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IS Leadership and Strategy Realization

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Abstract

With alignment of Information Systems (IS) strategy with business strategy, organizations can fully realize full potential of information technology (IT) resources. We view IS leadership as a core enabler to lead IS unit to contribute to organizational performance. Using upper echelons theory, we look at the effects of two characteristics of an IS leader, transformational leadership and gender, on IS unit's teamwork capability and how this capability, in turn, affects the realization of IS unit's strategy. We also investigate how the effect of teamwork capability on IS strategy realization is contingent on IS strategy. The results show that transformational IS leadership is effective in enhancing an IS unit's teamwork capability, which in turn significantly influences the realization of IS strategy to the extent the IS unit seeks to create systems that enable the organization to be flexible.

Keywords
IS Leadership, IS Strategy, IS Unit's Team Capability, IS Strategy Realization.

Introduction

The use of information technology (IT) has been expanding and capital spending on IT has been growing. Worldwide IT spending in 2017 is expected to total $3.5 trillion (Anonymous 2017), up from $2.1 trillion in 2005 (Anonymous 2005). These trends suggest that IT investments are likely to be critical in the foreseeable future, as organizations seek to improve their performance and competitiveness. However, many organizations fail to implement their IT successfully or realize its full potential. A recent report found that almost $400 billion of $600 billion spent on digital projects was invested in projects that fall short of expectations and returns on investment (Anonymous 2015).

A possible reason for the failure of IT in delivering results may be poor Information Systems (IS) strategy execution. While the alignment of IS strategy with business strategy is critical to organizational performance (Sabherwal and Chan 2001), a precursor to alignment is the ability to realize IS strategy. If that ability is lacking, then even if IS strategy is aligned, the organization's IS unit will fall short of its potential for contributing to organizational performance. The IS unit's inability to realize its strategy may stem from the inability of its human capital to work together and realize its full potential (Sambamurthy and Zmud 1992). The latter inability is probably a function of IS leadership (Armstrong and Sambamurthy 1999; McNish 2003; Sutcliffe 1999), which is typically exercised by the Chief Information Officer (CIO). Approximately 45% of the respondents to a survey conducted by CIO Insight feel that IS leaders are responsible for ensuring the proper utilization of IT resources (Anonymous 2002). The IS unit's human capital is probably its most important resource and, therefore, an understanding of how it is influenced by IS leadership and what impact it has on the realization of IS unit's strategy is likely to go a long way in reducing IT failure rates. Accordingly, looking through the lens of upper echelons theory (Hambrick and Mason 1984), we look at the effects of two characteristics of an IS leader – transformational leadership and gender – on IS unit's teamwork capability and how this capability, in turn, affects the realization of IS unit's strategy. We also investigate how the effect of teamwork capability on IS strategy realization is contingent on IS strategy.

IS Strategy and Realization

Prior research has identified effective strategic planning of information systems (IS) to be a critical issue facing business success as it helps organizations use information systems to achieve business objectives by improving communication with users, increasing top management support, forecasting resource requirements, and identifying new opportunities for business (Hartog and Herbert 1986; Lederer and Sethi 1988). IS strategies focus on systems and business applications that support business plans and consequently bring strategic benefits to business (Sabherwal and Chan 2001). According to Sabherwal and Chan (2001), an IS unit's dominant IS strategy falls into one of these four categories: IS for efficiency, IS for flexibility, IS for comprehensiveness, and no IS strategy.

