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ABSTRACT

This paper examines the critical role political processes play in small organizations' software maintenance. To identify political processes, a case study involving two projects (a successful and a failed project) was conducted in a small organization. Analysis of data from the case studies was used to develop insights about the phenomenon which highlight the important role of individuals' political processes in enabling and impeding organizational objectives. Specifically individual's political strategies and styles are explored and their effects on the outcome of software maintenance projects are presented. Preliminary findings of this research suggests that project success is contingent on the emergence of a strong political leadership and that such leadership emerges through synergies in political styles and political strategies of individual actors.

Keywords

Small Organizations, Software Maintenance, Politics, Power, Information Systems, Case Study, Grounded Theory

INTRODUCTION

Software Maintenance (SM) is an extremely important function for small organizations (SO). 60-80 percent of organizational resources get allocated to SM (Takang and Grubb, 1996). At the same time, SO are the drivers of economic growth in many countries of North American, Europe and Asia (Software Industry Statistics, 1991-2005). Despite the significance of SM in SO, little research has been carried out to investigate the challenges that SO face in SM (Brodman and Johnson, 1994). Some of the specific challenges are lack of resources - personnel, time, and funds (Pigoski, 1997). Such shortage of resources results in insufficient processes, methodologies, guidelines, tools and documentation needed for SM.

In Small Organizations, SM processes are carried out by neither set procedures nor chaotic ad-hoc spur of the moment flashes of whims; rather they are guided by certain heuristics that are developed by individuals over time (Hasan and Chakraborty, 2011). The individual therefore plays a critical role in the success of SM activities within an organization. However there is limited research investigating how such individuals within a small organization propagate and influence processes through an institutionalization of their personal heuristics. We felt that a promising avenue of exploration would be the role played by political processes. Consequently we investigated the nature and the role played by political machinations through a case study analysis of a successful and failed project within a small organization. Specifically, we tried to answer this question:

"What are the relationships between political processes utilized by individuals and their effects on the outcomes of Software Maintenance projects?"

The rest of the paper is as follows. First, we briefly discuss politics and its impact on SO, then we explain our methodology of investigating this phenomenon (politics in SO) and finally we report our findings.

POLITICAL PROCESSES IN SOFTWARE MAINTENANCE

Political process can be seen in full swing in all phases of SM projects. Withholding support, delaying, providing token contributions, acting confused are types of political tactics employed by individuals (Doolin, 2004). Individuals play these political games because they want to achieve certain outcomes, deflect goals, dissipate energies or divert resources (Bardoch, 1977). SM projects can be impacted by these and other political means such as coalition building, deceit control and gaining support from a higher authority (Myers and Young, 1997). Sabherwal and Grover (2010) suggest that individuals can adopt one of the three following political strategies within a software project: Empire Building, Tug of War and Obstacle Race. Empire Building refers to political efforts that are employed to increase one's power or domain. Tug of War exhibits the desire of individuals to seek project control. Obstacle Race implies political maneuvers that are utilized to overcome obstacles and resistances.

The political processes are particularly significant in SM projects in SO because such organizations are short on resources (Pigoski, 1997). Furthermore, since a vast majority of organizational resources get allocated to SM, wastage of resources by any means is ill afforded by SO. Research suggests that a significant amount of resources get wasted due to political maneuvers in software projects (Sabherwal and Grover, 2010). Thus in order to optimize limited resources in SM projects, it is essential that small organizations understand and better manage political practices that exists among its ranks.

Role of politics in information technology (IT) software projects is not a novel focus in IS research (although it has not been explicitly contextualized to SM and SO). Jasperson et al (2002) conducted a thorough review of existing articles and studies on Information Systems politics and presented theoretical conceptualizations that included workings of authority, participation in decision making, influence, power and politics. One reason for such a heightened interest in software professionals' political activities is because software professionals are often technically oriented individuals who constantly get subjected to political maneuvers, leading to significant frustrations (Overton and Frolick, 1996). Thus, it behooves IT professionals to understand the nature of political strategies that are played by various actors in organizations.

