A Critical Examination of the Causes of Failed IS Implementation: A Review of the Literature on Power and Culture

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Abstract. As organizational life is becoming increasingly dependent on information systems (IS), proper IS implementation has become imperative. If it is not properly implemented, it may disrupt the organizations' daily operations and strategic decision-making, which can carry significant monetary consequences. Sometimes IS implementation is halted halfway, or at any stage of the implementation process, which may also carry significant monetary consequences to the organizations, especially when the size of the IS implementation projects is large. This paper focuses on the latter. Through our literature review, we discovered that it is the human aspect, instead of the technology aspect, that contributes to most of the failed IS implementations. To better understand how this could take place, our study highlights two possible reasons of failed IS implementation: (1) organizational culture complexity and (2) power and politics in the organization.

Keywords: IS implementation failure · Power · Politics · Organizational culture complexity

1 Introduction

Organizations invest heavily in technology projects in terms of money, manpower and time. IS guides the daily tasks of an organization and provides a competitive advantage. The study on IS implementation failure unearths the complexity in IS implementation, provides solutions and saves organizations the fear of investing in technology. IS implementation is arguably not a simple task as it initially seems. A survey of 5,400 large scale IS implementation projects (i.e., projects with the initial budgets greater than US$15 million) reported that 17 % of the projects were so bad that they threatened the very existence of the organizations [6]. The IS implementation projects may exceed the allocated budget, experience delays due to various reasons, or not deliver their expected value.

Most IS projects aim to improve or enhance an existing work process. The goals of technology projects are the visions that result from coordination and interaction of the actors involved. The actors include non-humans, for this case technology, and humans. This underscores the integral part that human behavior plays in the success of

technology projects. Technology projects that do not take into account socio-technical factors such as diversity and plurality of actor groups, technology drift and interpretative flexibility result in miscalculations, costly delays and ultimately end up in failure [19, 28, 32]. Technical and social contingencies are of equal importance in the planning, formulation and implementation of technology projects.

There are inherent problems in IS implementation projects besides the technical problems encountered due to the diverse nature and culture of the employees and the management of the businesses for which they are being implemented. For a successful implementation, IS projects always require power realignments; understanding the impact of organizational culture, and a conducive environment within the organization [7, 44, 56].

The role of power in terms of IS failure has been highlighted in existing studies. In most cases, a wide gap between stakeholders' expectations enunciated in some ideal or standard project and its actual performance becomes the major cause of IS projects failure [36]. The stakeholders expect much more from the system whereas the actual outcome is far less than expected. Ultimately, the stakeholders are disappointed and the project fails. The failure of IS projects is also due to the vested interests of one or several groups of people called stakeholders. The interests originate from a personal, or a group advantage for controlling important material or organizational resources. These interests are symbolized in everyday situations through expectations expressing dynamic concerns of stakeholders with the IS projects [36, 44]. Various studies have been carried out to systematically identify the major factors associated to IS implementation failure.

Similarly, the role of culture has enjoyed a prominent role among instances of IS failure. The success of IS projects depend on the level to which values of subgroups of an organization merge with the values of embedded in the new technological innovation [28]. A mismatch between the values embedded in the process of software development and the values of the organization will lead to a complicated process of implementation. The IS systems are built with cultural assumptions in their process methodologies. If these cultural assumptions conflict with those of developers and users, the process of implementation will be increasingly difficult, thus leading to project failure [1, 14, 28].

Individuals with a culture of low uncertainty avoidance tend to have a lower perception of risks while those of high certainty avoidance culture have a high perception to risk [25]. Most technology projects involve high risks. The organizations involving people of low uncertainty avoidance culture venture into troubled technology projects with less opposition. Organization has participants of both low and high uncertainty avoidance cultures have complications in IS implementation since the participants with high uncertainty avoidance fear risks and opposes the projects.

