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How Leadership Styles Impact Enterprise Systems Success throughout the Lifecycle: A Theoretical Exploration

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Abstract
Top management support has been identified as one of the most critical factors to the success of enterprise systems. However, few studies have addressed the issue of what type of top management support is most effective in what phase of the enterprise systems lifecycle. In this study, we argue that effective management support is dependent on the top manager's leadership style and the specific phase of enterprise systems. Given the different challenges resulted from enterprise systems in different phases, and the variety of top management leadership styles, a one-size fits all approach is clearly inadequate. Drawing upon extant literatures, we propose a theoretical framework to clarify the relationship between the two most recognized leadership styles and the four phases of enterprise systems lifecycle. Specifically, we argue that transformational leadership is more effective in the adoption phase, while transactional leadership is more effective in the implementation phase, and a mixed leadership is more effective for the assimilation and extension phases. Our study deviates from the traditional focus on transformational leadership in management literature and breaks new ground in IS literature by highlighting the effectiveness of leadership style in the success of enterprise systems throughout the lifecycle.

Keywords: Top Management; Leadership Style; Enterprise Systems Lifecycle

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ABSTRACT

Top management support has been identified as one of the most critical factors to the success of enterprise systems. However, few studies have addressed the issue of what type of top management support is most effective in what phase of the enterprise systems lifecycle. In this study, we argue that effective management support is dependent on the top manager's leadership style and the specific phase of enterprise systems. Given the different challenges resulted from enterprise systems in different phases, and the variety of top management leadership styles, a one-size fits all approach is clearly inadequate. Drawing upon extant literatures, we propose a theoretical framework to clarify the relationship between the two most recognized leadership styles and the four phases of enterprise systems lifecycle. Specifically, we argue that transformational leadership is more effective in the adoption phase, while transactional leadership is more effective in the implementation phase, and a mixed leadership is more effective for the assimilation and extension phases. Our study deviates from the traditional focus on transformational leadership in management literature and breaks new ground in IS literature by highlighting the effectiveness of leadership style in the success of enterprise systems throughout the lifecycle.

Keywords: *Top Management; Leadership Style; Enterprise Systems Lifecycle*

INTRODUCTION

With the globalization of the economy and increasing uncertainty of market environment, competition in the marketplace has become increasingly fierce and dynamic. To survive and thrive in such conditions, firms are forced to examine their internal processes and external networks for potential areas of improvement, and many of them have turned to information technology to make their operational, tactical and strategic processes more efficient and effective. Enterprise systems (ES), such as Enterprise Resource Planning (ERP), Supply Chain Management (SCM), and Customer Relationship Management (CRM), have emerged as some of the most critical information technologies powering businesses since the 1990s (James and Wolf, 2000).

ES usually comprise of integrated modules across multiple business functions and even organizational boundaries, and can provide cost-effective functionalities for building knowledge platforms through systematic acquisition, storage, and dissemination of organizational knowledge, thus are regarded as one of the most significant levers for organizations to derive competitive advantage (Purvis et al., 2001; Hendricks et al., 2007). However, because of the scale and complexity of ES, significant amounts of money and resources are needed, and various risks and difficulties often rise in each phase of the ES lifecycle (Markus and Tanis, 2000).

Improving the chances of success of ES has been a focus of research in the last three decades. Many studies have identified critical success factors for ES adoption, implementation, and use (Hong and Kim, 2002; Somers and Nelson, 2004; Hwang, 2005; Liu et al., 2011). Top management support has been recognized as one of the most significant factors in the literature (Umble et al., 2003;

Law and Nagai, 2007; Rai et al., 2009; Elbashir et al., 2011). This is primarily because successful adoption, implementation, and use of a new technology often require mutual adaptation of the technology and the organizational. Top management can play an important role in the adaptation by unfreezing the prevailing institutional structures, introducing complementary structures that facilitate technology use, and reinforcing norms that value the use of the technology (Kwon and Zmud, 1987; Somers and Nelson, 2004).

However, knowing that top management support is critical to achieve ES success is clearly not enough. Leadership theory suggests that different leaders exhibit different leadership styles, and the specific support actions and behaviors of top management is dependent on their leadership styles (Bass, 1985). In a typical lifecycle of enterprise systems–in this study we define it as consisting of adoption, implementation, assimilation, and extension, the host organizations face different challenges and demand different types of leadership styles. For example, in the adoption phase, presenting a vision for the organization and articulating how the enterprise system might support that vision are critical in mobilizing the resources and getting stakeholders on board. In the implementation phase, on the other hand, it is primarily about plan execution, conflict resolution, and project management. In the assimilation phase, attention to details and promotion of innovation are both important to foster a continuous learning and improvement of system use. In the extension phase, both vision and execution may be needed in order to move the enterprise system beyond organizational boundaries. There are glaring gaps in the extant literature regarding the different phases of the ES lifecycle and the appropriate leadership styles needed in each of the phases.

