A Conceptual Model for Studying the Influence of Charismatic Leadership on ERP Implementation Lifecycle

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Abstract

In the context of ERP implementation, leadership is consistently found to be the most important factor leading to implementation success. However, most of the studies focus on leader’s strength and authority while ignoring the important role leader’s personal charisma plays in the implementation process. In addition, there is a lack of study on the underlying process of how leadership acts during the lifecycle of ERP implementation. In this paper we first introduce charismatic leadership from five dimensions, and divide the ERP implementation lifecycle into three phases: first adoption, secondary adoption and assimilation. We then propose a conceptual model for studying the influence of the five dimensions on each phase of the ERP implementation and analyze which of the dimensions plays a greater role in each phase. We conclude the paper by providing some suggestions on future research directions.

1. Introduction

With the uncertainty of market environment and variety of customer requirements, more and more organizations choose to implement ERP (Enterprise Resource Planning) system to improve their competitive advantage, the number of ERP implementations has been growing at a significant rate worldwide in the last three decades. ERP systems have been defined as comprehensive, packaged software solutions that integrate and automate many of the business practices associated with the operations or production and distribution aspects of a company [13]. It has been considered to be “the price of entry for running a business.” [29] It promises a seamless integration of all information flowing through an organization and helps organizations realize the real-time information transmission/processing and increases organizational agility [34]. However, this large scale of integration also makes ERP implementation a highly complex and inter-dependent task and imposes great challenges on the adopting organizations [37]. One study estimates that although between 1.5% and 6.0% of firms’ annual revenues are spent on ERP implementation [31], a significant proportion of the ERP implementation projects do not succeed [23,30].

ERP implementation is usually associated with business process reengineering that often cuts across functional and organizational boundaries, the implementation process may cause significant modifications to an organization’s structure, goals, technologies, and/or work tasks. Thus ERP implementation process has always been considered as a form of organizational change, in which organizations are usually faced with environment uncertainties [26, 38].

In order to manage environment uncertainties and increase the success rate of ERP implementation, many studies have attempted to identify the critical success factors for ERP implementation. According to the extant literature, the factors that influence ERP implementation success can be classified into three categories: human/organizational factors, technical factors, and economic factors [35]. As one of the human factors, leadership is consistently identified as the most important factor affecting ERP implementation [8,42,46]. Sarker and Lee find leadership to be one of three key social enablers for ERP implementation success [35]. Zhong and Min find that leader’s support and participation are critical enabling factors and are indispensable to the achievement of success in ERP implementation [47]. Leader’s commitment is also considered as a necessary condition for success in all phases of an ERP implementation [28].

Research on leadership has developed significantly during the past century, from earlier leader trait theory to later leader behavior theory. Leadership is about the leader’s ability to mobilize followers towards a particular goal. A review of the extant literature reveals that “there are as many definitions of leadership as there are persons who have
attempted to define the concept.”[5] Recently research on charismatic leadership has become popular in organizational research. According to the leadership research, leader charisma plays an important role in organizations under environmental uncertainties and can help organizations successfully adapt to new environments [2].

Considering ERP implementation process is a form of organizational change, leader charisma may play a significant role in the entire ERP implementation lifecycle. However, few researchers have studied the influence of charismatic leadership on ERP implementation lifecycle [25]. Charismatic leadership is a broad concept and comprises multiple dimensions. It is important to identify the influence of the specific charisma leadership dimension on each stage of the ERP implementation lifecycle in order to provide prescriptive insights to management practices and improve the success of ERP implementation.

Drawing from the literature, this paper analyzes the characteristics of the phases in ERP implementation and proposes a conceptual model to identify which kind of charismatic leadership plays an important role in which phase of the ERP implementation lifecycle. This paper is organized as follows. First, we review current literature on charismatic leadership and the ERP implementation lifecycle. Based on the literature, we analyze charismatic leadership from five dimensions: environmental sensitivity, dynamic leadership, exemplary leadership, personal leadership and leader expectations, and divide the ERP implementation lifecycle into three phases: first adoption phase, secondary adoption phase, and assimilation phase. Then we propose a conceptual model and develop six hypotheses about the influence of specific charismatic leadership dimension on each of the three phases of ERP implementation lifecycle. Finally we present some preliminary conclusions and suggestions on future research directions.