'IS for efficiency' strategy focuses on internal and inter-organizational efficiencies and long-term decision-making. It does so by managing IT resources and monitoring/controlling IT systems supporting the organization's daily operations and routines. It also embodies the use of IT to enable stability in relationships with key stakeholders (e.g., customer, suppliers, and partners), long-term planning, and forward integration. 'IS for flexibility' emphasizes market flexibility and quick and effective strategic decisions. The IS unit focuses on utilizing its resources and capabilities to screen products/services and market/industry trends, so as to help the organization select potential market, products and services (c.f., Miles and Snow 1978). Using this strategy, the IS unit can help the organization seek new business venues and become ready for more regular changes in its operations. The 'IS for comprehensiveness' strategy is a mixture of 'IS for efficiency' and 'IS for flexibility' strategies. With this strategy, the IS unit can help the organization observe the market and be responsive to its competitors. Simultaneously, this strategy enables leveraging IT resources and capabilities to ensure structural and inter-organizational stability. Through this strategy, the IS unit also helps the organization analyze its internal capabilities and external competition and enable seamless coordination between core functional areas (e.g., marketing, manufacturing, etc.). Lastly, 'no IS strategy' refers to the IS unit reacting to internal and external changes in an ad hoc fashion and is not typically considered as a real strategy. This state may reflect the lack of a viable strategy, a transition from one of the three ideal strategies to another or simultaneous pursuit of systems that fall into other three categories (Sabherwal and Chan 2001).

Clarity on strategy does not necessarily imply its realization (Lederer and Sethi 1988). According to the resource-based view of the firm, organizational IT capability is a key factor for effective execution of IS strategies and achieving superior IT performance (Nolan 1994). IT capabilities refer to an organization's ability to mobilize and deploy IT resources in combination with other resources (Bharadwaj 2000). Key components of IT capabilities include tangible IT resources, human IT resources, and intangible IT-enabled resources (Grant 1991). In this study, we focus on the teamwork capability of an organization's human IT resources, or the ability of those within the IS unit to work together, to understand its relationship to the realization of IS strategy.

Teamwork Capability and Effect on Strategy Realization

Using Hackman's (1987) socio-emotional and task categories of team processes, we see IT professionals' teamwork ability as stemming from their interpersonal relationships and performance capabilities. Particularly, we look at group cohesion, or the level of cohesion among members of the IS unit, and group effort, or the willingness of members of the IS unit to expend effort to accomplish their unit's goals. Past literature has included group cohesion and group effort as indicators of teamwork (Valentine et al. 2014).

Group cohesion is defined as the degree to which members of a group are motivated to remain in the same group (Shaw 1976). A cohesive group tends to have a concrete group foundation (e.g., a long history of working together, a shared worldview/belief, a common goal to achieve, etc.) that closely links members to one another. In a cohesive group, members are likely to share similar value systems and show consistent patterns of behaviors/actions (e.g., cooperative and collaborative attitudes) to challenging situations (e.g., adversity, crisis) (Baker 2005). Thus, a cohesive group is likely to show unified commitment, coordinated actions as well as perseverance during the course of completing a task, which increases a group's effectiveness (Dionne et al. 2004) and performance (Schminke et al. 2002). Group effort is defined as the amount of effort that group members are willing to exert to complete their tasks (Hoegl and Gemuenden 2001). This concept also encompasses the group's persistence to deal with

obstacles and failures as well as its willingness to take on any actions to make the group successful. Group effort indicates the level of dedication to a given task and the working atmosphere that permeates across the group (Ingram et al. 1989).

Teamwork capability of the IS unit is expected to influence the realization of the unit's strategy. Members of a unit possessing such capability are able to communicate and work with each other more effectively to develop applications it sets out to deliver to business (Sambamurthy and Zmud 1992). Effective execution of IS strategy may require the IS unit to expend considerable amount of time and effort (Price and Mueller 1986). In such a situation, the unit has to be willing to commit to whatever it takes to deliver on its strategy and its members would need to be persistent in the face of obstacles. Members of the IS unit would also need to have mutual respect for each other's roles and trust in the ability of other members. At the same time, they would have to be willing to help each other during periods of challenges. Thus, while the ability of members within the IS unit to work together is likely to be important for the realization of the unit's strategy, we believe that the level of importance is likely to be contingent on the level of organizational flexibility that the information systems seek to provide.