In this study, we attempt to provide a comprehensive lifecycle model for enterprise systems and establish a framework to explore what type of leadership

style is most effective in which phase of the ES lifecycle. Drawing on leadership and IS literature, we analyze the effectiveness of the two most recognized leadership styles (transformational and transactional leadership) in the redefined four phases of ES lifecycle (adoption, implementation, assimilation and extension phase). The new lifecycle model and the leadership effectiveness framework can provide a new theoretical perspective for enterprise systems research and guidance to executives for managing ES projects in their firms.

The rest of the paper is organized as follows. We first present a literature review on leadership style and ES lifecycle. We then analyze organizational challenges in each phase of the ES lifecycle, and its demand for leadership styles. This analysis leads to the proposed leadership effectiveness framework for enterprise systems. Finally we provide a discussion on the implications of the proposed framework and present some concluding remarks of this study.

LITERATURE REVIEW

Leadership Styles

Leadership theory has developed significantly during the last century, from the earlier leader trait theory to the later leader behavior theory. The traditional trait-based leadership theory focuses on the personal characteristics of leaders, without considering the influence of their followers and contexts (Zaccaro, 2007; Conger et al., 1994; Yukl, 2006).

A paradigm shift occurred in the mid-1970 with new theories of leadership emerging under the labels of transformational and transactional leadership. Burns (1978) argued that transactional leadership occurs when one person takes the initiative in making contact with others for the purpose of an exchange of something valued, while transformational leadership is based on more than the compliance of

follower through shifting their beliefs and values. Bass (1985) adopted this classification in organizational research and divided senior leadership style into these two types. He argued that in organizations, "transactional leaders mostly consider how to marginally improve and maintain the quantity and quality of performance, how to substitute one goal for another, how to reduce resistance to particular actions, and how to implement decisions" (p.27), while, "transformational leaders attempt and succeed in raising colleagues, subordinates, followers, clients, or constituencies to a greater awareness about the issues of consequence" (p.17). It is important to note that in Bass's view, transformational and transactional leadership styles are not two ends of a spectrum but two separate dimensions of leadership, thus it is possible that a leader possess both transformational and transactional qualities at different times (Bass, 1985).

To provide an empirical basis for transformational/transactional leadership, Bass and Avolio (1995) developed the MLQ scale to measure transformational and transactional leadership qualities, and further refined the two leadership styles into sub-dimensions. The descriptions of these specific sub-dimensions are shown in Table 1.

Table 1. Descriptions of Leadership Style

Leadership Style	Sub-dimensions	Descriptions
Transformational Leadership	Idealized Influence	Provides vision and sense of mission, instills pride, gains respect and trust.
	Inspiration	Communicates high expectations, uses symbols to focus efforts, and expresses important purposes in simple ways.
	Intellectual Stimulation	Promotes intelligence, rationality, and careful problem solving.
	Individualized Consideration	Gives personal attention, treats each employee individually, coaches, advises.

Transactional leadership	Contingent Reward	Contracts exchange of rewards for effort, promises rewards for good performance, recognizes accomplishments.
	Management by Exception(active)	Watches and searches for deviations from rules and standards, takes corrective action.

In an empirical study, Bass and Avolio (1995) found a high correlation exists in the neighborhood of 0.7-0.8 between the sub-dimensions of transformational and

transactional leadership styles, further indicating that both sets of leadership styles could co-exist in the same individuals with different intensities. Thus we use the term mixed leadership style to describe a leader who is capable of exhibiting different leadership styles at different times in our study.

While there are other types of leadership style and classification schemes in the literature, the transformational-transactional dichotomy has been the dominant scheme in the organizational literature (Yukl, 2006). In this study, we adopt the classification and definition of Bass (1985) as the basic framework for analyzing the effectiveness of leadership styles in the enterprise system lifecycles.

Enterprise Systems Lifecycle

Enterprise systems are defined as commercial software that enables the integration of transactions-oriented data and business processes throughout an organization (Markus and Tanis, 2000). As integration software, enterprise systems represent a complete or near-complete re-architecting of an organization's portfolio of transactions-processing applications and business processes to achieve the integration of business processes, information systems, and information-along with corresponding changes in the supporting computing platform and value chain activities, and promised a seamless integration of all information flowing through an organization (Davenport, 1998; Markus and Tanis, 2000).

