



Interaction effect of strategic leadership behaviors and organizational culture on IS-Business strategic alignment and Enterprise Systems assimilation

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ARTICLE INFO

Keywords:

Strategic leadership
IS-Business strategic alignment
Enterprise systems assimilation
Organizational culture

ABSTRACT

Drawing upon strategic leadership theory, this study develops a theoretical model to explore the impact of senior executives' leadership behaviors on IS-Business strategic alignment in the context of Enterprise Systems (ES) assimilation. In particular, organizational culture is added as a critical moderator in the research model based on contingency theory. Empirical analysis results suggest that idealized influence and inspirational motivation leadership behaviors are significant drivers of IS-Business strategic alignment, which further has a positive influence on Enterprise Systems assimilation. Moreover, flexibility-oriented culture positively moderates the relationship between strategic leadership behaviors and IS-Business strategic alignment, while control-oriented culture negatively moderates the path relationships. Our study contributes to the extant literature in both leadership and IS-business strategic alignment.

1. Introduction

With the globalization of e-commerce and uncertainty of external market environments, more and more firms have implemented Enterprise Systems (ES), such as ERP (Enterprise Resource Planning), to improve business efficiency and support business strategy (Markus & Tanis, 2000; Rezvani, Dong, & Khosravi, 2017; Tarafdar & Vaidya, 2006). In the past decade, the number of Enterprise Systems implementation has been growing at a significant rate. It was estimated that the global ERP market will exceed forty billion dollars by the end of 2020 (AMR, 2015). Although organizations have devoted a large amount of financial and human resources in Enterprise Systems, a large number of the projects do not succeed, which leads to financial loss or other negative consequences (Dwivedi et al., 2015; Hughes, Dwivedi, Rana, & Simintiras, 2016; Hughes, Dwivedi, & Rana, 2017; Standish Group, 2013). It was reported that more than half of the organizations have abandoned the ES project, resulting in loss of millions of dollars (Dong, Neufeld, & Higgins, 2009; Shao, Feng, & Hu, 2016; Shao, Feng, & Liu, 2012; Zhu, Li, Wang, & Chen, 2010). Accordingly, most of the organizations have not achieved the expected benefits from the implemented system functionalities due to the complexity of Enterprise Systems and the multiplicity of stakeholders (Dong et al., 2009; Dwivedi et al., 2015; Hughes et al., 2016, 2017; Standish Group, 2013).

The alignment between Information Systems (IS) strategy and business strategy is recognized as a critical antecedent of organizational success within the extant literature (Chan, Sabherwal, & Thatcher, 2006; Chen, Sun, Helms, & Jih, 2008; Huerta, Thompson, Ford, & Ford, 2013; Wang, Chen, & Benitez-Amado, 2015; Yayla & Hu, 2012). Thus how to formulate an appropriate IS strategy in support of business strategy has become a great challenge in front of the top executives (Johnson & Lederer, 2010; Lee, Koo, & Nam, 2010; Merali, Papadopoulos, & Nadkarni, 2012; Peters, Heng, & Vet, 2002; Sabherwal & Chan, 2001; Yun, Choi, & Armstrong, 2018). Strategic leadership theory suggests that top manager's demographics and leadership play a significant role in strategy formulation, and effective strategy implementation requires specific knowledge, skills and leadership styles of the key decision makers (Elenkov, Judge, & Wright, 2005; Gupta & Govindarajan, 1984; Hambrick & Mason, 1984; Silva, Figueroa, & González-Reinhart, 2007). Since a significant role of senior leadership is to secure the cooperation of others in pursuit of a vision (Elenkov et al., 2005; Hambrick, Cannella, & Albert, 1989; Hill, Jones, & Schilling, 2015; Kim & Kankanhalli, 2009), IS executives need to articulate an inspiring strategic vision for information systems in support of business operations and strategies (Shao, Feng, & Wang, 2016).

Despite previous studies having demonstrated the significant role of senior leadership in achieving IS-business strategic alignment and

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<https://doi.org/10.1016/j.ijinfomgt.2018.09.010>

Received 31 May 2018; Received in revised form 20 September 2018; Accepted 20 September 2018

Available online 17 October 2018

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organizational success, most of the literature concentrates on top management participation, involvement and strategic knowledge (Kearns & Sabherwal, 2007; Luftman & Brier, 1999; Preston & Karahanna, 2009). To our knowledge, few studies have delineated the specific leadership behaviors and mechanisms through which top management affect IS-business strategic alignment. There still exists a theoretical gap in the extant literature regarding the influence of senior leadership on strategic alignment in the assimilation phase of Enterprise Systems.

Drawing upon contingency theory, there is no one best way to lead an organization (Donaldson, 2001). The effectiveness of leadership is contingent upon social, institutional and organizational context (Cannella & Monroe, 1997; Elenkov et al., 2005; Fiedler, 1967). Organizational culture is recognized as a significant contingency factor in the previous literature (Cabrera, 2001; Hai & Mohamed, 2013; Kayas, Mclean, Hines, & Wright, 2008; Ogbonna & Harris, 2000). There is a call for more empirical studies to examine the effectiveness of leadership behaviors in various organizations with different types of cultures (Shao, Feng et al., 2016; Tsui, Zhang, Wang, Xin, & Wu, 2006).

Given the significant role of senior leadership in fostering strategic alignment and Enterprise Systems assimilation (Elenkov et al., 2005; Seah, Ming, & Weng, 2010; Shao, Feng, & Hu, 2017; Waldman, Javidan, & Varella, 2004), and the contingency of leadership in various organizational cultures (Hai & Mohamed, 2013; Ogbonna & Harris, 2000; Shao, Wang, & Feng, 2016), this study integrates strategic leadership, organizational culture, strategic alignment and ERP assimilation into a single comprehensive model, in order to develop a better understanding of the joint influences of strategic leadership behaviors and organizational culture on IS-business strategic alignment and ES assimilation.

The primary objectives of this study are three folds. Firstly, this study aims to examine the direct impacts of two salient strategic leadership behaviors, specifically idealized influence and inspirational motivation, on IS-business strategic alignment. Secondly, this study intends to examine the moderating effect of two typologies of organizational culture (flexibility-oriented and control-oriented cultures) on the relationship between strategic leadership behaviors and IS-business strategic alignment. Finally, this study would like to find out if the alignment between IS and business strategies are beneficial to achieve an assimilation of Enterprise Systems.

In order to address the research objectives, this study uses a theory-driven approach to develop the theoretical model, and conducts a survey-based empirical study to test the relationships among strategic leadership, organizational culture, IS-business strategic alignment and Enterprise Systems assimilation. The subsequent sections are organized as follows. The next section reviews the extant literature in leadership theory, IS-business strategic alignment, organizational culture and Enterprise Systems assimilation, then a research model is developed and seven hypotheses are proposed. The third section describes data collection and data analysis procedure, followed by empirical results discussion. The final section illustrates theoretical and practical implications, and concludes with limitations and future research directions.

2. Literature review

2.1. Strategic leadership theory

Strategic management literature suggests that organizational strategies and effectiveness are viewed as reflections of cognitive bases and values of the key decision makers in the organizations (Gupta & Govindarajan, 1984; Hambrick & Mason, 1984; Hill et al., 2015; Vera & Crossman, 2004). In particular, top managers' specific background, demographic characteristics and leadership behaviors do indeed make a difference in strategy formulation and firm performance (Mayfield, Mayfield, & Sharbrough, 2015; Thomas & Ramaswamy, 1996; Thomas, Litschert, & Ramaswamy, 1991; Vera & Crossman, 2004; Yukl, 2012).

Since power may emanate from a top manager's leadership, it is necessary to understand the role senior leadership behaviors play in strategy formulation and strategic alignment (Finkelstein, Hambrick, & Cannella, 2009).

Strategic leadership has been a research focus in strategic management studies during the last century. Strategic leadership is conceptualized as "the process of forming a vision for the future, communicating it to subordinates, stimulating and motivating followers, and engaging in strategy-supportive exchanges with peers and subordinates" (Elenkov et al., 2005, p. 666). Differently from traditional personality theory and leader-member exchange theory, strategic leadership theory focuses on executive work as a strategic activity and emphasizes the symbolism and social construction of top-level executives, which represents dominant coalition of the firm (Norburn, 1989; Vera & Crossman, 2004; Yukl, 2012).