To the extent an IS unit is pursuing the 'IS for flexibility' strategy, it is likely to face greater challenges; its work centers around managing flexible IT systems (e.g., high connectivity, diverse systems application functionality, high compatibility, and transparent database management, etc.), adapting to a changing IT infrastructure, shifting processes and business models, and changing IT and business skill requirements (Byrd and Turner 2000). Overcoming these challenges requires teamwork and the IS unit has to be a cohesive group in which its professionals collaborate effectively with one another by drawing on each other's expertise and making quick strategic decisions (Bass et al. 2003). They have to be persistent in their efforts to succeed despite challenges. To the extent the IS unit is not seeking to develop systems that provide greater organizational flexibility, it may need to deemphasize teamwork capability. Haas and Hansen (2005) found that collaboration, when it is not required, could hurt performance. Building teamwork capability takes time and building it when the capability is not required can give rise to the opportunity cost of not spending time on other more relevant activities that can aid strategy realization. Based on these arguments, we hypothesize the following:

> *Hypothesis 1. An IS unit's teamwork capability will have a more positive effect on the realization of IS strategy to the extent the IS unit is pursing the IS for flexibility strategy.*

IS Leadership

Leadership plays a central role in developing organizational capabilities and business unit performance (Howell and Avolio 1993). The upper echelons theory suggests that business executives' experiences, values, and personalities make a difference in strategy formulation and performance (Hambrick and Mason 1984). Business executives are the most powerful actors in an organization and the personalized interpretations of the strategic situations they face influence why organizations do the things they do or perform in the way they do (Hambrick 2007). The relevance of top-level managers to business performance is equally important in the context of IS. As demonstrated by prior studies, top management's guidance in the form of clear vision and strong support, and well-defined management objectives are the most important facilitators for the strategic use of IT (Jarvenpaa and Ives 1991; King and Teo 1996). Top executives' perception about IT professionals is also significant for enabling IT professionals to capitalize on IT to its full potential (Tallon et al. 2000). Therefore, by influencing IT professionals through effective IS leadership, an IS leader can help the IS unit build strong IT capabilities and increase the likelihood of successfully executing IS strategies.

The upper echelons theory suggests that a consideration of personal or leadership characteristics would be essential for examining the influence of IS leadership on IT capabilities (Hambrick and Mason 1984). We focus on transformational leadership as a characterization of leadership that is likely to be useful for examining the influence of IS leadership on the capabilities of the IS unit (Waldman et al. 2001). Transformational leadership is one of the most studied characterizations of leadership in the leadership literature. We also focus on an IS leader's personal characteristic: the leader's gender. Both leadership style and gender of an IS unit's leader can affect the unit's teamwork capability by influencing how the leader makes sense of or frames the situations s/he faces.

Transformational leaders frame work-related issues in a way that stimulates the followers and engages their intrinsic motivation to perform. Such leaders broaden and elevate followers' goals and thinking and provide them with confidence and ability to perform beyond the expectations by exhibiting intellectual stimulation (IST), individualized consideration (IC), inspirational motivation (IM), and idealized influence (II) (Bass and Avolio 1993; Bass et al. 2003).

IST involves stimulating followers to be innovative and creative by framing familiar situations in new ways. Transformational leaders see their followers as individuals who can be developed to help them realize their needs for achievement and growth. IC involves paying attention to these needs of individual followers and acting as coach or mentor and providing a supportive climate in which followers can develop. IM deals with viewing the work that followers do as related to a compelling vision which, when articulated to followers, makes them see their work as intrinsically meaningful. IM also deals with setting high expectations for followers to infuse challenge in followers' work, and expressing confidence in their ability to achieve those expectations. As part of IM, a transformational leader views a collective as powerful, champions teamwork, and helps followers identify with the collective (Kahai et al. 2012) II involves being a role model by displaying exceptional capabilities and strong conviction to the vision and displaying behaviors (e.g., optimism and high energy) that the leader wants the followers to display.

These transformational leadership behaviors by an IS leader are likely to promote teamwork capability. Through IM, the leader highlights the benefit of working towards a meaningful vision and displays optimism about the IS unit's ability to achieve that vision. The leader helps members of the IS unit to get to know each other and discover common ground. These behaviors motivate members to work with each other to realize the IS unit's strategy. They are likely to do so by making members of the IS unit relate their self-concept to the unit's vision, identify with it, and build their collective and self-efficacies (Shamir et al. 1993). When members of the IS unit identify with the unit and its goals and believe that they can achieve the unit's goals, they commit themselves to those goals and find mutual interest in coordinating their efforts with each other to help the unit succeed.