In today's business environment, enterprise systems usually cost millions of dollars to implement and several years for the host organizations to adapt and assimilate their functionalities and capabilities (Ross and Vitale, 2000; Hendricks et al., 2007). Therefore, enterprise systems are usually adopted and implemented in multiple phases with different tasks and challenges in each of the phases we call the lifecycle of the enterprise systems. However, there is no consensus in the literature regarding the exact nature and milestone of the phases in the lifecycle.

From a technological diffusion perspective, Kwon and Zmud (1987) divided information technology lifecycle into six phases: initiation, adoption, adaptation, acceptance, routinization and infusion. Later, Swanson and Ramiller (2004) combined the six phases into four phases-comprehension, adoption, implementation and assimilation, with the first two phases focusing on pre-implementation behaviors, and the last phase focusing on post-implementation behaviors.

In the context of enterprise systems, Markus and Tanis (2000) divided ES lifecycle into four different phases: charting, project, shake down, and onward & upward. Further, Ross and Vitale (2000) indicated that many firms executed or anticipated an extension of their enterprise systems into customer and supplier systems to gain increased agility, and they proposed an ERP lifecycle model with five phases: design, implementation, stabilization, continuous improvement and transformation.

Each of the above models offers a slightly different view on the lifecycle of enterprise systems, with different emphasis based on the authors' perspectives and contexts of analysis. For example, the Kwon and Zmud's (2000) model is detailed in the front (initiation and adoption) and at the end (routinization and infusion), while the Ross and Vitale's (2000) model focuses on the middle (design, implementation and stabilization). Interestingly, only Ross and Vitale (2000) had envisioned that

enterprise systems would eventually span across organizational boundaries into supply chains and networks, to make systems integration with the customers and suppliers a necessity in the lifecycle. However, their model misses the initial phase that includes the important organizational decisions and actions before the implementation officially starts (Markus and Tanis, 2000). Table 2 summarizes the key activities in each specific phase of the four models.

Table 2. Key activities in each specific phase of enterprise systems lifecycle

Kwon and Zmud (1987)	**Key Activities**
Initiation Phase	Active and/or passive scanning of organizational problems/ opportunities and IT solutions are undertaken; A match is found between an IT solution and its application in the organization.
Adoption Phase	Rational and political negotiations ensue to get organizational backing for implementation of the IT application; A decision is reached to invest resources necessary to accommodate the implementation effort.
Adaptation Phase	IT application is developed installed and maintained. Organizational procedures are revised and developed. Organizational members are trained both in the new procedures and in the IT application; IT application is available for use in the organization.
Acceptance phase	Organizational members are induced to commit to IT application usage; IT application is employed in organizational work.
Routinization phase	Usage of the IT application is encouraged as a normal activity; the organization's governance systems are adjusted to account for the IT application.
Infusion phase	Increased organizational effectiveness is obtained by using the IT applicationin; IT application is used within the organization to its fullest potential.
Markus and Tanis (2000)	**Key Activities**
Charting phase	Build a business case for enterprise systems, select a software package, identify a project manager, and approve a budget and schedule.
Project phase	Key activities include software configuration, system integration, testing, data conversion, training, and rollout.

Shake down phase	Key activities include bug fixing and rework, system performance tuning, retraining, staffing up to handle temporary inefficiencies.
Onward & upward phase.	Continuous business improvement, additional user skill building and post-implementation benefit assessment.
Ross and Vitale (2000)	**Key Activities**
Design phase	Decisions are made regarding the scope of process standardization, specifically whether processes would be standardized across the entire firm or only within certain subunits.
Implementation phase	Plan for implementation, deploy implementation teams, train users on the new system and, on new processes, and begin to go live.
Stabilization phase	Clean up data and parameters, provide additional training to new users, and work with vendors and consultants to resolve bugs in the software.
Continuous improvement phase `	Adding functionality through new modules, and generate significant operating benefits through the systems; engage in process redesign to implement new structures and roles to leverage the system.
Transformation phase	Focus more on combinations of products and services to address customer needs; change organizational boundaries and extend the firm's ERP into customer and supplier systems.
Swanson and Ramiller (2004)	**Key Activities**
Comprehension phase	Through the sense making efforts of its members, the firm engages the organizing vision in substantive terms and ponders the signals about its importance embedded in the broader community's reaction to it. As it learns more about the innovation, the firm develops an attitude or stance toward it and positions itself, in a basic way, as a prospective adopter or non-adopter.
Adoption phase	If adoption is entertained, a deeper consideration of the IT innovation follows in which the firm typically develops a supportive rationale, or business case. The organizing vision typically provides some general principles to draw on, but know-why demands attention to issues specific to the firm. Both the business value of the innovation and the challenge presented by the prospective change are likely to be weighed before the organization decides whether to proceed and commit its resources.