2. Literature Review

2.1. Charismatic Leadership Theory

Charismatic leadership theory is a popular and much researched approach to understanding effective leadership [9,21,36]. Over the years charismatic leadership theory has been expanded by a number of researchers who produced complementary, yet somewhat different conceptualizations of charismatic leadership. Each of these theoretical offerings links a leader's influence on group members or followers to important positive outcomes such as group performance, organizational performance, improved follower motivation, satisfaction, and effort [27,40,41,43].

The concept of charisma comes from a Greek word meaning gift and was initially used to describe the characteristics of religious figures and political and military leaders by Weber [44]. Nowadays, the term charisma is often used in political science and sociology to describe a subset of leaders who "by the force of their personal abilities are capable of having profound and extraordinary effects on employees" [16].

Willner concluded from in-depth case studies that charismatic leadership was neither personality-based nor contextually-determined, but rather the phenomenon was largely relational and perceptual [45]. House postulated a set of behavioral dimensions that distinguished the employees of charismatic leaders from others. These characteristics include an unquestioning acceptance of the leader by employees, employees' trust in the leader's beliefs, affection for the leader, willing obedience to the leader, emotional involvement of employees in the mission, heightened goals of the employees, and feelings on the part of the employees that they are able to accomplish or contribute to the leader's mission [19].

It is clear from the literature that charisma is not found solely in the leader and his/her personal qualities but rather is found in the interplay between the leader's attributes and the needs, beliefs, values, and perceptions of his/her employees [19]. Therefore, in this paper we adopt the definition of House and explain charismatic leadership as “employees’ perception of leader’s ability to influence their belief, value, behavior and performance greatly and widely through his behavior, belief and personality”[19, 20].

One of the earliest models for studying the behaviors of charismatic leaders was developed by Conger and Kanungo. Their model focuses on six behavioral dimensions to measure charismatic leadership: strategic visioning and communication behavior, sensitivity to the environment, unconventional behavior, personal risk, sensitivity to organizational members' needs, and deviation from the status quo [11].

Agle refined a large instrument proposed by Podsakoff and MacKenzie and proposed five dimensions to measure charismatic leadership: dynamic leadership, exemplary leadership, personal leadership, leader expectations, and leader risk [1]. The measurement refined by Agle was used to study the relationship between charismatic leadership and organization performance under environmental uncertainties with good results [2].

From the perspective that ERP implementation is a process of organizational change, we measure
charismatic leadership mainly according to Agle’s refined measurement. However, we add the dimension of environmental sensitivity based on Conger’s measurement. According to Agle [1], leader risk is related with the leader’s potential personal loss and may have an insignificant role in the context of ERP implementation. As a result, the dimension of leader risk is not considered in this paper.

In the end, we decide to investigate charismatic leadership from five dimensions: environmental sensitivity, dynamic leadership, exemplary leadership, personal leadership and leader expectations. The description of the five dimensions are showed in Table 1, based on [1,11,40].

<table>
<thead>
<tr>
<th>Charismatic Leadership</th>
<th>Five Dimensions</th>
<th>Descriptions</th>
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<tbody>
<tr>
<td>Environmental Sensitivity</td>
<td>Leader’s ability to make timely decision to apply to organizational environmental change</td>
<td></td>
</tr>
<tr>
<td>Dynamic Leadership</td>
<td>Leader’s ability to communicate an exciting vision and paint an exciting picture of the future of the organization</td>
<td></td>
</tr>
<tr>
<td>Exemplary Leadership</td>
<td>Leader’s ability to set a good example to his employees through participating in organizational activities</td>
<td></td>
</tr>
<tr>
<td>Personal Leadership</td>
<td>Leader’s ability to encourage his employees and improve their self-confidence</td>
<td></td>
</tr>
<tr>
<td>Leader Expectation</td>
<td>Leader’s ability to create lofty expectations for them and empower them</td>
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2.2. ERP Implementation Lifecycle