The IS unit's teamwork capability is likely to be further enhanced through the leader's IST and IC behaviors. Through IST behaviors, a leader reframes the situation faced and encourages members of the IS unit to do so. The leader encourages others to never criticize ideas simply because they are different. In fact, through IC behaviors, a transformational leader shows and encourages appreciation for the diversity of backgrounds and viewpoints within the IS unit. Because of these behaviors, members of the IS unit are not only encouraged to try new approaches, they are also more willing to accept diverse ideas, stimulate each other to be more creative, and help each other improve their ideas. Through these behaviors, a leader promotes positivity in interactions among unit members (Kahai et al. 2012). Unit members feel valued and safe to work with each other in such a climate. Because of II, members of the IS unit admire the leader's qualities, values, and conviction to unit's vision. Consequently, they idealize the leader as a role model and are more responsive to her/his vision and calls for teamwork (Kahai et al., 2012). Based on these arguments, we hypothesize the following:

> *Hypothesis 2. Transformational IS leadership will be positively related to an IS unit's teamwork capability.*

The upper echelons theory suggests that demographic characteristics of leaders can influence how they interpret or view the strategic situations they face and that, in turn, can affect the functioning of the organization. Gender is one such characteristic. Males and females tend to be associated with different character traits, interaction styles, and ways of reasoning and communicating. While scholars debate whether the source of these attributes is biological or social, there is a growing body of literature that suggests that males and females tend to have different qualities (Fondas 1997). Males are associated with the tendency to be impersonal, efficient, hierarchal, and assertive and to ignore emotional considerations in order to succeed. Females, on the other hand, tend to be credited with empathy, caring, and nurturance; they are said to be interpersonally sensitive and possess an orientation toward the collective interest, group cohesiveness, and cooperative relationships. The close correspondence between female traits and transformational leadership may have led to Eagly et al. (2005) finding that female leaders are generally more transformational than male leaders. Nevertheless, female IS leaders, because of their traits, are more likely to act as role models for cohesiveness and working towards achieving collective goals. When members of the IS unit emulate these behaviors, they are likely to build the unit's teamwork capability. Accordingly, we hypothesize the following:

Hypothesis 3. Female IS leaders will be associated with higher levels of IS unit's teamwork capability than male IS leaders.

Method

A web-based survey instrument was employed to collect data. A total of 954 US organizations representing different industries (e.g., government, education, or technology) and sampled from a commercial database were contacted via email. Out of the 954 invitations, 282 bounced back due to spam filters or problems with email addresses. Our survey was designed to collect responses from three different parties: the organization's top IS executive (e.g., CIO, VP of IS, Director of IS, etc.), at least one executive from the top management team (TMT) but outside the IS unit (e.g., CEO, CFO, COO, VP of Marketing, etc.), and at least one IS personnel (e.g., system administrator, network administrator, programmer, IS manager, etc.) who reports to the IS executive. 69 of 672 reachable organizations provided responses from all three parties, with an effective response rate of 10.3%, which is a reasonable response rate given that three different parties from each organization had to respond for an organization's responses to be usable. The 69 organizations whose data is reported in this study represent various types of organizations across industries: sizes, types of ownership (e.g., privately-owned, publicly-owned, or governmental agencies), and organizational goals (e.g., profit or non-profit).

Data Collection Procedure

An IS leader from the target respondents was first contacted using an invitation email. The invitation email included a brief description of the study, the role of an IS leader in administering a survey in his/her organization, and an elicitation of the organization's support. If the IS leaders agreed to participate, they were asked to provide email addresses of those whom they would like to invite to the survey (e.g., TMT members, IS personnel). Those parties included at least one TMT member and at least one IS personnel. Then, all identified participants were provided their own login information (username and password) to their respective surveys on the Web via email.

For a participating organization, an IS leader (e.g., a CIO, director of IS unit, vice president of IS, etc.) was asked to respond to the survey items evaluating his/her IS unit's strategy, demographic information, and and details about the organization (size, industry, etc.). TMT members responded to the survey items related to IS strategy execution and a brief set of items focusing on IS leader's transformational behaviors. Finally, IS personnel were asked to respond to the survey items about the IS leader's leadership behaviors and the IS unit's teamwork capability.