Implementation phase	The implementation process that follows then calls for a myriad of considerations, choices, and actions that will shape the transition. Know-when is accordingly a focus of the organization's attention. Know-how also comes to the fore as the firm navigates the details of what may be, and commonly is, a perilous venture. Bringing the innovation to productive life for its users is the immediate aim, with the wider goal being to advantageously reposition the firm in its larger environment.
Assimilation phase	Assimilation commences as the IT innovation begins to be absorbed into the work life of the firm and to demonstrate its usefulness. The organizing vision that inspired and motivated the innovation may then be largely forgotten. Alternatively, the innovation may be visited by persistent and disruptive problems that eventually discredit it in the perceptions of management and users, sometimes leading to its curtailment or eventual rejection. In such an event, the larger community discourse may now provide contrary rationales, particularly where the organization's own encounter with the innovation mirrors the problematic experiences of others.

Based on the extant literature, we argue that enterprise systems lifecycle is a continuous cycle-feedback process from initial adoption, specific implementation, to subsequent assimilation, and that a phase of system extension is essential given the globalization of the economy and global sourcing and marketing strategies of firms large or small. In this study we redefine a four-phase enterprise systems lifecycle model, as shown in Figure 1.

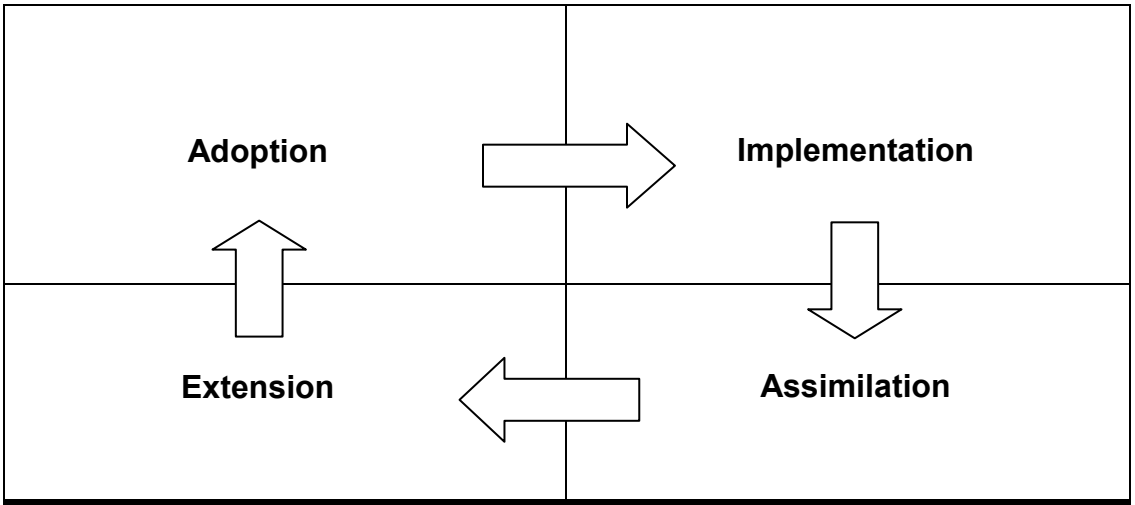

Figure 1. Enterprise Systems Lifecycle Model

The detailed descriptions of the activities in each of the four phases are presented in Table 3. To better understand our proposed lifecycle model, Figure 2 shows the comparison between our model and the previous models.

Table 3. Phases in Enterprise Systems Lifecycle in Current Study

Current Study	Key Activities
Adoption Phase	Evaluation of the competitive landscape and determination of the strategic need for an enterprise system. A vision is articulated and goals for the adoption are set. Resources are allocated and evaluation of alternative technologies and systems are conducted. Decisions are made about adopting particular systems and using particular vendors.
Implementation Phase	Implementation projects are established and appropriate human, financial and other resources are organized. Specific tasks, including business process reengineering, organizational structure adjustment, software configuration, system integration, testing, data conversion, system training and rollout, are carried out
Assimilation Phase	Enterprise systems are in daily use, diffused across organizational work processes and become routinized in organizational activities. Employees start to understand the inner workings of the systems and begin to develop innovative ways of using the system for new and unintended business activities.
Extension Phase	Enterprise systems are extended into supply chain and integrated with customer and supplier systems to develop new capabilities and competitive advantages in the networked economic environment.