Political behavior increases in situations of uncertainty (Madison, 1980), particularly when formalized rules and systems are not in place (Fairholm, 1993). Small organizations, are typically characterized by a lack of such formalized systems and a dependence on reactive response to situations (Rautiainen et al., 2002) making them a fertile environment for increased political machinations. The significance of such political maneuverings become particularly important given the central role played by individual's heuristics in ensuring the success SM activities within in SO (Hasan and Chakraborty, 2011). One can conjecture that individuals face resistance and obstacles which can be overcome only through political maneuverings. Further, an understanding and channeling of power processes in SO becomes important because of increased dependence of individuals on each other which also gives rise to increased conflicts (Pfeffer, 1992).

METHODOLOGY

This research utilized a qualitative Case Study approach to investigate the phenomenon at hand. The choice of the methodology was predicated by two reasons. Case study has been suggested as an appropriate approach when a) the investigator goes into a real life context and explores the phenomenon (Yin, 1994) and b) the theoretical development understanding of the particular phenomenon are at a formative stage (Benbasat et al., 1987). Given that our primary motivation was to understand the political reality as it unfolds within a small organization and our understanding of political processes in SM projects in SO, was formative at best, case study lent itself to be an attractive approach.

Data Collection

The site for data collection is an Information Systems department (ISD) of a US mid-Atlantic public university that has a user base of 20,000 students and 3,000 employees. The Information Systems Department under study has a total of sixteen staff employees including seven developers, five analysts, three managers and one director. The vast majority of work carried out in ISD is in SM. Data was collected from interviews and existing documents. Interviews constituted semi-structured and open ended questions. All interviews were tape recorded and were fully transcribed. Reviewed documents included project plans, customer service requests, application user guides, and software specifications. The data collection was targeted over two types of projects: A successful and a failed project. Both of which were characterized by significant politicking amongst

the main actors. Tables 1 and 2 below exhibits data related to the organization and actors. Following that a brief description of each of the projects is provided.

Table 1: Organizational Information

Director	1
Managers	3 (1)*
Analysts	5 (2)
Software Developers	7 (2)
Department Staff Size	16
Majority of work in Software Development (SD) or Software Maintenance (SM)?	SM
SM Large Project Time Span in Weeks	> 12
SM Medium Project Time Span (in Weeks	2 - 11
SM Small Project Size Time Span in Weeks	< 2
Department Type	I.S. Dept.
Type of Business	University
User Base – Students	20,000
User Base – Staff	3,000
*Actual Interviews	

Table 2: Project Actors

Actors Involved	Successful Project	Failed Project
Developers	1	2
Analysts	2	1
I.S. Managers	1	0
I.S. Directors	1	0
I.S. Executives	1	1
Functional Users	30	5
Functional Managers	2	0
Functional Directors	0	2
Functional Executives	2	2

Successful Project

The purpose of the project was to automate the form submission process for students. Previously students would fill these forms online but a particular office would print them for storage, processing and retrieval. This office would print them and stack them into folders, which would be then passed around to multiple people and multiple offices located in different areas. Supplemental documents to each file would be received and sent to the appropriate folder wherever the folder may be. This created a lot of confusion, duplication of efforts, delayed processes and increased errors. A recommended solution was to overcome these problems by using document imaging and workflow technologies. The goals of the project were to enable streamline storage, quick retrieval and faster processing of these forms. All of these were achieved and the project is considered a successful project because it met the specifications for its initiation, within time and budget

Failed Project

This failed project was concerned with making it easy for students to complete their transactions at a university's vending location. If implemented this would have allowed students to see and order certain items at a web page they often visit. A project was initiated, but got stalled in the design phase due to political hurdles put up by various actors involved in the project. This is considered a failed project as it did not meet functional specifications for which it was initiated.

Because the enhancements in both of these projects were undertaken per user requirements within the context of existing information systems, they fall into the category of perfective software maintenance projects.

Data Analysis

For the data analysis we adopted the analytic procedures within the Grounded Theory Method (Glaser and Strauss, 1967).These analytic techniques provide "a systematic set of procedure to develop an inductively derived grounded theory about a phenomenon"(Glaser and Strauss 1967). In particular we followed the particular procedural instructions to GTM data analysis recommended by Strauss and Corbin (1998). Following GTM procedures the data analysis was conducted over three phases: (1) Open Coding, (2) Axial Coding and (3) Selective Coding. Below we will briefly describe each phase and show how we went about the GTM process towards generation of a theoretical framework

The Coding phases

Open coding allows the researcher to fracture the qualitative text into its theoretically relevant conceptual elements. The process involves analysis and reflection of blocks of text using techniques written memos. The purpose is to identify concepts and categories. Concepts are the initial building block of the theory that identify or describe the phenomenon under

consideration (Strauss and Corbin 1998).Below in Table 3 is an excerpt from one of the interview transcripts. It provides an example of concepts were generated during the open coding phase.