The different occupational subcultures within an organization (e.g. those of engineers and operators) can impede the implementation of technology projects. The two groups hold entirely different cultural interpretations of technology projects that are proposed. Employees with individualistic cultures are more likely to report unfavorable news about troubled technology projects than those with collectivist cultures [37]. The technologies in such organizations experience conflict, leading to resistance to adopting and eventual failure. Overall, clashing values among institutional and organizational

subcultures hinder collaboration and information sharing that is necessary for effective integration of technology such as development of component-based software. Such IS systems end up in a disaster.

The theory of values and culture in IS has for a long time been used to highlight the correlation between values and the ranges of social behavior. Studies on the adoption and diffusion of information technology in the organizations' subculture within the different groups found that these subgroups presented cultural differences, especially when it came to inception of the software component development and the methods to be applied [17]. These values did clash amongst the organizational subculture hindering the knowledge collaboration and flow necessary in integrating technology components and development of software efficiently [17, 28].

A number of studies have examined the link between IS project implementation failure and culture. The important role of social relations in project implementation and the group behavior has already been documented, as rich social relations can facilitate conflict resolution, increase interdependence among diverse group members and recognize the contribution of the minority [32, 58]. Shared ideologies have resulted to higher group cohesion, lower group conflicts, increased information exchange and greater commitment, thus leading to higher long-term group performance and IS project success [25, 59].

In sum, the effects of power, politics and culture appear to be important causes of IS failure. The main objective of the current study is to better understand how two main themes, namely (1) power and (2) culture can potentially impact the failure of IS projects. To this effect, we conducted an extensive literature review of the two topics. Our rationale was to identify the recent advances in these two streams of literature that can potentially shed additional light on the relationship between powers, culture and IS failure.

2 Literature Review

To serve the basis of our study, we conducted a literature review of published papers on power and culture until November 2014 from top-tier journals. In total, we reviewed 27 papers related to the organizational culture complexity literature, and 21 papers related to the literature on power and politics.

2.1 Organizational Culture Complexity (Theme 1)

As already discussed, the first stream of research on failed IS implementation has identified organizational culture complexity as a main reason for such negative outcomes. A substantial effort to discover cultural clashes prior to the implementation of an IS project is essential to avoid the project from being halted. Such clashes are extremely challenging to IS implementation success because it may remain undetected for an extended period of time [44]. Although an early detection can translate to fewer damages, it is unfortunately not possible to alter an organization culture [44] since culture is not constructed overnight. Towards this end, the newly planned IS has to match to the culture of an organization.

Lowry et al. [32] claimed that culture has a great effect on the technology supported decision-making group in the organizations and that in culturally homogenous groups, individualism is the factor which has a negative impact on the interpersonal trust on the information system technology. However, the excessive use of different virtual groups will help foster the trust of culturally diverse groups on the information technology systems [23].

Culture has an impact on the community manifestation as well as trust by the group when it comes to making decisions on technology grounds. Lowry et al. [32] conducted a study to understand the role of cognitive behavior in technology conceptualization. In their study, they realized that technology was likely to succeed once the culture attached to it is positive [32]. To understand the beliefs associated with information systems and technology in general, a study that was concluded by Koch et al. set out to find the implications of enabling social networking sites in a company since they happened to have certain implications on culture [26]. Culture has adverse effects that can lead to technology failure. However, if culture is designed in such a way that it fosters collaboration among the parties involved, it can boost their morale leading to technology development [48].

In our attempt to obtain a better understanding of the effects of organizational culture complexity on IS failure, we further scanned the recent literature on culture. Our literature review starts from June 2006, where Leidner and Kayworth [28] did an extensive literature review that examined most issues of each volume of the leading journals using IT culture and information systems keywords, dating back to the early 1990s. Leidner and Kayworth [28] categorized the studies by methodology across six themes: (1) culture and IS development, (2) culture, IS adoption, and diffusion, (3) culture, IS use, and outcomes, (4) culture, IS management, and strategy, (5) influence on culture, and (6) IS culture. In short, we tracked the related works that cite this study [28] and attempted to classify them under the prism of IS success/failure. In terms of the latter, we followed another group of scholars, namely Gordon and Gordon [15], who provide a framework that consists of four effective IS projects' success/failure stages: (1) Diagnosis (2) Evaluation, (3) Design, and (4) Implementation – the details will be described below.

