td>
</tr>
<tr>
<td>Potential Slack</td>
<td>0.0053 (0.0050)</td>
<td>0.0133 (0.0161)</td>
<td>0.0047 (0.0050)</td>
</tr>
<tr>
<td>Performance above Aspirations</td>
<td>-0.1649*** (0.0579)</td>
<td>-0.1705*** (0.0568)</td>
<td>-0.1649*** (0.0578)</td>
</tr>
<tr>
<td>Performance below Aspirations</td>
<td>0.2393*** (0.0646)</td>
<td>0.2121*** (0.0628)</td>
<td>0.2159*** (0.0647)</td>
</tr>
<tr>
<td>Delta</td>
<td>0.0003*** (0.0001)</td>
<td>0.00015*** (0.0004)</td>
<td>0.00015*** (0.0004)</td>
</tr>
<tr>
<td>Vega</td>
<td>0.0003 (0.0002)</td>
<td>-8.66e-07 (5.67e-06)</td>
<td>-9.61e-06 (0.00004)</td>
</tr>
<tr>
<td>Unabsorbed Slack × Delta</td>
<td>0.0021** (0.0010)</td>
<td>0.0003*** (0.0001)</td>
<td>-0.0002 (0.0002)</td>
</tr>
<tr>
<td>Potential Slack × Delta</td>
<td>0.0003*** (0.0001)</td>
<td>-0.0002 (0.0002)</td>
<td>-0.0003 (0.0003)</td>
</tr>
<tr>
<td>Performance above Aspirations × Delta</td>
<td>0.0003*** (0.0001)</td>
<td>-0.0002 (0.0002)</td>
<td>-0.0003 (0.0003)</td>
</tr>
<tr>
<td>Performance below Aspirations × Delta</td>
<td>0.0003*** (0.0001)</td>
<td>-0.0002 (0.0002)</td>
<td>-0.0003 (0.0003)</td>
</tr>
<tr>
<td>Year</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industry</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>2850</td>
<td>2850</td>
<td>2850</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.0777</td>
<td>0.0857</td>
<td>0.0825</td>
</tr>
</tbody>
</table>

Notes. * Significance at 10% level; ** Significance at 5% level; *** Significance at 1% level.

Table 2. Results of Hypothesis Test

Model 2 indicates that the coefficient of delta is positive and significant, suggesting that the performance incentives will lead to a proactive digital strategic posture. The coefficient of vega in Model 3 is positive and significant. This suggests that the risk incentives will also induce a proactive digital strategic posture. In Model 4, consistent with Hypothesis 1a, the coefficient of the interaction between Performance below Aspirations and delta is negative and significant, indicating that a decrease in performance induces CEOs with performance incentives to enhance the firm’s digital strategic posture (Hypothesis 1a). However, the interaction terms between delta and firm slack (both unabsorbed and potential) are not significant. Therefore, Hypothesis 2a is not supported. In Model 5, the coefficient of the interaction between Performance below Aspirations and vega is insignificant, implying that a decrease in performance may...
not induce CEO with risk incentives to enhance the firm’s digital strategic posture. Therefore, Hypothesis 1b is not supported. The coefficients of the interaction terms between firm slack (both unabsorbed and potential) and vega are positive and significant, implying that financial slack will induce CEO with risk incentives to pursue a more proactive digital strategic posture. Hence, Hypothesis 2b is supported.

Discussion

Our research and findings have several important takeaways for future research. First, our work extends recent research that has used deviation from expected norms in IT investment levels as an indication of a firm’s digital strategy. While past studies have used industry IT investment levels as a benchmark, we argued that this conceptualization is inadequate and proposed that the benchmark IT investment levels should be derived based on a combination of industry and firm level factors. This allows for a more fine-grained conceptualization of digital strategic posture that is aligned with actual firm behaviors.

Second, while prior studies argued that digital strategic choices are influenced by external factors, such as institutional pressures (Ravichandran et al. 2009), environmental determinism (Mithas et al. 2013), we focus on the factors inside the organization and reinforce the salient role of top management. Our research examines the effect of agency issues on IT investment decisions and help to realize how to better align IT investment priorities with the long-term value for firms in the current wave of digitization through compensation mechanisms.

Third, prior research suggests that performance and risk incentives could motivate IT investment (Masli et al. 2014, Xue et al. 2017). Our study draws on the behavioral theory of the firm (Cybert and March 1963) to propose that the effects of managerial incentives are contingent on organizational factors such as performance discrepancy and slack. Our study further shows that the effect of performance incentive is sensitive to prior firm performance, and the effect of risk incentives can be moderated by firm slack.

In conclusion, understanding the antecedents of IT investment decisions is critical in IT business value research. We shed light on the complexity inherent in formulating a digital strategic posture and drive value from IT investments. We believe that our findings provide significant implication for scholars and practitioners on understanding the IT investment behaviors of firms.

REFERENCES