Table 3: Open Coding Concepts

Transcript	Memo and Concepts
Below is a follow-up question, after a developer mentioned that sometimes political instincts causes people to mislead him: **Why would another software professional mislead you or put you on a wrong track at your job?** Answer: *They don't want you to succeed. They want credit. They want to show that they know more. Also they don't want others to know that you are better than them. It's all about power and position. They want to be praised.*	This response shows a classic political maneuvering in action at workplace. There is a **race among peers** to get ahead of each other. It shows people have **hidden agendas**. They are **vying for power and positions**. They feel this way they can **get promotion** or have **more power**. Sometimes others see this behavior and become involved in a **political game**. The **climate becomes very political**. People play politics or **political games** due to many reasons. To get **control of resources, enlarge their domains** or to **overcome problems**. People also act certain way due **to emotional insecurity, peer pressure,** or the **politics of grouping** (race, age, and seniority). This is **politics at workplace**. Other **reasons for politics: getting ahead, getting praise (self-fulfillment), securing position,** etc.

The next step in Open Coding is to take similar concepts and labels and formulate categories from them. Categories are abstract representation of concepts and labels that are classified and grouped together (Strauss and Corbin 1998). Categories provide rich descriptions through the definition of properties. This is an iterative process and continues till saturation is reached and no further concepts or categories are revealed from the data. Below in Table 4, similar concepts and labels are grouped together from our data.

Table 4: Open Coding Categorization

| Political Strategies	Political Styles
• Empire Building • Tug of war • Territorial • Obstacle Race • Not doing enough • Just doing minimal • Lack of professionalism • Manipulation of situation and people to gain advantage	• Tactician/Moderate • Bystander/Apathy • Shotgun/Threatening/Forceful • Self-centered • Social skills • Soft skills • Being extravert • Being assertive/aggressive
Political Actors	**Politics in SO**
• Identify people with power • Cultivate relationship with people of power • Executives, Managers, Analysts • Power Users	• Individuals' involvement in many projects • Stepping over other domains • Resource Scarcity • Dependency on one another

Axial coding represents the next coding phase and is used to links the categories identified in open coding. The objective of this phase is to develop hierarchical relationships between the categories identified in the open coding phase. Identification of these connections requires multiple reading of the original transcripts and documents. The process of axial coding is facilitated by the use of the Paradigm approach suggested by Strauss and Corbin (1998). Strauss and Corbin suggest that to researchers to identify conditions, actions / interactions and consequences within the data. This approach enables analysts to better understand the data and generate meaningful relationships between categories. In our particular case the paradigm

approach was useful in asking questions of the data that facilitated our linking of the categories.   Below, in Table 5, our paradigm approach is presented and in Figure 1, related hierarchical links of categories are shown.

Table 5: Paradigm Approach

Conditions	Why individuals get involved in political processes\games? Where are political games played? How come individuals play political games? When are political games played?
Actions / Interactions	How are political games played? By who are political games played?
With What Consequences	What are the consequences of political games?