Based on Leidner and Kayworth [28], Gordon and Gordon [15], and literature reviews from 2006 to November 2014, we have adopted the below four subthemes. And for our literature review, we examined 24 articles based on the roles of culture related to three levels: the national, organizational, and departmental levels of culture [28]. Of these, 16 articles are at the organizational level and 8 are at the national level. We did not identify any paper in the departmental level (Table 1). The structure of the table is based on the four stages of effective IS projects' success/failure developed by Gordon and Gordon [15], also referred to as subthemes. In short, these are the following:

Subtheme 0 – Diagnosis:

Diagnosis - Research; What other competitive companies are using; assess the situation and determine needs. The team will first assess an organization's need for information systems according to the existing situation facing it. The Diagnosis phase

requires a description of the existing problem, the context in which it occurs, opportunity, type of information available, the type of information required, and possible ways of securing the required information. None of the papers that we reviewed were classified under this subtheme.

Subtheme 1 – Evaluation:

According to Gordon and Gordon [15], the evaluation phase has several steps:

1. Asses the current components of information technology and systems used to acquire, process, store, retrieve, or communicate information;
2. Compare these components to the available systems;
3. Determine what information needs are not or cannot be handled;
4. Examine and document any current initiatives currently being planned or implemented that involves IT resources.

We found that only two studies covered or examined the relationship between culture and IS evaluation; both studies focused on organizational level of culture. It is interesting for future research to assess this subtheme on the national level of culture in the context of IS evaluation in multinational corporation.

Subtheme 2 – Design and Implementation:

The design phase includes correcting deficiencies in the existing systems or proposing new IS; integrate the state-of-the-art practices and technology into them and involve making decisions about specific technology and their integration into the existing IS.

This phase focuses on the issues associated with the implementation of the new and/or altered systems. The focus is to answer the following question: how will the implementation occur, what additional resources will be required for the IS implementation, what types of follow-up will occur, how will the changes affect other aspects of an individual's or organization's functioning, what are the roles of different individuals (managers, IS staffs, specialists from outside the organization) for the IS implementation, and how does the implementation timetable should look like [15, 28]. Six articles are related to this subtheme.

Subtheme 3: IS Use, Adoption, and Outcomes

16 of the studies fall into the subtheme of IS use, adoption and outcomes; nine at the national level and nine at the organizational level of culture. Collectively, these studies comprehensively examine the relationship between culture and the use of IS.

In sum, a number of studies have examined the link between technology project implementation success/failure and culture since 2006. In any organization, the introduction of technology projects may be perceived as disruptive to the existing culture of the organization and hence face opposition as people are more likely to resist changes that make the users distress. As a result, it is necessary to better understand the concept of culture, as it plays a very important role and can directly or indirectly influence implementation of IT systems. However, defining, measuring, and understanding the concept of culture remains a challenge [1, 26, 28, 58]. According to our literature review, behaviors that result from introduction of information technology projects define the success or failure of an IT project [58]. Social norms, which are part of the organization culture, influence how members of the organization react to introduction of IT and act as a means of social control by setting expectations and boundaries of

appropriate behaviors for members [55, 58]. Studies in culture and its effect on IT projects implementation were taken to another level when Kappos and Rivard [24] created a model that explains the relationships between culture and IS development. The authors identified three perspectives of the culture's modeling in information technology and their application; integration, differentiation, and fragmentation [24]. Culture has an impact on community manifestation, as well as on the degree of trust among group members when it comes to making decisions on technology initiatives. The role of cognitive behavior in technology conceptualization states that technology was likely to succeed once the culture attached to it is positive [32, 42, 58].