In the past decade, a large number of empirical studies have been conducted to examine the behavioral characteristics of strategic leadership, and idealized influence and inspirational motivation are identified as two salient leadership behaviors that focused on organizational strategic issues (Bass, 1999; Elenkov et al., 2005; Vera & Crossman, 2004). Previous studies suggest that both idealized influence and inspirational motivation leadership behaviors are displayed when a leader envisions a desirable future, clearly articulates how it can be reached and inspires others with the future (Egri & Herman, 2000; Rafferty & Griffin, 2004; Shao, Feng et al., 2016; Vera & Crossman, 2004).

Thus in this study, we draw on strategic leadership as a theoretical foundation to examine the impact of idealized influence and inspirational motivation leadership behaviors on IS-business strategic alignment. The two leadership behaviors are selected since they are recognized as prominent characteristics of strategic leadership, as suggested in the previous literature (Elenkov et al., 2005; Rafferty & Griffin, 2004; Shao, Feng et al., 2016; Vera & Crossman, 2004). The descriptions of the two leadership behaviors are illustrated in Table 1.

2.2. Organizational culture

Originated from organizational behavior theory, organizational culture is defined as a collection of shared assumption, values and beliefs that is reflected in organizational practices and goals (Schein, 2004; White, Varadarajan, & Dacin, 2003). It is suggested that organizational culture determines how organizational members perceive, think about and appropriately react to the internal and external environments (Schein, 2004; White et al., 2003). In the past decade, organizational culture has been widely applied in various research contexts, and is identified as a critical factor guiding organizational strategy formulation and implementation (Berthon, Pitt, & Ewing, 2001; Liu, Feng, Hu, & Huang, 2010; Liu, Ke, Wei, Gu, & Chen, 2010; Stock, McFadden, & Gowen, 2007).

Scholars have proposed different theoretical frameworks to quantitatively measure organizational culture, and the most widely used is Quinn and Rohrbaugh (1983)'s competing values Model (CVM). CVM emphasizes the co-existence of competing values and enables a firm's culture to be delineated by two dimensions of value orientations rather than a single point (Khazanchi, Lewis, & Boyer, 2007; Stock et al., 2007). The first dimension describes an organization's focus on

Table 1
Strategic Leadership Behaviors.

Leadership Behaviors	Descriptions
Idealized Influence	Provides strategic vision and sense of mission, insightful and knowledgeable
Inspirational Motivation	Communicates high expectations, articulation and representation of a clear vision, optimism and enthusiasm

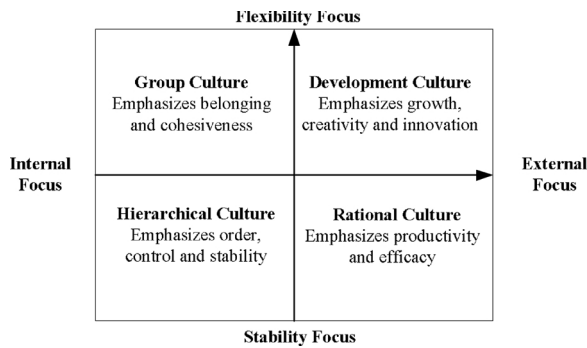


Fig. 1. Quinn and Spreitzer (1991)'s Organizational Culture Typology.

flexibility or stability, while the second dimension depicts an organization's focus on internal activities or external environments (Liu, Feng et al., 2010; Liu, Ke et al., 2010; Quinn & Rohrbaugh, 1983; Quinn & Spreitzer, 1991). CVM is recognized as an appropriate model for organizational culture research in developing countries such as China where the business scopes and scales constantly change according to the highly volatile environment (Liu, Feng et al., 2010; Liu, Ke et al., 2010; Ralston, Terpstra-Tong, Terpstra, Wang, & Egri, 2006).

Fig. 1 illustrates Quinn and Rohrbaugh (1983)'s organizational culture typology based on competing values model (CVM). As noted in Fig. 1, organizational culture can be classified into four typologies, specifically development culture, group culture, hierarchical culture and rational culture (Quinn & Spreitzer, 1991). Notably, although a firm can exhibit a combination of different organizational culture typologies, it is usually dominated by specific value orientations than the others (Khazanchi et al., 2007; Shao et al., 2012). For example, internet enterprises such as Alibaba is dominated by flexibility-oriented culture that focuses on growth, creativity and belonging. While traditional organizations such as Bank of China is dominated by stability-oriented culture that emphasizes order, control and efficacy.

Prior literature indicates that organizational culture can impact managers' ability to process information, rationalize, and exercise discretion in their decision-making processes (Berthon et al., 2001; Khazanchi et al., 2007; Liu, Feng et al., 2010; Liu, Ke et al., 2010). In particular, flexibility-oriented culture and stability-oriented culture may have different influences on how managers respond to the environments and make strategic decisions, which in turn affect information technology implementation and assimilation (Berthon et al., 2001; Khazanchi et al., 2007; Liu, Feng et al., 2010; Liu, Ke et al., 2010). Accordingly, this study adopts the typology of flexibility-oriented and control-oriented culture in the research model, which is consistent with the previous literature (McDermott and Stock, 1999; Khazanchi et al., 2007; Liu, Feng et al., 2010; Liu, Ke et al., 2010).

Considering that the effectiveness of strategic leadership is contingent upon organizational culture, this study integrates organizational culture with strategic leadership in a single research model, in order to examine their interaction effects on IS-business strategic alignment. The next section will provide an introduction of IS-Business strategic alignment.

2.3. IS-Business strategic alignment

In the past decade, how to integrate system functionalities with business processes, and achieve a strategic alignment between business strategy and IS strategy has become a research focus in the field of information systems. IS-business strategic alignment refers to the degree to which organizational visions, objectives and plans articulated in the business strategy are shared and supported by the IS strategy (Chan et al., 2006; Pearlson & Saunders, 2012; Reich & Benbasat, 1996). The core of strategic alignment is applying information systems (IS) in an appropriate way to make it harmonious with business strategy, and use

information system resources effectively in support of business strategies (Byrd, Lewis, & Bryan, 2006; Henderson & Venkatraman, 1993; Luftman & Brier, 1999; Yayla & Hu, 2012).

The alignment between IS and business strategies has been identified as a critical antecedent to increase firm profitability and achieve competitive advantage (Chan et al., 2006; Pearlson & Saunders, 2012). The synergy between the two strategies is important. On the one hand, IS strategy must be formulated and implemented according to business visions, goals and operational processes. On the other hand, the deployment and implementation of IS strategy may also influence business strategy. Thus it is necessary to maintain a coordination and balance between the two strategies. If a firm changes the business strategy without thinking through its effects on IS strategy, it may cause the business to struggle until coordination is achieved. Likewise, if a firm changes the IS strategy without considering its influence on business visions and goals, it may hinder the implementation of information systems, thus leads to a negative consequence of firm performance (Pearlson & Saunders, 2012).

Previous studies have largely examined the influence of IS-business strategic alignment on firm performance in various situations (Chan et al., 2006; Johnson & Lederer, 2010; Merali et al., 2012; Yayla & Hu, 2012), while few research has empirically investigated its effect on Enterprise Systems assimilation in the post-implementation phase. In order to fill in the research gap, this study introduces ES assimilation as an outcome variable in the research model, which will be illustrated in the next section.

2.4. Enterprise systems assimilation

Enterprise systems is a set of integrated software that includes a re-architecting of an organization's portfolio of transaction processing applications and business processes to achieve a seamless information flow throughout an organization. Because of the complexity of Enterprise Systems, the implementation of system functionalities is associated with a large amount of monetary and manpower investments, and the risk of failure is usually high (Markus & Tanis, 2000).