Source	Phases in Enterprise System Lifecycle											
Current study	**Adoption**			**Implementation**				**Assimilation**			**Extension**	
Swanson and Ramiller (2004)	Comprehension		Adoption	Implementation				Assimilation			Not defined	
Ross and Vitale (2000)	Not Defined			Design	Implementation		Stabilization	Continuous Improvement			Transformation	
Markus and Tanis (2000)	Charting			Project				Shake Down		Onward& Upward	Not Defined	
Kwon and Zmud (1987)	Initiation	Adoption		Adaptation		Acceptance		Routinization		Infusion	Not Defined	

Figure 2. Enterprise Systems Lifecycle Model Comparison

The Missing Link in the Literature

While there is a rich body of literature regarding the impact of leadership style on organizational/individual performance (Dvir et al., 2002; Piccolo et al., 2006; Gong et al., 2009; Wu et al., 2010), research on the relationship between leadership style and ES lifecycle is virtually non-existent. In the IS research, top management championship has been consistently identified as a critical factor in IS success, most of the extant studies, however, focus on top management support (Guimaraes et al., 1992; Premkumar and Ramamurtby, 1995; Rai and Patnayakuni, 1996; Rai and Bajwa, 1997; Soliman, 2004; Lam, 2005; Law and Nagai, 2007), top management participation (Jarvenpaa and Ives, 1991; Chatterjee, 2002; Somers and Nelson, 2004) and top management commitment (Umble et al., 2003; Lewis et al., 2003), little is known about what type of top management leadership style is most effective in which phase of the lifecycle, and what exact leadership behaviors top management should exhibit during the different phases in information systems lifecycles.

On the other hand, the concept that leadership style does have an impact on the success of enterprise systems has emerged in the literature. For example, Neufeld et al. (2007), examined the impact of charismatic leadership on IT adoption, and Ke and Wei (2008) emphasized the significant role of transformational leadership in ERP implementation success. What have been missing are a systematic examination of the relationship between leadership style and ES lifecycle model and an in-depth understanding of this relationship.

EFFECTIVE LEADERSHIP STYLES IN ES LIFECYCLE

In this study, we argue that each of the phases in the ES lifecycle model faces different challenges, and one specific leadership style may not fit well with all

of the phases with varying demand and challenges. And we propose the following research question: which leadership style is more effective in which phase of the ES lifecycle and why?

To substantiate our argument, we map the leadership styles needed in each phase and create a leadership-lifecycle map, as shown in Figure 3.

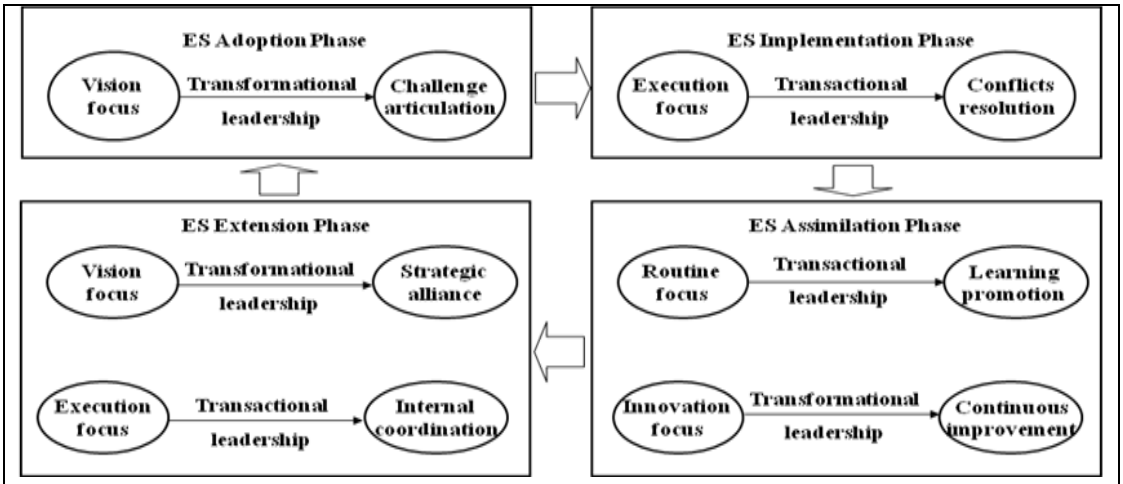

Figure 3 Effectiveness of Leadership Style in Enterprise Systems Lifecycle

We submit that each of the lifecycle phases demands a different type of leadership style or a combination of styles. In the adoption phase, a top executive needs to set a clear vision and inspire other managers to embrace change, thus transformational leadership with strong vision is likely to be more effective.