The ERP literature suggests that researchers have different understandings of ERP implementation. Earlier researchers see ERP implementation as a static project and judged implementation success according to its initial performance, such as whether the implementation is completed on time and within budget. However, this view ignores the fact that ERP implementation is a continuing improvement process which consists of an initial ERP implementation plus a series of post-implementation projects. The success of ERP implementation should be judged by its initial performance as well as its performance in the post-implementation phases [3, 33].

Cooper and colleagues proposed a six-stage model to describe technology implementation lifecycle in organizations, which has been widely used in IS research. Based on the six-stage model, the whole lifecycle of ERP implementation can be divided into six stages: initiation, adoption, adaptation, acceptance, routinization, and infusion. At the initiation stage, a match is found between an ERP system and its application in the organization. At the adoption stage, a decision is reached to invest resources to accommodate ERP implementation effort. At the adaptation stage, ERP system is developed, installed and maintained, procedures are developed and revised, and members are trained both in the new procedures and in the ERP system. At the acceptance stage, organizational members are induced to commit to the ERP system's usage. At the routinization stage, usage of ERP system is encouraged as a normal activity. At the infusion stage, increased organizational effectiveness is obtained by using ERP system in a more comprehensive and integrated manner to support higher level aspects of work [12].

The six-stage model is useful for understanding the various phases of ERP implementation, including the factors and events that influence them. Gallivan integrated the six-stage implementation model along with some constructs from traditional individual adoption frameworks to forge a new framework to understand authority-based contingent adoption of IT innovations [17]. Based on Gallivan’s research, the whole ERP implementation lifecycle can be divided into three phases: ERP primary adoption, ERP secondary adoption and ERP assimilation. ERP primary adoption occurs at authority level, when leaders make the decision to implement ERP system and begin to initiate ERP implementation in the organization. This phase corresponds to the ERP initiation stage. ERP secondary adoption occurs at individual level, when employees accept ERP system voluntarily and begin to use it. This phase corresponds to the adoption, adaptation, and acceptance stages. ERP assimilation occurs at organizational level, when the ERP system diffuses across the organizational work processes and becomes routinized in the activities of those processes. This phase corresponds to the
routinization and infusion stages. Gallivan pointed out that most of the researches have focused on the ERP primary adoption but neglected the ERP secondary adoption and the ERP assimilation [17].

In this paper, we divide ERP implementation lifecycle according to Gallivan’s framework and focus on the influence of charismatic leadership on each of the three phases. The ERP implementation lifecycle in terms of the three phases is presented in Table 2.

<table>
<thead>
<tr>
<th>ERP Implementation Lifecycle</th>
<th>Phase Descriptions</th>
</tr>
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<tbody>
<tr>
<td>Phase 1: ERP Primary Adoption</td>
<td>Leaders make the decision to implement ERP system and begin to initiate ERP implementation in the organization.</td>
</tr>
<tr>
<td>Phase 2: ERP Secondary Adoption</td>
<td>Employees accept ERP system voluntarily and begin to use ERP system.</td>
</tr>
<tr>
<td>Phase 3: ERP Assimilation</td>
<td>ERP system diffuses across the organizational work processes and becomes routinized in the activities of those processes.</td>
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3. Conceptual Model

Based on current literature review, we measure charismatic leadership from five specific dimensions and divide ERP implementation into three phases. In order to identify which specific leadership dimension plays a great role in which phases, we analyze the characteristics of each phase in detail and develop six hypotheses. The conceptual model and corresponding hypotheses are shown in figure 1.