Based on a process view, Enterprise Systems lifecycle is a long-term continuous improving process that includes adoption, implementation, assimilation and extension phases (Shao, Feng et al., 2016). Earlier studies mostly focus on the adoption and implementation phase, and evaluate Enterprise Systems success according to the landmark of system's going alive. While recent studies pay attention to the assimilation phase of Enterprise Systems lifecycle, when system functionalities are diffused across organizational work processes and devoted into routine use (Gattiker & Goodhue, 2005; Liang, Saraf, Hu, & Xue, 2007; Purvis, Sambamurthy, & Zmud, 2001). In the assimilation phase, Enterprise Systems is used to support routine business operations and strategic decision makings (Shao, Feng et al., 2016). Empirical studies posit that organizational success necessitates an understanding of systems assimilation since the business value of Enterprise Systems cannot be fully realized until the system functionalities and applications have been extensively assimilated in the organization (Liu, Feng, Hu, & Huang, 2011; Shao, Feng et al., 2016).

Drawing upon the extant literature, this study defines Enterprise Systems assimilation as "the extent to which the Enterprise Systems technology is diffused in routine business processes and the degree to which it supports business decision making at operational and strategic levels" (Purvis et al., 2001; Liu, Feng et al., 2010; Liu, Ke et al., 2010; Shao, Feng et al., 2016).

2.5. Theoretical gaps in the extant literature

Although the extant literature has posited the significant role of senior leadership and organizational culture in facilitating IS-business strategy alignment and Enterprise Systems assimilation, most of the literature is conducted in separate research streams (Berthon et al.,

2001; Elenkov et al., 2005; Hai & Mohamed, 2013; Liu, Feng et al., 2010; Liu, Ke et al., 2010; Ogbonna & Harris, 2000; Shao, Wang et al., 2016; Shao, Feng et al., 2016; Shao et al., 2017; Stock et al., 2007; Waldman et al., 2004). To our knowledge, few studies have incorporated the constructs in an integrated model. Thus the extant literature cannot comprehensively explain the effectiveness of strategic leadership in promoting strategic alignment and ES assimilation under different organizational cultures.

Contingency theory of leadership suggests that the effectiveness of leadership on organizational outcome is contingent upon organizational situations, and an effective leadership in one situation may not be effective in another situation (Fiedler, 1967; Yukl, 2012; Shao, Feng, Wang, 2016). Thus a match between senior leadership and organizational culture is crucial to achieve organizational success (Hartnell, Kinicki, Lambert, Fugate, & Doyle Corner, 2016; Tsui et al., 2006). In the context of Enterprise Systems utilization, strategic leadership plays a significant role in promoting the alignment between business and IS strategies (Pearlson & Saunders, 2012). However, an observation from practice is that despite strategic leadership behaviors are effective in firms that focus on innovation and cohesiveness (flexibility-oriented culture), they may not work well in other firms that emphasize control and efficacy (stability-oriented culture) (Chamorro-Premuzic & Sanger, 2016; Martins, Dias, & Khanna, 2016). For example, leadership behaviors that are effective in emerging internet enterprises may be ineffective in traditional entity banks, which may result from the different organizational cultures. The theoretical framework of contingency theory and practical observations drive the research objective of this study. The following question is proposed accordingly: *What are the moderating effects of organizational culture (flexibility-oriented and control oriented culture) on the relationship between strategic leadership behaviors and IS-Business strategic alignment?*

3. Research model and hypotheses

In order to fill in the research gap, this study develops a theoretical model to examine the interaction effect of strategic leadership behaviors (idealized influence vs. inspirational motivation) and organizational cultures (flexibility-oriented culture vs. control-oriented culture) on IS-Business strategic alignment and Enterprise Systems assimilation. Furthermore, organizational industry type, organizational size and Enterprise Systems use time are added in the research model as control variables of ES assimilation, as suggested in the previous literature (Liang et al., 2007; Shao et al., 2017). The research model is illustrated in Fig. 2. The theoretical logic behind each hypothesis is illustrated in the following sections.

3.1. Idealized influence and IS-Business strategic alignment

Drawing on strategic leadership theory, idealized influence is the most general and important dimension of senior leadership (Bass, 1985; Elenkov et al., 2005; Vera & Crossman, 2004). Leaders who possess idealized influence behavior are visionary, insightful, knowledgeable

and sensitive to the environment, and are more likely to provide a sense of mission within the firm (Bass & Avolio, 1995). Rafferty and Griffin (2004) described this type of leadership behavior as “the expression of an idealized picture of the future based on organizational values” (p.332).

In organizations, strategic decision making occurs at upper echelons level, and idealized influence leadership behavior plays a significant role in strategy formulation and change (Gupta & Govindarajan, 1984; Hambrick & Mason, 1984; Shao, Feng, Wang, 2016; Vera & Crossman, 2004; Waldman et al., 2004). As a key decision maker of IS strategy, the top executives in charge of IS need to focus on firm’s strategic vision and long-term planning, and also, be insightful and knowledgeable. This is beneficial to make an appropriate deployment of IS functionalities according to firm’s business operations and strategies (Shao, Feng et al., 2016). In addition, given the variety and complexity of external environments, the top executives must be sensitive to marketing and technology environment, thus to make a timely adjustment of IS strategy in support of business strategy according to the environmental change (Agle, Nagarajan, Sonnenfeld, & Srinivasan, 2006; Shao, Feng, Wang, 2016; Vera & Crossman, 2004; Waldman et al., 2004). This can help achieve the alignment between business and IS strategies (Chan et al., 2006; Johnson & Lederer, 2010; Luftman, Papp, & Brier, 1999). Thus this study proposes the following hypothesis:

H1. Idealized influence leadership behavior is positively associated with IS-business strategic alignment.

3.2. Inspirational motivation and IS-Business strategic alignment

Drawing on strategic leadership theory, inspirational motivation is another important dimension of senior leadership (Bass, 1985; Elenkov et al., 2005; Vera & Crossman, 2004). Leaders who possess inspirational motivation behavior are skilled at articulating a clear vision of the firm, communicating high expectations and expressing encouraging messages, which are beneficial to build confidence and stimulate enthusiasm among colleagues (Bass & Avolio, 1995; Yukl, 2012).

Given the significant role that IS plays in supporting and enabling business strategy, the strategic decisions of IS deployment and usage are usually made within the top management team. The top executive in charge of Information Systems is the most important and pertinent senior leader responsible for guiding the formulation and implementation of IS strategies (Waldman et al., 2004; Shao et al., 2016). As a key decision maker of IS strategy, the IS executive must be able to clearly articulate the objectives of information systems for the firm, and communicate what benefits information systems can bring to the organization (Shao, Feng et al., 2016). Moreover, the IS executive needs to reach a consensus among organizational members regarding IS resource devotion and utilization (Johnson & Lederer, 2010). This is beneficial to achieve other top executives’ recognition and support, thus to deploy and utilize information system resources appropriately according to organizational missions and objectives (Chan et al., 2006; Luftman & Brier, 1999). The above analysis leads to the following

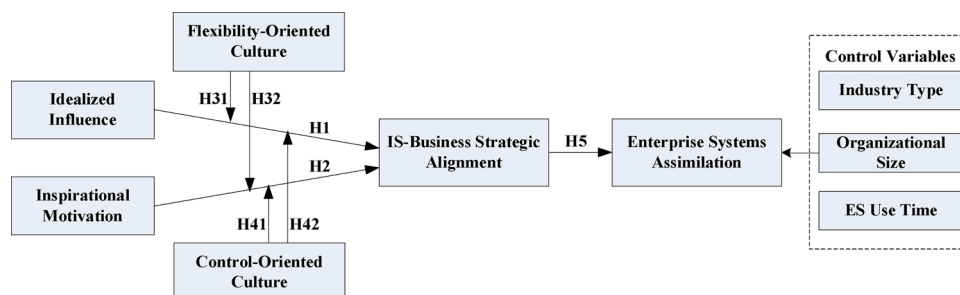


Fig. 2. Research Model.

hypothesis:

H2. Inspirational motivation leadership behavior is positively associated with IS-business strategic alignment.

3.3. The moderating effect of flexibility-oriented culture

Drawing upon the competing values model, there is a fit between leader styles and culture typologies (Quinn, 1984). It is found that certain types of leader styles are reinforced by the values of certain organizational cultures typologies (Cameron & Freeman, 1991). The existence of an appropriate leadership style in a specific organization can lead to lower conflict and result in higher efficiency and productivity, while a mismatch between leadership and organizational culture may lead to higher conflicts and impede organizational performance (Cameron & Freeman, 1991; Tsui et al., 2006; Wilderom, Berg, & Wiersma, 2012).