On the other hand, in the implementation phase, a top executive needs to manage and control the implementation process and resolve conflicts, thus a transactional leadership style with strong execution ability is likely to be more effective. In the assimilation phase, a top executive needs to foster a culture of continuous learning and improvement of the system and inspire employees to reach ever higher goals, thus a mixed leadership style focusing on both routine and innovative system use may be the most effective. In the extension phase, a top

executive needs to make strategic alliance with business partners, negotiate cooperative frameworks, and push for internal business process changes in order to integrate with external partners, and once again, a mixed leadership style that is strong on both vision and execution seems to be the most critical for the success of this phase. In the following section, we elaborate the main ideas in this leadership effectiveness map and articulate our research propositions based on this map and the literature.

Transformational Leadership and ES Adoption

In the adoption phase, an organization must first make the decision whether or not to use enterprise systems according to its internal operations and external environments. Research shows that adoption decision usually occurs at organizational upper echelons level without much lower-level participation (Meyer and Goes, 1988; Jasperson et al., 2005). As the most authoritative decision makers, successful adoption of new high impact technology such as enterprise systems requires top executives to focus on the organizational vision, be sensitive to internal and external environments, and make timely decisions regarding the necessity of adopting new technologies and systems (Tong and Yap, 1995; Elenkov et al., 2005; Damanpour and Schneider, 2006).

As highly integrative systems, adoption of enterprise systems will inevitably require changes to the organizational structure, business processes, and organizational culture. A top leader must be able to overcome the cognitive inertia of the top leadership team and other key members of management structure of an organization (Gersick, 1991; Wiersema and Bantel, 1992; Damanpour and Schneider, 2006). This requires the champion of the new system, usually a top executive, to be able to articulate a clear vision of the organization and the objectives of adopting the system and to communicate this vision and objectives to

the entire organization in an effective manner (Elenkov et al., 2005; Kumar et al., 2002).

Once the decision to adopt the new system is made, the organization must select the most appropriate systems (software and hardware) based on its business strategic goals and operational reality, and allocate resources for the subsequent acquisition and implementation (Cooper and Zmud, 1990; Markus and Tanis, 2000). This requires the top executives to be decisive, insightful, and knowledgeable, and provide strong leadership that inspires other managers and employees alike.

Another challenge in the adoption phase arises from power re-distribution among the different units and constituents as a result of introducing new systems, which may cause political conflicts within the ranks of management (Kwon and Zmud, 1987; Cooper and Zmud, 1990; Markus and Tanis, 2000). This requires the top executives to use personal persuasion to convince individuals, and inspire forward looking culture in the management team (Colbert and Barrick, 2008; Damanpour and Schneider, 2006; Law and Ngai, 2007).

These discussions are summarized in Table 4. As it is shown, the key characteristics of leadership style required for the successful adoption of enterprise systems are largely exhibited in transformational leaders. Thus, we propose:

Proposition 1 (P1): Transformational leadership style is likely to be more effective in ES adoption phase.

Table 4. Match between Leadership Style and Enterprise Systems Adoption

Challenges in Adoption Phase	Desirable Leadership Characteristics	Transformational Leadership	Transactional Leadership
Initiating the discussion about adoption in the upper echelon of an organization	Strategic vision, sensitivity to environment, long term orientation	√	
Making the strategic decision to adopt new	Articulate a clear vision and objectives,	√	

systems and technology	communicate an inspiring outcome		
Selecting systems and vendors, investing necessary resources	Decisiveness, insightful and knowledgeable	√	
Managing political conflicts within management ranks	Idealized influence and personal consideration	√	

Transactional Leadership and ES Implementation

In the implementation phase, an organization needs to focus on specific tasks of project management, software and hardware configuration, system integration, data conversion, and user training in order to improve the chance that the system will go live successfully on schedule and within budget (Markus and Tanis, 2000; Malbert et al., 2003).

To ensure a smooth and successful implementation process, the organization needs to establish project teams and develop a detailed implementation plan (Ross and Vitale, 2000). This requires the top executives to pay attention to details, be on top of the implementation process, and to take corrective actions before things get out of control (Wagle, 1998; Mandala and Gunasekaran, 2003).

ES implementation is usually associated with significant business process reengineering, which triggers diverse groups of overt and covert opponents within the organization (Al-Mudimigh et al., 2001; Malbert et al., 2003). This requires the top executives to set up appropriate evaluation mechanisms, carefully balance the conflicting interests of the groups, and take decisive actions to ensure that the necessary changes are made in both business processes and personnel (Holland, 1999; Nah et al., 2001; Umble et al., 2003; Podsakoff et al., 2006).

ES implementation also requires the mutual adaptation between the system and the organization (Soh et al., 2000; Hong and Kim, 2002). To accommodate the

new system and processes and resolve any misfit that might arise, the top executives often have to establish new organizational structures, set up new policies, and clarify individuals' new roles and responsibilities (Saunders and Jones, 1992; Podsakoff et al., 2006).