Variable Operationalization

IS Leadership

A revised version of MLQ Form 5X (Avolio and Bass 2002), a widely used questionnaire for leadership measurement, was employed to assess different leadership styles of the IS leaders. This instrument includes 29 five-point scale items ranging from 0 (not at all) to 4 (frequently, if not always). IS personnel were asked to judge how frequently their leaders (i.e., IS leaders) engage in specific behaviors. In addition to including 20 items measuring a leader's transformational behaviors (i.e., idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration behavior), the MLQ also includes items that measure transactional leadership (contingent rewarding), management-by-exception leadership, and laissez-faire leadership. In addition to asking IS personnel to provide ratings of IS leader's behaviors, a subset of MLQ items focusing on transformational leadership behaviors of the IS leader were selected for administration to TMT members. The use of these items is described later in the section on alleviating common source bias concerns.

Teamwork Capability

Group cohesion was measured using six-items (α = .94) adapted from Bass et al. (2003) and Chidambaram and Jones (1993) and completed on a 5-point scale (1=strongly disagree to 5=strongly agree). Sample items were "Members of the IS unit pull together to get the job done," "Members of the IS unit trust each other," and "Members of the IS unit help one another." Group effort was measured using

three items about the IT professionals' perception on the IS unit's overall effort, perseverance, and willingness (α = .88) (Lester et al. 2002). These items included "Overall level of effort exerted by the IS unit for IS activities," "Overall level of persistence exhibited by the IS unit when it encounters obstacles," and "Overall willingness of IS personnel to do whatever it takes to make the IS unit a successful group." All items were completed using a 5-point scale (1=extremely low to 5=extremely high).

IS Strategy

IS strategy was measured using the instrument and method developed by Sabherwal and Chan (2001). Twenty 5-point Likert scale items ranging from 1 (strongly disagree) to 5 (strongly agree) were used. The instrument measures emphasis of IS strategy on operational support systems (OSP), inter-organizational systems (ISO), market information systems (MTIS), and strategic decision support systems (SDSS). Specifically, these items measure the extent to which each type of system is emphasized to support the organization's operations, processes, and strategic goals. Individual IS leaders were asked to respond to this instrument. Depending on the pattern of responses to these items, the method developed by Sabherwal and Chan yields three scores which are then used to classify each IS unit into one of the following three IS strategy types: 'IS for efficiency,' 'IS for flexibility,' and 'IS for comprehensiveness.'

IS Strategy Realization

This was operationalized as the negative of the Euclidean distance between the IS unit's focus on delivering operational support systems, inter-organizational systems, market information systems, and strategic decision support systems and the top management's view of the extent to which these systems are delivered. The IS unit's focus on delivering each type of system was obtained from the twenty IS strategy questions described above. To measure how well the IS unit delivered the different systems, we used the instrument developed by Chan et al. (1997). These twenty items correspond to the twenty IS strategy questions. Sample items were "The information systems in our organization improve the efficiency of day-to-day operations," "The information systems in our organization enable stronger links with business partners," "The information systems in our organization help in the introduction of new products and/or services in the market place," and "The information systems in our organization facilitate strategic business planning." These items used a 5-point scale (1=strongly disagree and 5=strongly agree).

IS Leader's Gender

This was collected as part of the survey items administered to the IS leader. It was coded as a dummy variable for data analysis (0 = Male, 1 = Female).

Control Variables

Additional variables were employed for control purposes in the data analysis. Data for these was collected in the IS leader's survey and they include the IS leader's tenure in the current position as well as that in the current organization. Tenure can influence the leader's knowledge about the workings of the IS unit and, hence, the ability of the leader to influence the unit's teamwork capability beyond the leader's transformational leadership characteristics. The two tenure items were modeled as reflecting IS leader's tenure in the PLS analysis described later. Data about the organization was also collected to enable determination of whether it was profit oriented or non-profit oriented and its size in terms of number of employees. Organizations with 1000 or less employees were classified as small whereas those with 1001 or greater number of employees were classified as large. Lack of profit orientation and larger organizational size may represent challenges perceived by an IS leader in creating teamwork capability and, hence, may affect the leader's efforts towards creating teamwork capability beyond her/his transformational leadership capabilities (for instance, the leader may not put in as much effort if s/he sees that her/his efforts are not going to be as successful due to the challenges). Two dummy variables, one representing profit orientation (1 = non-profit oriented, 0 = profit) and another representing organizational size (1 = large, 0 = small) were modeled as reflecting the challenge perceived by an IS leader in creating teamwork capability in the PLS analysis described later.