As illustrated in Quinn and Spreitzer (1991)'s organizational culture framework, flexibility-oriented culture focuses on creativity, change, risk taking, growth and adaptation to both internal and external environment (Khazanchi et al., 2007). An organization with a strong flexibility-oriented culture tends to invest its resources in unique products or services, and combines external resources with internal resources to achieve growth and competitive advantage in a highly volatile environment (Stock et al., 2007; White et al., 2003). Prior literature suggests that flexibility-oriented culture is best fitted with leaders who are visionary, idealistic, inspirational and future-oriented (Cameron & Freeman, 1991; Denison, Nieminen, & Kotrba, 2014). These type of leaders usually play the role of innovators and facilitators in the organization (Denison, Hooijberg, & Quinn, 1995).

In the context of Information Systems utilization, the top executives in charge of IS must concentrate on the external market environment, be sensitive to technology development, and clearly articulate the significance of information systems in support of business operations and strategies (Shao, Wang et al., 2016, 2017). When there exists a flexibility-oriented culture within the firm, organizational members are guided by the value of innovation, development and adaptation to dynamic environments, and are more likely to develop innovative ways of system usage in support of new business activities (Liu et al., 2011; Shao, Feng et al., 2016). This type of organizational culture fits best with leaders who provide strategic visions and communicate high expectations to organization members, which are largely exhibited in behaviors of idealized influence and inspiration motivation (Cameron & Freeman, 1991; Denison et al., 2014; Shao, Wang et al., 2016). Accordingly, top executives' strategic leadership behaviors may play a more significant role in achieving a strategic alignment when organizations are dominated by flexibility-oriented culture (Johnson & Lederer, 2010; Pearlson & Saunders, 2012).

Based on the above analysis, this study argues that flexibility-oriented culture could strengthen the influence of IS executive's strategic leadership behaviors, specifically idealized influence and inspiration motivation, on IS-business strategic alignment. The following hypotheses are proposed accordingly:

H3. Flexibility-oriented culture positively moderates the relationship between strategic leadership and IS-business strategic alignment.

H31. Flexibility-oriented culture positively moderates the relationship between idealized influence and IS-business strategic alignment.

H32. Flexibility-oriented positively moderates the relationship between inspirational motivation and IS-business strategic alignment.

3.4. The moderating effect of control-oriented culture

Drawing upon Quinn and Spreitzer (1991)'s organizational culture framework, control-oriented culture focuses on order, stability, rules

and predictability, and emphasizes achieving productivity and performance by pursuing and attaining of well-defined objectives (Stock et al., 2007). In order to execute the regulations and achieve the pre-defined goals, leaders usually play the role of coordinators, monitors and directors in the organization (Denison et al., 1995). In contrast to flexibility-oriented culture, control-oriented culture is best fitted with task-oriented leaders who pay attention to standard deviation and problem solving, and may not fit with leaders who are visionary, inspirational and future-oriented (Cameron & Freeman, 1991; Denison et al., 2014).

In the context of information systems utilization, organizations are confronted with the challenge of aligning the embedded business processes with the existing organizational processes (Liang et al., 2007). Moreover, organizations are also faced with system updates and extensions to align with business development, especially in the digital age when new technologies (such as cloud-computing and mobile networking) emerges and develops rapidly (Albanese & Manning, 2015). When there exists a control-oriented culture within the organization, organizational members are guided by the value of order and stability, and prefer to maintain the routinized business process and complete daily tasks according to traditional regulations and rules. This type of organizational value may conflict with strategic leadership behaviors that focus on long-term strategic vision and inspirational motivation. Accordingly, top executives' strategic leadership behaviors may play a less significant role in achieving strategic alignment when organizations are dominated by control-oriented culture (Johnson & Lederer, 2010; Pearlson & Saunders, 2012).

Based on the above analysis, this study argues that control-oriented culture may weaken the influence of IS executive's leadership behaviors, specifically idealized influence and inspiration motivation, on IS-business strategic alignment. The above analysis leads to the following hypotheses:

H4. Control-oriented culture negatively moderates the relationship between strategic leadership and IS-business strategic alignment.

H41. Control-oriented culture negatively moderates the relationship between idealized influence and IS-business strategic alignment.

H42. Control-oriented negatively moderates the relationship between inspirational motivation and IS-business strategic alignment.

3.5. IS-Business strategic alignment and Enterprise systems assimilation

Drawing upon Information Systems Strategy Triangle framework, organizational strategy and information strategy must complement with each other to facilitate the assimilation of system functionalities in business processes (Pearlson & Saunders, 2012; Shao, Feng et al., 2016). The alignment between business strategy and IS strategy can help realize the benefits of Enterprise Systems in support of business operations and strategic decision makings (Pearlson & Saunders, 2012). Previous literature has widely examined the relationship between IS-business strategic alignment and firm performance in organizational context. Sabherwal and Chan (2001) found that the alignment between business strategic orientation and IS application had positive effects on business performance in terms of innovation and market growth. Kearns and Lederer (2003) indicated that there existed a positive impact of strategic alignment on firm competitive advantage in terms of cost reduction and product differentiation. In a recent study, Zhou, Bi, Liu, Fang, and Hua, (2018) reported that IS-business strategic alignment was beneficial to enhance organizational agility.

In the context of Enterprise Systems usage, the business value of ES cannot be fully realized until the system functionalities have been extensively assimilated in the organization, thus ES success requires a comprehensive understanding and application of systems functionalities (Liang et al., 2007; Liu et al., 2011; Purvis et al., 2001; Shao et al., 2017). In order to achieve a high level of ES assimilation, the firm must

design and deploy IS strategy in alignment with business strategy, and use IS resources effectively in support of business operations and strategic decisions (Chan et al., 2006; Pearlson & Saunders, 2012). For example, an “IS for flexibility” strategy would be more effective for firms with a prospector business strategy (Sabherwal & Chan, 2001). High-tech firms such as Apple, Google and Amazon are using this type of IS strategy to continuously seek new product/market opportunities. Contrarily, an “IS for efficiency” strategy may be more appropriate for firms with a defender business strategy (Sabherwal & Chan, 2001). Traditional enterprises such as Bank of China and the National Electricity Company are adopting this type of IS strategy to maintain operational efficiency and stability in a narrow industry. The alignment between business strategy and IS strategy is beneficial to facilitate the diffusion of system functionalities in operational business processes and support business decision makings at strategic levels (Liu, Feng et al., 2010; Liu, Ke et al., 2010; Pearlson & Saunders, 2012; Shao, Feng et al., 2016). Following this logic, we propose the following hypothesis:

H5. IS-business strategic alignment is positively associated with Enterprise Systems assimilation.

4. Research methodology

4.1. Construct operationalization

Drawing on a comprehensive review of the existing literature, this study design the survey instrument using a seven-point Likert scale, anchored from 1 (strongly disagree) to 7 (strongly agree). A few revisions are made to adapt to the context of Enterprise Systems usage.

Strategic leadership behaviors are measured based on the Multifactor Leadership Questionnaire (MLQ). Specifically, six items are used to measure idealized influence behavior, and four items are used to measure inspirational motivation behavior (Bass & Avolio, 1995). The scale of IS-business strategic alignment is adapted from Preston and Karahanna (2009)’s study and four items are designed to measure the construct. Organizational culture is operationalized following Quinn and Spreitzer (1991)’s study. Four items are used to measure flexibility-oriented and control-oriented culture respectively according to Liu, Feng et al. (2010) and Liu, Ke et al. (2010)’s study. Enterprise Systems assimilation is measured using three reflective items based on Shao et al. (2017)’s study. The original references of the constructs and measurements are provided in Table 2.

We conducted a pilot study before the final data collection to examine the content validity and reliability of the constructs. 70 EMBA (Executive Master of Business Administration) students enrolled in a large Chinese university were invited to participate and 50 completed questionnaires were received. This study deleted an item of IS-business strategic alignment (SA1) with factor loading lower than 0.7 according to the statistical analysis results. The final survey instrument is included in Appendix A.

Table 2
Operationalization of Constructs.