Another critical challenge in the implementation phase is organizational learning and knowledge transfer (Marabelli and Newell, 2009). To ensure that the system can be used effectively after the implementation, users need to be trained for the new business processes and the new system applications (Umble et al., 2006). This requires the top executives to orchestrate a system of policies and reward mechanisms to foster a learning culture and allocate resources to support the training (Podsakoff et al., 2006; Marabelli and Newell, 2009).

These discussions are summarized in Table 5. As it is shown, key characteristics of the leadership style required for successful implementation of enterprise systems are largely exhibited in transactional leaders. Thus, we propose:

Proposition 2 (P2): Transactional leadership style is likely to be more effective in ES implementation phase.

Table 5. Match between Leadership Style and Enterprise Systems Implementation

Challenges in Implementation Phase	Desirable Leadership Characteristics	Transformational Leadership	Transactional Leadership
Developing implementation plan and establishing project team	Monitoring and control, attention to details		√
Managing the redesigning and reengineering business process	Monitoring and control, decisive		√
Resolving misfits between ES and organization	Coordination, execution		√

Promoting organizational learning and knowledge transfer	Incentives, rewards		√

Mixed Leadership and ES Assimilation

In the assimilation phase of an enterprise system, most of the radical customizations and business process reengineering are already complete, and the system is considered officially "rolled out" for routine usage (Luo and Strong, 2004). However, having the system up and running does not automatically produce the expected benefits to both business operations and financial performance. Organizations are faced with a new set of challenges in the assimilation phase.

Continuous learning by individuals has been identified as one of the important activities in enterprise systems assimilation (Kumar et al., 2002; Liu et al., 2010a). The top executives can motivate individuals by establishing rewards systems based on performance evaluation, thus foster a learning culture and stimulate individuals to think innovatively about how the system could be used to improve business operations continuously (Podsakoff et al., 2006; Liu et al., 2010a).

ES assimilation also requires users to develop a deeper understanding of the systems' capabilities and potentials. However, users are usually limited by their access to the system and job specifications (Liu et al., 2011). This requires the top executives to reassess the existing job specifications and broaden the responsibilities for key users in order to motivate them to acquire broader skills and develop a deeper understanding of the systems and their capabilities (Liu et al., 2011; Kumar et al., 2002).

Another important aspect of ES assimilation is to have a large number of power users and VIP users in an organization who not only can use the system effectively for routine business activities but also think innovatively for new

possibilities with the current system (Liu et al., 2011; Kumar et al., 2002). This requires the top executives to offer the vision to users about the strategic directions of the organization and inspire the users to think innovatively about how the system might enable the business to accomplish its goals (Elenkov et al., 2005; Jasperson et al., 2005).

The above discussions are summarized in Table 6. It is clear that no single style of leadership will be able to meet the challenges of the assimilation phase. Instead, the characteristics of both transactional and transformational leadership styles are needed. Thus, we propose:

Proposition 3 (P3): A mixed leadership style is likely to be more effective in ES assimilation phase.

Table 6. Match between Leadership Style and Enterprise Systems Assimilation

Challenges in Assimilation Phase	Desirable Leadership Characteristics	Transformational Leadership	Transactional Leadership
Promoting learning and continuous improvement of enterprise systems	Incentives, rewards		√
Fostering innovative use of systems and taking on new challenges with the existing systems	Vision, articulation, inspiration	√	

Mixed Leadership and ES Extension

With the globalization of business environment where global sourcing for material and components and global distribution of products and services are becoming norm than exception, businesses large and small cannot survive without highly efficient supply chain or supply networks. Organizations are increasingly linking their ES with the ones of their business partners to achieve efficiency and growth, and the era of ES extension has arrived (Rai et al., 2006).

In the extension phase, the top executives are faced with two unique and challenging tasks – selling a vision to the management teams of the partner firms, and coordinate resources and tasks to make the extension happen. The top executive who champions the extension initiative not only has to convince the management team of his or her own firm but also the management teams of the partner firms the benefits and necessity to link-up the systems and share critical production, financial, logistics, and market data.

Similarly to the adoption phase, the extension phase requires the top executives to clearly articulate necessity vision for the system extension to the partner in the supply chain or network at organizational upper echelon in order to obtain the support from these top executives (Damanpour and Schneider, 2006; Elenkov et al., 2005). The qualities of a transformation leader are required to accomplish this task.