3.1. The Influence of Charismatic Leadership on ERP Primary Adoption

Organizations face new challenges with its development such as size expansion, structure adjustment, and market competition. As advanced software, an ERP system integrates multiple functions and helps improve management decision making, upgrade product quality, and optimize business process. However, not all the organizations need to implement ERP systems. Organizations should make the decision according to its unique operational and competitive conditions. The decision to implement ERP is made according to organizational environments...
both inside and outside. Inside environment is about the increasing business activities and complicated business processes, and outside environment deals with organization’s suppliers, customers, and competitors. If traditional business processes cannot meet the increasing business demand, and customers have higher expectations on order response time, organizations usually consider an organizational transformation through ERP implementation.

According to charismatic leadership research, environmental sensitivity is the leader’s ability to make timely decision to apply to organizational environmental change [11]. ERP primary adoption occurs at authority level [17]. As the most authoritative administrator, the leader needs to make strategic decision in time. If the leader is sensitive to both the inside and outside environment and determines that the traditional business processes cannot satisfy current market requirements, he or she is more likely to make the decision of adopting ERP system to improve organizational performance. Thus, we argue that:

**H1: A leader’s environmental sensitivity is significantly related to the decision of ERP primary adoption.**

### 3.2. The Influence of Charismatic Leadership on ERP Secondary Adoption

ERP secondary adoption occurs at individual level [17]. After the leader has made the decision to implement ERP system, he or she should promote ERP within the organization to make employees accept the ERP system voluntarily. ERP implementation is always associated with revolution and innovation because of the complexity of the system. So that it is important for the leader to express his/her beliefs to each employee and set up clear strategy and goals about ERP at the ERP secondary adoption phase. The leader needs to identify the organizational status and point out the necessity for implementing the ERP system. Meanwhile, he or she should also illuminate the effects the ERP system will bring to the organization [42].

According to charismatic leadership research, dynamic leadership is the leader’s ability to communicate an exciting vision and paint an exciting picture of the future of the organization [11]. If the leader has the ability to set up clear strategy and goals about ERP implementation and points out the exciting effects the ERP system will bring to the organization, employees’ perceived usefulness of ERP system may increase. Based on TAM (Technology Acceptance Model), employees’ perceived usefulness of ERP system can positively improve their ERP adoption intention [14], thus employees are more likely to adopt ERP system voluntarily. Following this line of logic, we argue that:

**H2: A leader’s dynamic leadership is significantly related to the level of ERP secondary adoption.**

After the leader has made the decision of ERP implementation and communicated the strategic vision to the employees, an organization begins to develop, install and maintain an ERP system and employees are trained both for the new procedures and the ERP system [12]. As a form of organization change, ERP implementation is usually associated with business process reengineering in which traditional business process is optimized and revised. Since employees have adapted to their traditional business process and formed a fixed schema, they would not like to think outside the fixed schema and accept the new business processes; this is a kind of cognitive inertia. Current literature suggests that cognitive inertia has enormous effects on employees and organizations, which may block the ERP secondary adoption [2, 18].

According to charismatic leadership research, leader expectation is a leader’s ability to empower employees and create lofty expectations for them [11]. It may help organizations overcome cognitive inertia. Charismatic leaders empowers their employees and that this empowerment provides greater motivation to employees, which can engage employees’ self-efficacy [10]. Studies also found that the combination of high expectations and displaying of confidence in employees enhances employees’ specific task relevant efficacy expectations [39]. If employees have higher self-efficacy and a positive expectation about the effects of ERP implementation, they are more likely to cooperate with implementation consultants and adopt the system voluntarily. Thus we hypothesize that:

**H3: A leader’s expectation is significantly related to the level of ERP secondary adoption.**

Since ERP secondary adoption is at individual level, it is the employee who uses the ERP system in daily work. So that it is important to understand employees’ attitude towards the ERP system and provide enough direction and technological support to them. Current literature suggests that leader’s participation plays an important role in fostering individuals’ ERP adoption [35]. As a form of organization change, ERP implementation changes traditional organizational structures as well as the working activities attributed to each employee, individual’s tasks and responsibilities will be redistributed. This process may also affect individuals’ potential benefits. In order to protect their benefits,
employees normally attempt to maintain the status quo. This is often referred to as a kind of motivational inertia. Current literature suggests that motivational inertia has enormous effects on employees and organizations, which may impact ERP secondary adoption [2,18].