Constructs	Items	References
Idealized Influence	ID1-ID6	Bass and Avolio (1995)
Inspirational Motivation	IS1-IS4	
Flexibility-oriented Culture	FO1-FO4	Quinn and Spreitzer (1991)
Control-oriented Culture	CO1-CO4	Liu, Feng et al. (2010); Liu, Ke et al. (2010) Gu, & Chen, 2010Liu, Ke et al., 2010Liu, Ke et al. (2010) Gu, & Chen, 2010
IS-Business Strategic Alignment	SA1-SA4	Preston and Karahanna (2009)
Enterprise Systems Assimilation	AS1-AS4	Shao et al. (2017)

4.2. Data collection

A survey-based field study was conducted to test the research model. We first contacted a large ERP software provider in the city of Harbin of China for data collection. In addition, we also contacted firms in Beijing, Shanghai and Shandong province of China to improve the distribution of samples. We selected sample firms that have used Enterprise Systems for at least one year to guarantee that these firms have been using systems for long enough time to allow for the assimilation of Enterprise Systems.

In order to reduce the common method bias in survey, this study collected data by sending emails to an IS executive and his direct subordinate (e.g., director of IT department) separately in each firm, following Podsakoff, MacKenzie, Lee, and Podsakoff (2003)’s suggestion. The top executive who is in charge of Information Systems (IS executive) was asked to complete the section of flexibility-oriented culture, control-oriented culture, IS-business strategic alignment and Enterprise Systems assimilation. While the direct subordinate of the IS executive was asked to evaluate his/her supervisor’s idealized influence and inspirational motivation leadership behaviors.

Of the 250 firms contacted, 322 questionnaires from 190 firms were returned, with 160 from the IS executives and 172 from their direct subordinates. In order to examine the non-response bias, this study conducted a *t*-test to compare the responding and non-responding firms’ industry type, organizational size and Enterprise Systems use time. No significant differences were found based on the *t*-test ($p > .05$). Then this study matched the questionnaires from the IS executives and their direct subordinates according to firm number. 306 questionnaires from 153 firms were matched after deleting the unmatchable firms from the samples. We combined the questionnaires from the IS executive and his/her subordinate in each firm and finally obtained 153 valid data cases.

We then examined missing values in the dataset. There are totally 21 cases with missing items in the dataset. We deleted the 21 incomplete cases from the dataset following Little and Rubin (1987)’s listwise deletion approach. Finally we got 132 complete data cases for analysis. Profiles of the 132 sample firms are illustrated in Table 3.

As noted in Table 3, most of the samples are private and state-owned firms from manufacture industry with sales income between 101–500 million per year. In addition, most of the sample firms have used Enterprise Systems for more than two years, and the average

Table 3
Profiles of the Sample Firms.

Firm Characteristics	Categories	Percentage
Industry Type	Manufactures	36.6%
	Retails	12.9%
	Public Administration	11.8%
	Construction	8.5%
	IT Service	5.3%
	Others	24.9%
	State Owned	39.1%
Firm Ownership	Joint Venture	7.4%
	Private	48.5%
	Foreign Invested	5%
Sales Income (Million RMB)	10–100	26.7%
	101–500	50.4%
	501–1000	14.2%
	1001–5000	6.8%
	> 5000	1.9%
Enterprise Systems in Use (Years)	1–2	13.8%
	3–5	36.9%
	6–10	34.6%
	> 10	14.7%
Tenure of the IS executives (Years)	1–2	7.9%
	3–5	36.6%
	6–10	42.6%
	> 10	12.9%

tenure of the IS executives is seven years. This can satisfy our requirement that the top executives have been in charge of the Enterprise Systems for an adequate time, and they are experienced in using the system functionalities across business processes to support organizational visions and objectives.

4.3. Data analysis

Partial least squares (PLS) is selected as the primary statistical tool to examine the research model since it is able to process multiple dependent variables and handle errors of measurement within unobserved latent variable in a better manner (Gefen, Straub, & Boudreau, 2000). In addition, PLS is not contingent upon data having multivariate normal distributions and is more suited for theory prediction and exploration (Chin, Marcolin, & Newsted, 2003). The bootstrapping procedure with re-sampling method is used to estimate the statistical significance of the parameter estimates in order to derive valid standard errors or t-values (Temme, Kreis, & Hildebrandt, 2006). The total samples of 132 can meet the common standard for PLS analysis, which requires that the sample size is either ten times of the larger measurement number within the same construct or ten times of the larger construct number affecting the same construct (Chin, 1998; Chin et al., 2003).

4.3.1. Measurement model

Following a two-step analysis procedure, the measurement model is firstly analyzed to assess the validity and reliability of the constructs. Construct reliability refers to the consistency of the items that measure the same construct, and it is assessed by examining the factor loadings and the composite reliability of each construct (Chin, 1998; Chin et al., 2003). Convergent validity refers to the degree to which the items measuring the same construct correspond, and it is assessed by checking if the average variance extracted (AVE) of each construct from its indicators is greater than 0.5 (Pavlou and Fygenon, 2006). Table 4 describes the analysis results of factor loadings, composite reliability and AVE of the constructs.

As illustrated in Table 4, the factor loadings of all the items are above 0.80, and the composite reliability of each construct is above 0.90, suggesting an adequate reliability of the measurement model

Table 4
Construct Reliability and Validity.

Construct	Items	Factor Loadings	Composite Reliability	Average Variance Extracted (AVE)
Idealized Influence (ID)	ID1	0.895	0.944	0.738
	ID2	0.874		
	ID3	0.889		
	ID4	0.803		
	ID5	0.836		
	ID6	0.853		
Inspirational Motivation (IS)	IS1	0.874	0.941	0.801
	IS2	0.915		
	IS3	0.906		
	IS4	0.883		
Flexibility-Oriented Culture(FO)	FO1	0.895	0.937	0.817
	FO2	0.893		
	FO3	0.910		
	FO4	0.907		
Control-Oriented Culture(CO)	CO1	0.897	0.945	0.842
	CO2	0.906		
	CO3	0.863		
	CO4	0.872		
IS-Business Strategic Alignment(SA)	SA1	0.928	0.956	0.878
	SA2	0.931		
	SA3	0.940		
Enterprise Systems Assimilation(AS)	AS1	0.955	0.960	0.909
	AS2	0.956		
	AS3	0.950		

Table 5
Correlation between Constructs.

	Mean	SD	ID	IS	FO	CO	SA	ES
ID	4.14	0.91	0.859					
IS	4.18	0.88	0.60	0.895				
FO	4.97	1.06	0.58	0.51	0.904			
CO	4.58	1.01	0.34	0.47	0.41	0.918		
SA	4.73	0.97	0.56	0.55	0.65	0.53	0.937	
ES	4.09	1.06	0.31	0.34	0.32	0.62	0.51	0.953

Note: Diagonal bold values are the square roots of AVE of each construct.

(Chin, 1998; Chin et al., 2003). In addition, we note that the AVE of each construct is above 0.70, which is highly above the threshold of 0.5. The above results demonstrate a good convergent validity of the measurement model (Pavlou and Fygenon, 2006).

Furthermore, discriminant validity is examined to assess the degree to which items differentiate between constructs. Drawing upon the previous literature, we first analyze the correlation between constructs to check whether the square root of the average variance extracted from each construct exceeds the construct's correlation with other constructs (Chin, 1998; Yi & Davis, 2003). As illustrated in Table 5, the square root of the AVE for each construct is much higher than the construct's correlation with other constructs, indicating an adequate discriminant validity of the measurement model.

We then analyze the cross-loadings of the constructs to examine if items load more highly on their corresponding constructs than on the other constructs (Chin, 1998; Yi & Davis, 2003). As noted in Table 6, each item loads much higher on their corresponding construct than on the other constructs. The analysis results further demonstrate a good discriminant validity of the measurement model.

4.3.2. Structural model

The structural model is then analyzed in PLS to assess the significance of the path coefficients between the constructs and the variance of the exogenous variables explained by the endogenous variables (Gefen et al., 2000). Following Chin et al. (2003)'s suggestion, this study first analyzes the structural model without adding organizational cultures. The PLS test results are illustrated in Fig. 3.

Table 6
Cross-Loadings of the Constructs.