In extension phase, resource and task coordination across organizational boundaries become critical. The boundary of enterprise systems are extended from intra-organization to inter-organization, and multiple stakeholder groups are usually involved (Lam, 2005). Thus one of the key challenges for top executives is to manage inter-firm relationship and coordinate inter-firm activities at the top management level, which requires strong inter-personal skills and negotiation skills (Grover, 1993), a typical characteristic of transactional leaders.

ES extension also requires changes to internal business processes to accomplish process level coupling between partners (Ash and Burn, 2003), and may expose internal weaknesses to external customers and partners. This requires the top executives to be able to overcome the fear from managers and employees, resolve conflict of interests among the different groups, and forge ahead with the changes necessary (Grover, 1993; Lam, 2005).

These discussions are summarized in Table 7. It is clear that no single style of leadership will be able to meet the challenges of the extension phase. Instead, the characteristics of both transactional and transformational leadership styles are needed. Thus, we propose:

Proposition 4 (P4): A mixed leadership style is likely to be more effective in ES extension phase.

Table 7. Match between Leadership Style and Enterprise Systems Extension

Challenges in Extension Phase	Desirable Leadership Characteristics	Transformational Leadership	Transactional Leadership
Championing extension in organizational upper echelon and obtaining support from other top executives in the focal firm	Strategic vision, articulation, communication	√	
Acquiring and securing the support of top management teams in the partner firms	Strategic vision, charisma, communication	√	
Coordinating activities in multiple groups with different stakeholders	Negotiation, inter-personal skills		√
Redistributing power and responsibilities among groups with conflicting interests	Coordination, inter-personal skills, execution		√

CONCLUDING REMARKS

We integrated the extant literature on enterprise systems lifecycle and proposed a new four-phase lifecycle model that consists of adoption, implementation, assimilation, and extension. We then analyzed the characteristics of two most recognized leadership styles-transformational and transactional leadership and mapped the most appropriate style for each phase in the lifecycle model. This map can serve as a framework for understanding the relationship between the leadership styles and the phases of enterprise systems lifecycle and for empirical

validations of the leadership effectiveness theory for enterprise systems behind the framework. Although the propositions developed in this paper have not been empirically tested and validated, this study fills a significant theoretical gap in the literature related to enterprise systems and leadership, thus making important theoretical and practical contributions.

From a theoretical perspective, our study makes at least two contributions. First, we articulated a new lifecycle model for enterprise systems that has clearly delineated boundaries between each phase and included the inter-organizational integration phase that is critical to most organizations in today's networked and global business environment. Second, we refined the discussion on the critical role of top management in enterprise systems by demonstrating that different leadership styles are likely to more effective in different phases of the lifecycle, extending traditional top management championship theory in the IS literature.

In terms of practical contributions, this study lays out a map for managing enterprise systems throughout the entire lifecycle. It provides insights for the board of directors and top executives in terms who to put in charge and what type of leaders to look for when they are considering adopting new systems or contemplating integration with their business partners in their supply chain or supply network. The framework developed in this study can also serve as a mental map for executives to think through a proposed new enterprise system before making commitments and to anticipate the challenges in terms of leadership in addition to the well-known technical, financial, and organizational factors.

The proposed leadership effectiveness theory and framework can be tested and validated or refuted in a number of ways. One is to conduct multiple comparative case studies in which firms at different phases of enterprise system cycle are recruited, examined, and contrasted. Ideally, for each phase, at least three

contrasting cases should be identified in which a transformational leader, a transformational leader, or a mixed style leader is or was in charge of the enterprise systems initiative and the effectiveness of the specific leadership style in the specific phase can be evaluated and compared. Given the lack of theory and empirical studies in this subject, we anticipate that the case studies are likely to yield a rich set of observation and supporting evidence for the general ideas expressed in the proposed theory and framework.

Another way is to directly test the propositions by conducting survey based quantitative analyses using the common tools such as regression or structural equation modeling (SEM). Once again, studies should be based on different phases, and use leadership style as one main independent construct, and the success of a particular life-cycle phase as the dependent construct, with consideration of other organizational and technical factors, such as task-technology fit, IT-business strategic alignment, environment uncertainty, and organizational culture. Critical control variables must be considered as well in order to explicate the true effect of leadership style, such as size and industry.

In addition to testing and validating the proposed theoretical framework, this study also opens up a number of opportunities for future research that extends the current theory and framework. For one, other critical organizational and environmental factors can be added into the framework to further explore the mechanism through which transformational, transactional and mixed leadership styles impact ES success in each specific phase. Given the critical role of leaders in shaping organizational culture, another interesting study would be to investigate the role of organizational culture in the effectiveness of leadership styles in the ES success in each phase. Last but not the least, future research could also focus on what this study has left out-the relationship between the ES success in each of the

phases and firm performance-the ultimate goal of using enterprise systems in the organizations.

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