According to charismatic leadership research, exemplary leadership is a leader’s ability to set a good example to his employees through participating in organizational activities [11]. It may help organizations overcome motivational inertia. Charismatic leaders are trusted and respected by employees and the leader’s behaviors and words can influence employees greatly [10]. If the leader can participate in organizational activities and share information with employees, he can find out the negative attitude towards the ERP system in time and provide enough support to them both technologically and mentally, which is beneficial to reduce employees’ resistance towards ERP system. By participating in ERP implementation, the leader can also coordinate potential conflicts among individuals arising from the distribution of tasks. Through popularity among employees, charismatic leaders can motivate their employees to work towards the benefit of the collective, as opposed to their individual desires [20]. This is helpful to reduce conflicts within organization. Current literature suggests that the reduction of resistance and conflicts plays an important role in fostering individuals’ ERP adoption [15]. Thus, we hypothesize that:

H4: A leader’s exemplary leadership is significantly related to the level of ERP secondary adoption.

3.3. The Influence of Charismatic Leadership on ERP Assimilation

ERP implementation is a continuing improvement process; potential business value of IT applications cannot be fully realized until they are extensively assimilated in an organization [3]. While initial acceptance of ERP is an important first step toward ERP success, long-term viability of ERP and its eventual success depend on its continued use rather beyond the initial phase. Success can be claimed only when ERP assimilation is ultimately achieved by the organization [22,25].

After the initial ERP implementation, employees begin to use the ERP system to deal with daily work. Potential benefits of the ERP system can be realized only when employees have mastered main functions of ERP system and are able to use the system to deal with the business processes in proper manner. Although employees have formed positive attitude towards ERP system at the secondary adoption phase, ERP routinization and infusion at the assimilation phase may also influence their attitude towards ERP system. Self-perception theory suggests that individuals continually adjust their perceptions as they acquire new information about the focal behavior and the adjusted perceptions then provide the basis for subsequent behaviors [6]. If they manage daily business process in a wrong way, the ERP system may not help improve their work efficacy, and worse, the ERP system may interfere with their daily work and decrease work efficacy [24]. Infrequent, inappropriate, and ineffective long-term use of ERP systems often contributes to corporate failures. According to cognitive dissonance theory, users may experience cognitive dissonance or psychological tension if their pre-acceptance usefulness perceptions are disconfirmed during actual use [7]. In that case, employees are easy to get frustrated with ERP systems and their self-confidence will decrease, which is not beneficial for ERP assimilation.

According to charismatic leadership research, personal leadership is the leader’s ability to encourage his employees and improve their self-confidence [11]. Charismatic leaders care about their employees and communicate with them. By participating in ERP implementation and communicating frequently with employees, leaders can identify the misusing problems of the ERP system and initiate timely measures. They can encourage employees to feel confident about themselves and help them solve the problems. Based on social cognitive theory, increase of self-confidence can help reduce or eliminate negative attitude towards ERP system [4]. If employees are more confident about themselves and have positive attitude towards ERP system, they will not easily get frustrated. In that case, the ERP system is more easily diffused across the organizational work processes and becomes routinized in the activities of those processes. Thus, we hypothesize that:

H5: A leader’s personal leadership is significantly related to the level of ERP assimilation.

At the same time, if the leader is respected and trusted by employees, employees are more willing to follow the leader’s direction and work towards the organizational vision of ERP implementation. In order to realize organizational vision of performance improvement, they would spend more time to learn the ERP system to deal with daily work in correct ways. This may also help organization assimilate ERP system. Thus we hypothesize that:

H6: A leader’s exemplary leadership is significantly related to the level of ERP assimilation.
4. Research Method and Data

Considering the significant differences among the three phases of the ERP implementation lifecycle model, the next step of this research will be conducted via three separate studies. We will use a combination of survey and interview methodology to collect data for each study. Three questionnaires will be developed for each study. Data collection will be conducted in cooperation with ERP implementor and vendors to collect corresponding sample data according to the research objective in each study.