	ID	IS	FO	CO	SA	ES
ID1	0.90**	0.55	0.60	0.31	0.55	0.35
ID2	0.87**	0.58	0.46	0.25	0.51	0.17
ID3	0.89**	0.51	0.53	0.34	0.53	0.31
ID4	0.80**	0.43	0.52	0.37	0.41	0.28
ID5	0.84**	0.48	0.44	0.24	0.33	0.20
ID6	0.85**	0.54	0.46	0.25	0.49	0.22
IS1	0.47	0.87**	0.37	0.37	0.47	0.26
IS2	0.59	0.92**	0.51	0.46	0.52	0.32
IS3	0.55	0.91**	0.53	0.40	0.47	0.32
IS4	0.54	0.88**	0.41	0.46	0.52	0.33
FO1	0.58	0.52	0.90**	0.33	0.54	0.27
FO2	0.54	0.46	0.90**	0.36	0.61	0.27
FO3	0.40	0.44	0.91**	0.35	0.58	0.22
FO4	0.59	0.44	0.91**	0.45	0.64	0.38
CO1	0.29	0.48	0.40	0.92**	0.48	0.53
CO2	0.31	0.43	0.37	0.94**	0.50	0.61
CO3	0.35	0.43	0.38	0.91**	0.54	0.59
CO4	0.30	0.39	0.36	0.91**	0.44	0.54
SA1	0.55	0.48	0.65	0.52	0.93**	0.52
SA2	0.51	0.53	0.58	0.49	0.94**	0.49
SA3	0.50	0.55	0.61	0.49	0.94**	0.42
AS1	0.33	0.31	0.29	0.61	0.47	0.96**
AS2	0.30	0.38	0.29	0.59	0.50	0.96**
AS3	0.23	0.29	0.32	0.57	0.49	0.95**

Note: **p < 0.01.

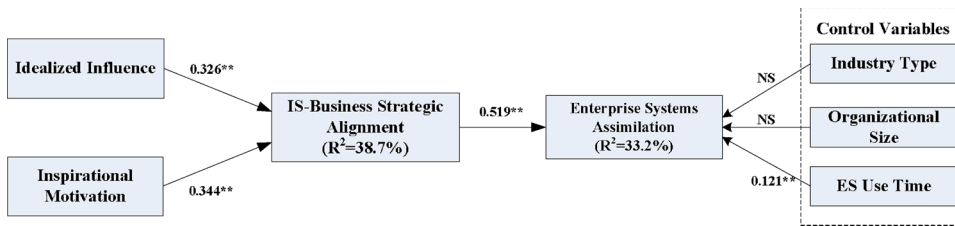


Fig. 3. PLS Test Results of the Structural Model without Organizational Cultures.

(Notes: ** represents $p < .01$; * represents $p < .05$; NS represents not significant).

As noted in Fig. 3, both idealized influence and inspirational motivation are significantly associated with IS-Business strategic alignment ($\beta_1 = 0.326$, $\beta_2 = 0.344$, $p < 0.01$), providing support for hypotheses H1 and H2. Furthermore, IS-Business strategic alignment is positively related with Enterprise Systems assimilation ($\beta_1 = 0.519$, $p < 0.01$), thus provides support for hypothesis H5. Regarding the control variables, ES use time is positively associated with ES assimilation, indicating that accumulated experience of system usage are beneficial to enhance the assimilation level of systems functionalities within the firm (Fichman, 2001; Liang et al., 2007). While industry type and organizational size have no significance influences on ES assimilation.

Regarding the variance of the exogenous variables explained by the endogenous variables, Fig. 3 suggests that the R^2 value of IS-Business strategic alignment and ES assimilation are 38.7% and 33.2% respectively. After removing the control variables from the structural model, the R^2 value of ES assimilation reduced to 26.1%. The above analysis results show a good explanatory power of the research model (Kline, 2011).

4.3.3. Moderating test

This study then adds flexibility-oriented culture and control-oriented culture in the research model to examine their moderating effect on the link between the two leadership behaviors and IS-Business strategic alignment. Following Chin et al. (2003)'s study, four interaction variables are added in the structural model by multiplying the standardized indicators of the independent variables (ID, IS) and the moderators (FO, CO). SmartPLS provides a built-in procedure based on the standardized algorithm to calculate the coefficient of the interaction variables. The interaction variables should be significant in the structural model for the moderating effect to be interpretable (Henseler & Fassott, 2010). The PLS analysis results of the moderating effect are illustrated in Fig. 4.

As noted in Fig. 4, flexibility-oriented culture positively moderates the relationship between idealized influence and IS-business strategic alignment ($\beta = 0.197$, $p < 0.01$), as well as the relationship between inspirational motivation and IS-business strategic alignment ($\beta = 0.341$, $p < 0.01$), thus provides support for hypotheses H31 and H32. While control-oriented culture negatively moderates the relationship between idealized influence and IS-business strategic alignment ($\beta = -0.196$, $p < 0.01$), as well as the relationship between inspirational motivation and IS-business strategic alignment ($\beta_1 = -0.389$,

Table 7

Moderating Effect Analysis in SmartPLS.

The Main Effect Model (R^2 of Strategic Alignment = 51.0%)		
Path Relationship	Path Coefficient	t-Test
Idealized Influence→Strategic Alignment	0.177	**
Inspirational Motivation→Strategic Alignment	0.239	**
Flexibility-oriented Culture→Strategic Alignment	0.495	**
Control-oriented Culture→Strategic Alignment	-0.077	NS
Strategic Alignment→ES Assimilation	0.510	**
The Interaction Model (R^2 of Strategic Alignment = 54.8%)		
Path Relationship	Path Coefficient	t-Test
Idealized Influence→Strategic Alignment	0.238	**
Inspirational Motivation→Strategic Alignment	0.250	**
Flexibility-oriented Culture→Strategic Alignment	0.379	**
Control-oriented Culture→Strategic Alignment	-0.032	NS
Idealized Influence* Flexibility-oriented Culture →Strategic Alignment	0.197	**
Inspirational Motivation* Flexibility-oriented Culture →Strategic Alignment	0.341	**
Idealized Influence* Control-oriented Culture →Strategic Alignment	-0.196	**
Inspirational Motivation* Control-oriented Culture →Strategic Alignment	-0.389	**
Strategic Alignment→ES Assimilation	0.510	**

NS represents not significant.

Notes:

** Represents $p < .01$.

* Represents $p < .05$.

$p < 0.01$), providing support for hypotheses H41 and H42. Furthermore, the explained variance of IS-business strategic alignment has increased to 54.8% after adding the moderators of flexibility-oriented culture and control-oriented culture.

In order to better compare the interaction model that includes the interaction variables with the main effect model that excludes the interaction variables, this study then excludes the interaction variables and keeps the direct links between organizational cultures and IS-business strategic alignment. The analysis results of the main effect model and the interaction model are described in Table 7. Following Chin et al. (2003)'s approach, this study calculates Cohen's effect size by comparing the R^2 value for the interaction model with the R^2 value for the main effect model. The calculation procedure is described in the following equation (f^2 represents the Cohen's effect size value):

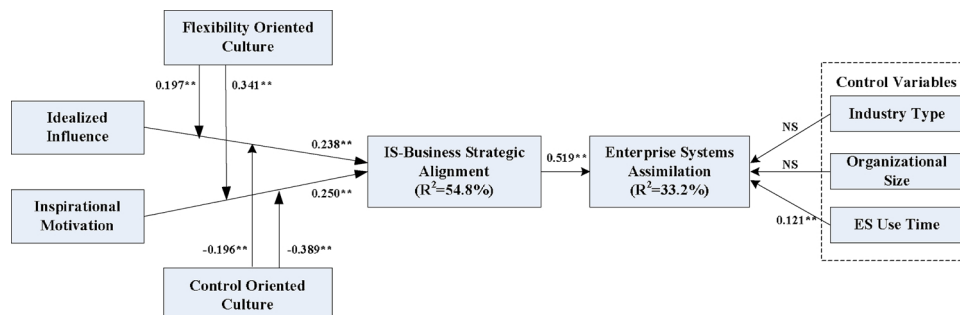


Fig. 4. PLS Test Results of the Moderating Effect Model.

(Notes: ** represents $p < .01$; * represents $p < .05$; NS represents not significant).