Figure1: Axial Coding - Category Linkages and Main Categories Emerging from Axial Coding
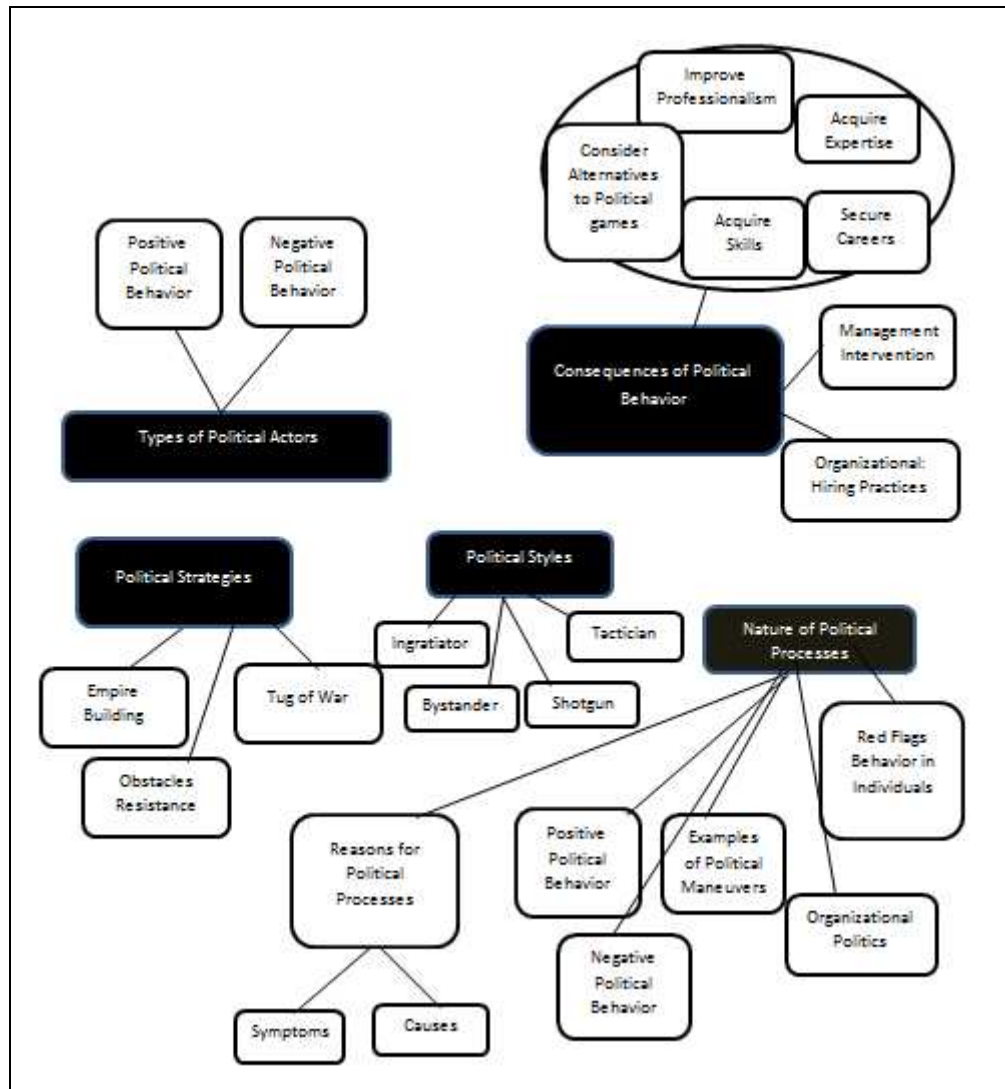
The primary objective of the selective coding phase was to explicate the final "story line" of the theoretical narrative by identifying the core category and linking them with the other major categories. The core category that was chosen for this particular theorizing effort is "the nature of the political process."

Theoretical Sensitivity

Developing of the theoretical narrative was facilitated by the mechanism of theoretical sensitivity. GTM scholars emphasize the importance of being sensitive to, and drawing inspiration from, existing research while developing the empirically grounded theoretical model. We sought to achieve this objective by drawing on broader theoretical perspectives from related IS research and organizational research, as recommended by GTM scholars (e.g., Urquhart, Lehman and Myers, 2010; Glaser 1978; Suddaby 2006).

In particular we were interested in developing an insight into the nature of the political process within a SO. To better understand the unique value each actor added, we investigated the political styles of the involved actors. The work of Kipnis and Schmidt (1988) was instrumental in helping us gain clarity about the political styles inherent within the actors in the SO. They identified four political styles employed by actors - a) Shotgun: A highly political person who uses threatening and bargaining behaviors; b) Ingratiator: A highly political person who relies on ingratiating and impression management practices; c) Tactician: A moderately political person who emphasizes competence, logic, reason and the use of information ; and, d) Bystander: Those who are minimally political and use few political tactics. This typology of political styles helps us examine the key actors within the organization and understand how the embodiment of such styles within the actors enabled the SM activities. In addition we developed insights into the nature of the political machinations within SO from the work of Sabherwal and Grover (2010). We would like to mention here that these theoretical lenses were used to identify relevant conceptual patterns to facilitate the emergence of theory. For example the above typologies made us cognizant of the existence of actors' political styles and strategies, and also sensitized us to look for the different patterns of political styles and strategies and their implications within the data.