In Study 1, hypothesis H1—the influence of leader’s environmental sensitivity on ERP primary adoption—will be tested. Since ERP primary adoption occurs at the authority level, we will use interview or survey methodology to investigate the leader’s acceptance intention of ERP systems. Charismatic leadership can be measured by employees’ perception of leader’s ability, and Conger’s scale to investigate employees’ perceived leader’s environmental sensitivity [1] can be used.

In Study 2, hypotheses H2, H3 and H4—the influence of leader’s dynamic leadership, leader expectation and exemplary leadership on ERP secondary adoption—will be tested. ERP secondary adoption occurs at individual level, and we will investigate employees’ acceptance of ERP systems through questionnaire to collect data on the extent of ERP secondary adoption. Agle’s scale to investigate leader’s dynamic leadership, leader expectation and exemplary leadership [1] can be used for leadership measurement.

In Study 3, hypotheses H5 and H6—the influence of leader’s personal leadership and exemplary leadership on ERP assimilation—will be tested. ERP assimilation occurs at organizational level, Massetti and Zmud have designed a four dimension scale to measure EDI assimilation within organizations [32], Liang et al. refined the scale to three dimensions—volume, diversity and depth to better adapt to ERP context [22]. We plan to adapt Liang et al.’s scale to measure the extent of ERP assimilation within the organization. Agle’s scale will be used to investigate leader’s personal leadership and exemplary leadership [1].

In order to reduce the impact of others factors that may have influence on ERP implementation lifecycle, appropriate control variables will be added to this conceptual model, such as organizational size and ERP implementation time, so that the cross-sectional survey can be used in each stage to validate the hypotheses [22].

Data analysis and hypothesis testing will be primarily done using structural equation modeling (SEM) techniques due to the nature of the research models. Supplementary analyses using linear regression, factor analysis, as well as other commonly used statistical methods are also planned.

5. Conclusions

This paper provides a conceptual model to study the influence of charismatic leadership on ERP implementation lifecycle. It has both theoretical and practical contribution. The key contribution of the paper is the development of research model and the six hypotheses. It extends the research scope of ERP implementation by clearly explaining five dimensions of charismatic leadership and qualitatively analyzes the influence of the five dimensions on each phase of the ERP implementation lifecycle. Prior studies are mainly focused on the influence of leaders’ authority but neglected the role of charismatic leadership. This study fills the gap and emphasizes the important role the charismatic leadership may play in the ERP implementation lifecycle.

For practical contribution, although the six hypotheses of the conceptual model have not been validated by empirical studies at this point, the qualitative analysis of the hypotheses may offer guidance to managers as well as ERP vendors. If leader’s environmental sensitivity indeed facilitate ERP primary adoption, ERP software vendors should pay more attention to the leaders who are more sensitive and choose these organizations as their potential clients. This can provide guidance for ERP software vendors to better select their clients and help them decrease sale cost and increase sale success rate.

The results of Study 2 may guide the organization to select appropriate project managers. The organization should select a manager who has strong ability to paint an exciting picture of organization’s future. He or she should also be good at creating expectations to empower employees. The result of Study 2 may also direct the manager’s activities during ERP implementation process. He or she must participate in ERP implementation and communicate with employees frequently. His or her behavior can set a good example for employees.

The results of Study 3 may suggest managers to pay more attention to ERP assimilation phase. Traditionally, the involvement of managers in ERP assimilation is usually diminished after the ERP software has been installed and the consultants have left the organization. The study suggests that ERP implementation is a continuing improvement process
and the managers should continue to participate and communicate with employees to identify the difficulties that employees may have encountered while using the ERP system and help resolve the problems in time.

6. Acknowledgements

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7. References