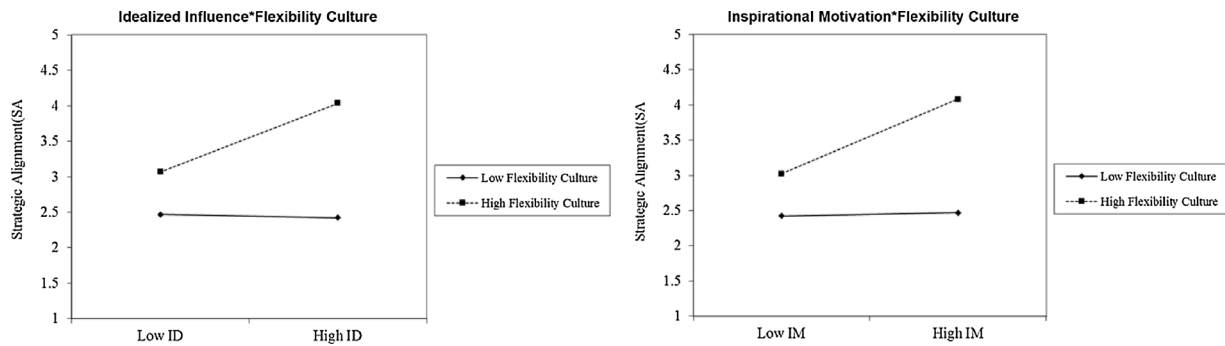


Fig. 5. Moderating Effect of Flexibility-Oriented Culture.

$$f^2 = \frac{R^2_{\text{Interaction model}} - R^2_{\text{Main effect model}}}{1 - R^2_{\text{Interaction model}}} \quad (1)$$

In Eq. (1), the $R^2_{\text{Interaction model}}$ and $R^2_{\text{Main effect model}}$ are 0.510 and 0.548 respectively, and the calculated Cohen's effect size (f^2) is 0.084 (Cohen, 1988). The effect size value indicates a between small and medium moderating effect of organizational culture based on the criterion suggested in the previous IS literature (Chin et al., 2003).

Fig. 5 depicts the pattern of moderating effects of flexibility-oriented culture on the relationship between leadership behaviors and IS-business strategic alignment. As illustrated in Fig. 5, the influences of idealized influence and inspirational motivation on IS-business strategic alignment are strengthened when there exists a flexibility-oriented culture within the organization. The results further demonstrate that flexibility-oriented culture positively moderates the relationship between strategic leadership behaviors and IS-business strategic alignment.

Fig. 6 describes the pattern of moderating effects of control-oriented culture on the relationship between strategic leadership behaviors and IS-business strategic alignment. As illustrated in Fig. 6, the influences of idealized influence and inspirational motivation on IS-business strategic alignment are weakened when there exists a control-oriented culture within the organization. The results further demonstrate that control-oriented culture negatively moderates the relationship between strategic leadership behaviors and IS-business strategic alignment.

4.3.4. Post-hoc analysis- mediating test

The analysis results of Fig. 3 imply that IS-business strategic alignment may mediate the effects of idealized influence and inspirational motivation on ES assimilation. Since no formal hypothesis is developed regarding the mediating effect, this study conducts a post-hoc analysis in PLS to test the mediating effect of strategic alignment between strategic leadership behaviors and ES assimilation based on the following criteria: (1) the independent variable (IV) is significantly associated with the dependent variable (DV) when the mediator (M) is not included in the model; (2) the effect of independent variable on

dependent variable is reduced to zero (Full Mediation, FM) or reduced by a significant amount (Partial Mediation, PM) after adding the mediator; (3) the independent variable is significantly associated with the mediator, and the mediator is significantly associated with the dependent variable (Baron & Kenny, 1986; Liang et al., 2007; Shao, Feng et al., 2016). The analysis results in PLS are illustrated in Table 8. The results suggest that strategic alignment fully mediates the relationship between idealized influence and ES assimilation, and partially mediates the relationship between inspirational motivation and ES assimilation (Baron & Kenny, 1986; Liang et al., 2007).

5. Theoretical implications and practical implications

5.1. Theoretical implications

This study makes at least three contributions to the extant literature. Firstly, this study examines the direct influences of two specific strategic leadership behaviors on IS-business strategic alignment and Enterprise Systems assimilation. Previous literature mostly considers strategic leadership as an overall construct to examine its influence on organizational success. There exists a theoretical gap regarding how different facets of leadership behaviors might influence the alignment between business and IS strategies in the post-implementation phase, when system functionalities have been diffused in routine processes. By conducting an empirical study in China, this study uncovers that idealized influence and inspirational motivation leadership behaviors are beneficial to facilitate the alignment between business and IS strategies. The empirical research findings can extend the previous literature of IS-business strategic alignment from a strategic leadership theoretical perspective.

Secondly, this study uncovers the moderating effect of organizational culture between strategic leadership behaviors and IS-business strategic alignment. Prior studies mostly focus on the direct influence of strategic leadership on organizational success, while ignoring the effectiveness of leadership in different organizational situations. This

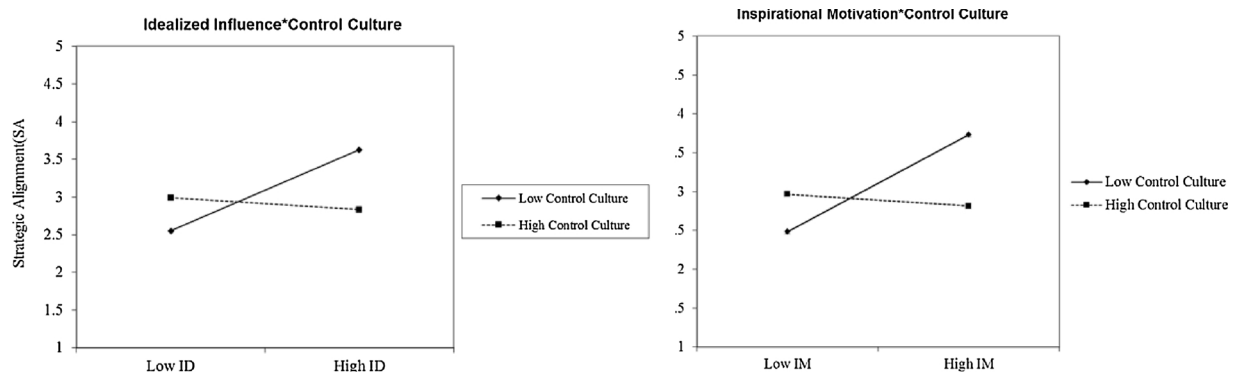


Fig. 6. Moderating Effect of Control-Oriented Culture.

Table 8
Mediation Test Results.

Variables			Path coefficient				Mediation Effect
IV	M	DV	IV→DV	IV→M	IV + M→DV		
					IV→DV	M→DV	
Idealized Influence	Strategic Alignment	ES Assimilation	0.155 ^{***}	0.352 ^{***}	NS	0.465 ^{***}	Full Mediation
Inspirational Motivation			0.255 ^{***}	0.342 ^{***}	0.095 ⁺		Partial Mediation

NS represents not significant.

Notes:

** Represents $p < .01$.

* Represents $p < .05$.

study extends the previous literature by considering organizational culture as a significant contingency factor, and examining the interaction effects of leadership behaviors and organizational cultures on IS-business strategic alignment. Empirical research findings indicate that idealized influence and inspirational motivation leadership behaviors are more effective in flexibility-oriented culture but less effective in control-oriented culture. The research findings could further refine the boundary condition of leadership effectiveness in facilitating IS-business strategic alignment from an organizational culture theoretical perspective.

Thirdly, this study uncovers the mediating effect of IS-business strategic alignment between strategic leadership behaviors and ES assimilation. Although previous studies have underlined the significance of leadership in achieving strategic alignment and ES assimilation, few studies have empirically examined the relationship between the constructs. By integrating the three constructs in a same model, this study finds that IS-business strategic alignment fully mediates the influence of idealized influence on ES assimilation, and partially mediates the influence of inspirational motivation on ES assimilation. The empirical findings could further enrich the extant literature of Enterprise Systems assimilation from an IS-business strategic alignment theoretical perspective.