FINDINGS

Our analyses of collected data exhibit not only a heavy presence of political maneuvers but also their constant impact on outcomes. Consequences of actors' political behavior with both positive and negative implications have been mentioned by researchers (Madison, 1980). It has been noted that politics can be useful to organizations in reaching its goals, coordinating staff, developing espirit de corps, and making decisions.

As we analyzed empirical data in the successful and failed projects, we found overall evidence of political machinations by all actors in one form or another.   Some of the terms that exemplify these actions are withholding support, providing token contributions, acting confused and exhibiting sensitivity, self-confidence, ambitiousness or social adeptness. The patterns of political style and political strategies that emerged were found to be closely aligned to the typology proposed Kipnis and Schmidt (1998) and Sabherwal and Grover (2005).

A common pattern of political machination used in the projects closely resembled the Empire Building strategy in its approach and nature of use, and was used by several actors in the projects under our study. One new executive, in particular, was described in the following way.

> *"The new executive saw the automation project as a way to solidify and extend his domain."*

Similarly we also found evidence of stratagems that closely resembled Obstacle Race and Tug of War. For example a manager describes how evidence of an obstacle race based strategy was employed within the projects.

> *"At one point, in this project, one of our main technical resources was not working properly. He was using stalling tactics, delaying work, not sharing knowledge and postponing tasks. Thankfully the project manager involved senior management in the right time; who took corrective action and put the project back on track."*

Given the scarce resources within a SO, there were ample evidence of turf battles and attempts to hold onto one's domain. For example one of the respondents had this to say about a manager

> ***"We had problems with one manager (functional). He was very self-conscious about his image and would not tolerate anyone else trying to do his role. He thought if others scheduled a meeting, or spoke more in a meeting, that took away from his authority. This cause many frictions with others and stalled the progress."***

Similarly individuals also used this stratagem to maintain their skill based capital within the organization

> ***"this developer wanted to not get anyone to learn web services technology usage, this way, he thought, his control will be intact."***

We also found evidence of political machinations resembling tug of wars being employed not only at the individual level but also at a team level. As a technical manager mentions

> ***"we faced users' ridicule from the functional team when my team did not correct errors in time. Overcoming their mockery and negative propaganda was a challenge for me but I totally ignored them and doggedly kept at fixing errors until they were all resolved. "***

As with political strategies, we found patterns of political styles that resembled Kipnis and Schmidt's typology. Typically management (both mid-level and executive) seemed to adopt the tactician or a shotgun style. There were indication that actors who had reputations as good leaders or effective managers often used these as a favored style. For example an analyst speaks about a functional executive

> ***"the functional executive was not a pushy person but he knew how to push the right buttons of people to get their cooperation. He is a good leader and knows how to lead."***

Another developer cites the example of a manager who used a shotgun approach

> ***"This manager was known to be a forceful person who got her way around. If she wanted something, she got it."***

We also found some evidence where individuals used ingratiating styles to curry favors or be seen favorably by supervisors or their peers. There also seem to be evidence that certain individuals or group of individuals were not so active in the political machination and were typically less influential in the projects. For example the users typically did not indulge or become part of the political dynamics within the projects

The use of diverse political styles and political strategies were in evidence across both the projects. As our intention was to develop insight as to how these machinations influenced project success or failure, we felt it would be interesting to identify if there were perceptible difference in the patterns of usage across the successful and failed project. The patterns that emerged are presented in tables 6 and 7 below. We would like to note here that this mapping is based on subjective interpretation that emerged from data and represents dominant political styles and strategies used by the individuals.

A study of the usage pattern that emerges indicates that at the executive level there seems to have been a preference of political style of a tactician. At the same time some of the executives who were not so involved in the project were less active and remained bystanders in the political process. This implies that this group was moderately active in politics but at the same time emphasized competence and data in decision making. In terms of political strategies, there was a prevalence of empire building and tug of war. While these strategies were often applied to attain project objectives, there also seems to have been a greater objective of expanding or protecting one's domain of influence. Interestingly the strategy of overcoming obstacle race was found to be used by all executives indicating an active preoccupation with overcoming resistance.