Table 1. Literature on organizational culture complexity and IS implementation

	Studies focusing on the national level of culture	Studies focusing on the organizational level of culture
Subtheme 1: IS evaluation	N/A	1. Bradley et al. [8]
		2. Hsu et al. [16]
Subtheme 2: IS design and implementation	1. Clemmensen [11]	1. Iivari and Huisman [18]
		2. Kappos and Rivard [24]
		3. Popovic et al. [39]
		4. Rai et al. [40]
		5. Schmiedel et al. [47]
Subtheme 3: IS use, adoption, and outcomes	1. Clemmensen [11]	1. Jackson [20]
	2. Im et al. [19]	2. Kappos and Rivard [24]
	3. Lowry et al. [32]	3. Koch et al. [26]
	4. Martinsons et al. [35]	4. Li and Mao [31]
	5. Sia et al. [49]	5. Ravishankar [41]
	6. Tan et al. [54]	6. Reinecke and Bernstein [42]
	7. Vance et al. [57]	7. Rizzuto et al. [43]
		8. Strong and Volkoff [53]
		9. Thomas and Bostrom [55]

2.2 Power and Politics (Theme 2)

A significant number of studies have provided evidence suggesting that failed IS implementation is due to the aspects of power and politics in the organization. Power is defined in terms of behavioral outcomes instead of the purposes or the professed legitimacy of the behaviors involved in power use [45]. Power has the potential to determine the success or failure of an IS implementation project. IS implementation projects have historically been halted through the misuse of power and politics. Power and politics complicate the process of implementing IS by constraining the process of constructing and setting up effective management models [3]. Power and politics in an organization may impact how the organization approaches the technology, recruit, and train project members, design the system, and support the project. Ironically, perhaps the existing IS in the organization nurtures the development of power in the

organization since IS enable information to be disseminated in non-random ways, where some employees have better access to information compared to others [34]. To this end, failure of the IS implementation is essentially the embodiment of a recognized situation, instead of the actual failure of the system [3].

Our literature review starts from December 2002, where Jasperson et al. [21] used the meta-triangulation method to explore the relationships between power and IS outcomes based on a sample of 82 articles from management and IS journals that were published between 1980 and 1999. We applied the framework of Jasperson et al. [21] to examine the literature in order to identify: (1) the casual structures between IS and organizational power based on Markus and Robey [33] 's concept, and, (2) the role of power and different IS outcomes based on Bradshaw-Camball and Murray's [9] concept.

We further classified the literature into three main IS disciplines: (1) the role and impact of IS when it comes to determining the most relevant decision-making to achieve competitive advantage, (2) IS development and deployment, and (3) IS use and implementation, which describes power and politics associated with IS management and implementation. Studies show that the conflict starts when IS staff acquire their power from their knowledge of and their access to technology, while the business users use their control of financial resources to guide the systems directions and implementation. The result is that everyone attempts to achieve some outcomes that favor their interests and/or increase their ownership of the resources.

In total, we examined 17 articles. Of these, 5 articles are related to the structure between IS and organizational power and 12 articles are related to role of power and (potential) IS outcomes. From the table, it is interesting to note the non-existent study that focuses on organization and management of IS resources to examine the role of power and potential IS outcomes although the two are closely related. This research gap should be investigated by future research (Table 2).

Our literature review revealed that power certainly has a strong influence on the failure/success of information technology projects. There are various perspectives of power and how they lead information systems implementation to success or failure; include; zero sum view of power, a processual view of power, an organizational view of power, and finally the social view of power [13, 21, 46].

A recent study was conducted to analyze how politics, power, norms, resistance and culture affect the implementation of an IT project by adopting Clegg's [10] framework of circuits of power, norms, resistance, power and cultural relationships to proof that implementation of IS often incurs problems and leads to failure due to of power relations and political games [10, 51]. Another empirical case study examined an IS project that lost its significance and finally failed due to political reasons and the practices that existed in the organization. The researchers adopted Michel Foucault's theoretical work on power, which states that every relationship is a power relationship. The existing power dynamics in the organization and the rationality in IS innovation greatly influenced how the interested parties judged the value of the new innovation. This in turn influenced their ability to corrupt or support the initiative [4, 12, 51]. A study by Attygalle et al. [3] explored the power and political aspects related to adoption of information systems. This study is in line with other works, which have

concluded that power and politics complicate the process of implementing IS and may impact the ways in which an organization and its members approach technology, recruit and train members, design their systems and support projects [4, 45].