5.2. Practical implications

This study can provide guidelines to top management and IT practitioners for managing and utilizing Enterprise Systems. Firstly, the empirical findings highlight that IS executives' strategic leadership behaviors are beneficial to achieve the alignment between business and IS strategies. Notably, strategic leadership behaviors are particularly important in the stage of Enterprise Systems assimilation. This requires the board to select appropriate candidates who exhibit specific leadership behaviors to take charge of the Enterprise Systems when the system has been successfully implemented and devoted into daily use. Previous literature mostly focuses on top executives' participation and strategic knowledge while ignoring their strategic leadership behaviors. This study highlights that Enterprise Systems deployment and assimilation is a long-term strategic issue for the organization, thus top executives in charge of Enterprise Systems must be visionary, insightful and inspirational. Accordingly, the board must also pay attention to the two strategic leadership behaviors, specifically idealized influence and inspiration motivation, when selecting candidates to take charge of the Enterprise Systems.

Secondly, the empirical findings suggest that a match between leadership behaviors and organizational culture is beneficial to achieve the alignment between business strategy and IS strategy. Prior literature mostly examines the direct influence of senior leadership on IS-business strategic alignment while ignoring the contingency of organizational culture. By adopting competing values model (CVM) in the research framework, this study finds that flexibility-oriented culture can further strengthen the influences of idealized influence and inspirational

motivation on IS-business strategic alignment, while control-oriented culture may weaken the influences of idealized influence and inspirational motivation on IS-business strategic alignment. This research finding can offer guidelines for CEOs who initiate and shape the dominated organizational values to promote the most appropriate culture in alignment with IS executives' strategic leadership behaviors. In addition to selecting an appropriate candidate to take charge of Enterprise Systems, the CEO must consider organizational culture as a significant situational factor when designing and formulating IS strategy in support of business strategy.

Thirdly, the empirical findings suggest that the alignment between business and IS strategies is beneficial to facilitate Enterprise Systems assimilation. Considering that organizational business strategy is a dynamic process, the environment surrounding organizations largely determine the choice of strategies and managerial behaviors. In particular, organizations must build dynamic strategies and agile processes to achieve competitive advantage in the constantly changing marketing and technology environment. For example, the well-known firm Alibaba has changed its original business strategy from e-commerce to big data and cloud-computing application, and adjusted the IS strategy in alignment with its business strategy. Accordingly, the IS executives must facilitate a dynamic application and deployment of Information Systems according to business strategies. Only if the underlying system functionalities are designed in alignment with business visions and goals, the information systems can be used to support business decision makings at operational and strategic levels.

6. Conclusions and future research directions

This study develops a theoretical model to examine the influences of IS executives' strategic leadership behaviors on IS-business strategic alignment and Enterprise Systems assimilation. Organizational culture is considered as a significant contingency factor that moderates the relationship between strategic leadership behaviors and IS-business strategic alignment in the research model. A survey is conducted in China and 132 valid data is collected from organizations that have used Enterprise Systems for at least one year. Structural equation modelling technique is used to analyze the research model. The empirical analysis results suggest that idealized influence and inspirational motivation leadership behaviors are significant drivers of IS-Business strategic alignment, which in turn has a positive influence on Enterprise Systems assimilation. Furthermore, flexibility-oriented culture positively moderates the relationship between strategic leadership behaviors and IS-Business strategic alignment, while control-oriented culture negatively moderates their relationship.

This study has several limitations which open up directions for future research. Firstly, this study uses cross-sectional data to test the theoretical model, which may cause the issue of common method bias. Future research could conduct a longitudinal approach to examine if the influences of strategic leadership behaviors on IS-business strategic alignment and Enterprise Systems assimilation change over time.

Secondly this study mainly concentrates on idealized influence and inspirational motivation, which are recognized as prominent characteristics of strategic leadership. Future studies can examine if other dimensions of strategic leadership also play significant roles in achieving the alignment between business and IS strategies, and whether their influences are moderated by different organizational cultures. Thirdly, this study is conducted in China and all data is collected from Chinese organizations, which may limit the generalization of the empirical results. A follow-up interesting study could collect data from organizations in other countries, in order to examine if the effectiveness of strategic leadership is contingent upon national cultures. Last but not

least, future studies can extend the sample size and collect more data from organizations of different industries and sizes, in order to examine if the influences of strategic leadership on IS-business strategic alignment and ES assimilation are contingent upon industry and organizational size.

Acknowledgements

This research was supported by the National Natural Science Foundation of China (71771064, 71301035) and the Ministry of Education of Humanities and Social Science Project (17YJC630118).

Appendix A. Survey Instrument

See [Tables A1 and A2](#).

Table A1
Survey Instrument for the IS Executive.

Enterprise Systems Assimilation											
Question1: In this study, we define levels of organizational ERP assimilation based on following definitions:											
1.1 ERP is used for routine business operations supporting.											
1.2 ERP is used to support our company's short and medium operational plans (e.g. marketing, production, finance).											
1.3 ERP is used to support our company's long term strategic plans (e.g. marketing, production, finance).											
Please circle the number you think most closely represents your company's level of using the ERP system to support:											
Business Process			Decision Making			Business Strategy					
1	2	3	4	5	6	7					
Question2: In this study, we define levels of organizational ERP assimilation based on following definitions:											
2.1 ERP is used to process data generated by daily business transactions in our company.											
2.2 ERP provides necessary data to support our company's operational decision making.											
2.3 ERP is used to help top management team to determine the company's strategic goals.											
Please circle the number you think most closely represents your company's level of using the ERP system to support:											
Business Process			Decision Making			Business Strategy					
1	2	3	4	5	6	7					
Question3: In this study, we define levels of organizational ERP assimilation based on following definitions:											
3.1 In our company, transactional and production data are organized and integrated by ERP system.											
3.2 In our company, ERP system provides analytical reports that are used for making operational decisions.											
3.3 ERP is used to help top management team to define the company's future strategic direction.											
Please circle the number you think most closely represents your company's level of using the ERP system to support:											
Business Process			Decision Making			Business Strategy					
1	2	3	4	5	6	7					
IS-Business Strategic Alignment											
1-Strongly Disagree			4-Neutral			7-Strongly Agree					
The IS strategy is congruent with the corporate business strategy in your organization											
					1	2	3	4	5	6	7
Decisions in IS planning are tightly linked to the organization's strategic plan											
					1	2	3	4	5	6	7
Our business strategy and IS strategy are closely aligned											
					1	2	3	4	5	6	7
Flexibility-oriented Culture											
1-Strongly Disagree			4-Neutral			7-Strongly Agree					
Our firm is a very dynamic place and entrepreneurial place.											
					1	2	3	4	5	6	7
Our firm emphasizes growth by generating new products or services.											
					1	2	3	4	5	6	7
People in our firm are willing to take risks for innovation.											
					1	2	3	4	5	6	7
The glue that holds our organization together is trust, loyalty and commitment to development.											
					1	2	3	4	5	6	7
Control-oriented Culture											
1-Strongly Disagree			4-Neutral			7-Strongly Agree					
Our firm is a very production oriented place.											
					1	2	3	4	5	6	7
The glue that holds our firm together is formal rules and policies.											
					1	2	3	4	5	6	7
Our firm emphasizes permanence, stability and efficiency.											
					1	2	3	4	5	6	7
Accomplishing goals is important in our firm.											
					1	2	3	4	5	6	7

Table A2
Survey Instrument for the Direct Subordinate of the IS Executive.

Leadership Traits									
1-Strongly Disagree	4-Neutral	7-Strongly Agree							
Idealized Influence	The top executive instills pride in us for being associated with him/her	1	2	3	4	5	6	7	
	The top executive goes beyond self-interest for the good of the firm	1	2	3	4	5	6	7	
	The top executive acts in ways that build respect for him/her	1	2	3	4	5	6	7	
	The top executive displays a sense of power and confidence	1	2	3	4	5	6	7	
	The top executive specifies the importance of having a strong sense of purpose	1	2	3	4	5	6	7	
Inspirational Motivation	The top executive emphasizes the importance of having a collective sense of mission	1	2	3	4	5	6	7	
	The top executive talks optimistically about the future	1	2	3	4	5	6	7	
	The top executive talks enthusiastically about what needs to be accomplished	1	2	3	4	5	6	7	
	The top executive articulates a compelling vision of the future	1	2	3	4	5	6	7	
	The top executive expresses confidence that goals will be achieved	1	2	3	4	5	6	7	

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