Common Source Bias and Higher-Order Construct

Having three different parties responding to the survey measuring different constructs enabled us to avoid 'common source bias' (Campbell and Fiske 1959; Avolio et al. 1991). However, there were two latent variables (IS leadership and IS unit's capability of working together) collected from the same respondent (IT professional). To verify that the relationship between those two variables would not be contaminated, inflated, or misleading (e.g., Type I error), we asked another party (TMT members) a selected set of questions on IS leadership. As a result, we created a higher-order construct for transformational IS leadership behaviors. We used items collected from both TMT members and IT personnel to reflect II, IM, IST, and IC. These four dimensions, in turn, can be considered as arising from a higher order variable representing transformational IS leadership behaviors. Thus, transformational IS leadership behaviors was modeled as giving rise to four first-order variables, II, IM, IST, and IC. In turn, each of these variables was modeled as giving rise to two items, one based on the responses from TMT members and the other based on the responses from IT professionals.

Analyses and Results

We used PLS to test our hypotheses. Smart PLS version 2.0 was used to analyze the data. Table 1 presents the descriptive statistics for the measures, the Cronbach alpha (α), the composite reliability (CR), the average variance extracted (AVE), and the correlation matrix for all constructs in the study.

Reliability of questionnaire items was assessed by the factor loadings of items, the composite scale and Cronbach alpha reliability, and the average variance extracted (AVE) (Bagozzi and Youjae 1988; Fornell and Larcker 1981). With the exception of one Cronbach alpha measure (that for items made to load on teamwork capability creation challenge), all other assessments of reliability indicate adequate reliability. Convergent and discriminant validity of items was assessed in a manner similar to the multitrait-multimethod analysis by comparing the loadings of indicators on their respective constructs with cross-loadings, i.e., loadings of indicators on other constructs. Examination of the PLS output indicated that the cross-loadings were lower than the loadings of indicators on their respective constructs. Also, Table 1 shows that the square root of AVE by each construct from its indicators was greater than the magnitude of its correlation with other constructs, thereby providing additional indication of convergent and discriminant validity of items.

	M	SD	α	CR	1	2	3	4	5	6
1. IS strategy realization	-1.93	0.88	--	--	1.00 (1.00)					
2. Teamwork capability	4.08	0.66	.73	0.88	0.04	0.78 (0.89)				
3. Transformational leadership	3.09	0.49	.85	0.88	0.21	*0.27*	0.77 (0.88)			
4. IS leader's gender	0.1	0.3	--	--	*-0.30*	*0.31*	0.14	1.00 (1.00)		
5. IS leader's tenure	0.0	0.94	.88	.94	0.11	0.08	-0.09	0.05	.88 (0.84)	
6. Teamwork capability creation challenge	0.0	0.8	.45	.78	-0.09	-0.19	-0.01	0.06	-0.06	.65 (.80)

Table 1. Descriptive Statistics, Reliabilities, and Correlation Matrix

Table Notes: Italicized correlations are significant at $p < .05$. The average variance extracted (AVE) by constructs from its items is shown along the diagonal, with the square roots of AVE shown in parentheses. [a]Items reflecting variables 5 & 6 were standardized due to which their means were zero. Raw scores of individual items were analyzed to compute the following descriptive: M = 3.49, SD = 1.35 for tenure in current position; M = 3.81, SD = 1.35 for tenure in company; M = 0.28, SD = 0.45 for organizational size; M = 0.45, SD = 0.50 for profit orientation.