Table 2. Literature on power, politics, and IS implementation

	Studies focusing on the (potential) role and impact of IS	Studies focusing on IS development and deployment	Studies focusing on organization and management of IS resources
Subtheme 1: Structure between IS and organizational power	1. Silva et al. [51] 2. Xue et al. [61]	1. Dhillon [12] 2. Smith et al. [52]	1. Avgerou and McGrath [4]
Subtheme 2: Role of power and (potential) IS outcomes	1. Backhouse et al. [5] 2. Johnson and Cooper [22] 3. Silva and Fulk [50] 4. Williams and Karahanna [60]	1. Allen et al. [2] 2. Dhillon [12] 3. Doolin [13] 4. Lapointe and Rivard [27] 5. Levina [30] 6. Levina and Vaast [29] 7. Phang et al. [38] 8. Sabherwal and Gover [46]	N/A

3   Discussion and Future Research

Defining and measuring culture is one of the greatest challenges faced by researchers on the study of the relationship between information systems and culture. This can be attributed to that fact that it is difficult to decide what level of culture to study, as well as that fact that it is not possible to analyze culture objectively at a single level. There is therefore need for further research to unpack the levels of culture and identify the ones that are related to Information Technology. To have a conclusive and workable definition of culture in relation to information technology is a necessary point of study, so as to provide a formidable framework for the study of the IS phenomena [28]. Further studies should be focused towards identifying and creating a more realistic view of culture, so as to understand the individual simultaneously with the organization as well as other external factors, which have significant influence to functioning of the individual.

Other factors that influence the success of IT projects should be studied with bias towards IT related aspects such as the cost of the systems, complexity in use, interoperability among others, as those are some of the other factors which greatly impede project success. There is no data available on how such factors may influence organization culture as well as such affect the success of the projects. These are important areas where further research is need to provide answers to the many pending questions. The trend worldwide is that the uptake of information technology continues to increase despite the many challenges facing the sector. Providing the relevant data will thus help provide easy solutions so that projects can smoothly be integrated and Information Technology be integrated to organizations where they are required.

The previous studies concentrated on the influence of national and organizational cultures on the implementation of IS. However, offshore IS development practices are on the rise. Further research needs to be done on the influence of culture on culturally diverse, globally distributed software development teams. The future research should indicate how the values of these diverse team members contradict or complement each other in the process of IS development and implementation. It is important to indicate how such culturally diverse teams should reconcile their divergent value orientation and effectively develop and implement IS.

The research conducted on IS implementation and culture so far focuses on IS a construct rather than breaking it into the technology and informational aspects. This contradicts the study of culture on implementation. For example, the IS users of the uncertainty avoidance culture avoid technology for the fear of its cost. On the other hand, the culture may encourage them to seek more information for a deeper understanding. Future research should choose a categorically clear aspect of research on culture and IS, whether informational or technological.

One of the major gaps is related to diagnosis phase, where no studies dealt explicitly with the question of how culture and power influence IS initiatives during the Diagnosis phase (what other competitive companies are using; assess the situation and determine needs).

4   Conclusion

IS implementation projects often fail because of the vested interests of the stakeholders. If every stakeholder puts his/her personal interests on top of the common benefits, then the IS implementation projects are likely to be delayed, over-budget, or stopped. We posit that this seemingly common problem can be attributed to two factors: the organizational culture complexity, and the power and politics in the organization. Through systematic search and review of the literature, we classified the literature into different subthemes. It is important to note here that the two factors are by no means mutually exclusive. Instead, they are so much intertwined that the presence of any one of them may trigger the other.

To conclude, 'human-computer interaction' is indeed already present as early as in the initial planning of IS implementation. Right from the start, the decision to invest in a new IS is likely to be accompanied by cultural complexity and politics, which may be reflected through disagreement about the organizational goals and values, and the

uncertainty about the means required to implement the IS. It is important for the organizations, especially the sponsors of the new IS, to be aware of these issues and prevent them from disturbing the successful implementation of IS projects.

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