Path coefficients and significance levels corresponding to research hypotheses were examined. Results reveal that transformational IS leadership behaviors were positively related to the IS unit's teamwork capability ($\beta = 0.25$; $t = 2.37$; $p < 0.05$), supporting Hypothesis 2. IS leader's gender was positively associated with teamwork capability ($\beta = 0.28$; $t = 2.84$; $p < 0.01$), suggesting that female leaders were associated with higher IS unit's teamwork capability. Thus, Hypothesis 3 was supported. To test the moderation effect of IS strategy on the relationship between teamwork capability and IS strategy realization as proposed in Hypothesis 1, we conducted analyses for two sub-samples created by splitting

the whole sample near the median for the 'IS for flexibility' measure. One subsample (N=34), represented organizations whose IS units pursued 'IS for flexibility' to a greater extent, whereas the other subsample (N=35) represented organizations whose IS units pursued 'IS for flexibility' to a lower degree. We found that for organizations with IS units that pursued 'IS for flexibility' to a greater extent, the IS unit's teamwork capability of working together was positively related to IS strategy realization (β = 0.42; t = 2.41; p < 0.05). On the other hand, for organizations with IS units that pursued 'IS for flexibility' to a lower degree, the IS unit's teamwork capability was not related to IS strategy realization (β = -0.16; t = -1.02; n.s.). Moreover, the difference in the effect of IS unit's teamwork capability on IS strategy realization across the two subsamples was significant (t = 2.52, p < .01). Therefore, Hypothesis 1 was supported.

Discussion and Conclusions

Our findings are consistent with prior studies highlighting the importance of transformational leadership in enhancing a group's teamwork capability (Bass et al. 2003; Dionne et al. 2004). These result demonstrate that transformational leadership can be applied and replicated in an IS context despite the uniqueness of an IS context and IS personnel's characteristics. In addition, we also found that an IS unit's teamwork capability significantly influences the realization of IS strategy to the extent the IS unit seeks to create systems that enable the organization to be flexible. When an IS unit seeks to create less flexible systems, it is dealing with status quo and it focuses on controlling and monitoring existing IT systems. The IS unit can be successful in undertaking those tasks while being less capable to work together as a group. As the IS unit seeks to create systems that enable the organization to be more flexible and be responsive to market changes, the unit has to have greater teamwork capability in order to successfully implement its IS strategy (Byrd and Turner 2000).

Our study is expected to set the foundation for future research on leadership in the IS context. It can serve as a starting point for future discussion on the effects of IS leadership on many potential IS outcomes such as the effectiveness of the IS unit, IS personnel performance and characteristics, organizational performance, etc. Findings from this study imply to IS executives that appropriate behaviors (e.g. transformational leadership behaviors) can be exerted to enhance the level of an IS unit's teamwork capability, which in turn increase the unit's effectiveness in implementing its strategy.

This study is not without limitations. Its small sample size is one limitation. Though we were able to detect the hypothesized effects despite a smaller sample size, confidence in the robustness of the study's findings would be enhanced by future research that attempts to replicate this study's results with a larger sample. We were successful in avoiding common source bias by collecting responses from three different parties measuring their perceptions of IS leadership behaviors (Campbell and Fiske 1959; Avolio et al. 1991). However, the results of this study are not free of common method variance, which is common to any research using self-reporting questionnaires. All the data were collected through the survey method. The results of our data analysis may be contaminated due to the artificial covariance between two variables attributable to the common measurement method. Thus, the development of objective measures for certain latent variables (e.g., IS unit's response time, number of complaints, return on investment (ROI) on IT for the IS unit's effectiveness; IT investment, cost/benefit ratio, internal rate of return (IRR) on IT for business strategy) in the model would be very plausible and effective in avoiding common method bias (Chatterjee et al. 2001).

In conclusion, this study has taken a step forward by providing a contingency perspective on IS strategy realization and clarifying the role of an IS leader in enhancing the IS unit's performance. In so doing, this study identified the appropriate leadership behaviors (transformational leadership) that can help increase the IS unit's teamwork capability and ultimately lead the IS unit to execute IS strategy more effectively when it seeks the 'IS for flexibility' strategy. The research model and the measures employed in this study provide a foundation for future research on the promising topic of how IS leaders influence IS personnel to enable the IS unit to realize its strategy. This has been an elusive goal for many organizations and the results of this study should prove to be useful for achieving this important goal.

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