The individuals at mid-level showed slightly differing patterns based on the role. The directors were found to have employed all of the variations of political styles. In terms of political strategies, the utilization of empire building and tug of war was quite high. On the other hand, this group was not found to be active in the obstacle race. For the managers, shotgun seemed to be a preferred style perhaps indicating that the managers believe that forceful tactics are useful in keeping the project on track toward success. Similar to directors, managers used more of empire building and tug of war and were less involved in overcoming obstacle race.

In low-level staff, among analysts, the style of a tactician was used more. Among developers, ingratiatory style was found to be used more. Whereas, usage of political strategies was either non-existing or less used among low-level staff. This implies that due to their lesser prestige and power in the organization, these actors could not do much in overcoming obstacles.

While this analysis of the patterns of political style and political strategy used by the actors in both projects helped us gain interesting perspectives on the variations based on role-hierarchy within the organization, we were unable to identify an overall pattern that could provide us with insights on the influence of such patterns of political machination on project outcome. At the same time, there were some indications that certain individuals were more involved and also more influential within each of these projects. Based on this we shifted focus on examining the political dynamics involving only the most influential individuals in each project.

Table 6: Political Maneuvers in Successful Project

Actors	Political Style	Usage of Political Strategy		
		Empire Building	Tug of War	Overcoming Obstacle Race
Developer	Ingratiator	Frequent	Infrequent	Infrequent
I.S. Analyst #1	Tactician	Infrequent	Infrequent	Infrequent
I.S. Analyst #2	Bystander	Infrequent	Infrequent	Infrequent
I.S. Manager	Shotgun	Frequent	Frequent	Infrequent
I.S. Director	Tactician	Infrequent	Infrequent	Infrequent
I.S. Executive	Tactician	Infrequent	Infrequent	Frequent
Functional Manager#1	Shotgun	Frequent	Frequent	Frequent
Functional Managers#2	Ingratiator	Infrequent	Infrequent	Infrequent
Functional Executive#1	Tactician	Frequent	Frequent	Frequent
Functional Executive#2	Bystander	Infrequent	Infrequent	Frequent
Functional Users	Bystander	Infrequent	Rare	Rare

Table 7: Political Maneuvers in Failed Project

Actors	Political Style	Frequency Usage of Political Strategy		
		Empire Building	Tug of War	Overcoming Obstacle Race
I.S. Developer	Ingratiator	Rare	Rare	Rare
I.S. Analyst	Tactician	Rare	Rare	Rare
I.S. Executive	Tactician	Rare	Rare	Rare
Functional Director#1	Shotgun	Frequent	Frequent	Frequent
Functional Director#2	Ingratiator	Frequent	Frequent	Infrequent
Functional Executive#1	Tactician	Frequent	Frequent	Rare
Functional Executive#2	Bystander	Infrequent	Frequent	Rare
Functional Users (5)	Bystander	Rare	Rare	Rare

In the successful project, the functional executive #1, the I.S. Director and the I.S. Analyst #1, were the most influential actors. As we looked at their political styles, we found that all three of them employed the style of the tactician. This political style, which emphasizes competence, logic, reason and the use of information, could perhaps have been effective in achieving cooperation of the other actors in the project and aligning them toward the project goals. Additionally one can also conjecture that the similarity of political styles of the influential actors created a sort of positive resonance in terms of dealing with operational issues of the project and reduced the possibilities of conflict. Another interesting observation that emerges is that only one of the three influential actors, the functional executive, made frequent use of all three different political strategies. This perhaps makes sense as the owner of a project is typically the functional department and therefore this

functional executive needed to employ political stratagems more than the IS actors to champion the project and attain positive outcome. Therefore the indication is that there was an emergence of political leadership in the project in the form of the functional executive. Additionally the lack of strategic machinations demonstrated by the IS actors is also perhaps indicative of a lack of conflict within the personnel and also an acceptance of the political directions of the functional executive.

Evidence suggests that in the failed project, the functional directors and functional executives were the most influential actors. There is also an indication of much stronger political dynamics. In fact political interplay was so intense among these individuals that it overwhelmed everything else and the project came to a stand-still and eventually failed. It is also perhaps interesting to note that among the four key players, the most prevalent strategies were that of empire building and tug of war. These strategies, symbolic of an individual's strong urge for developing a strong domain for themselves, therefore could act as catalysts for potential conflict. In fact, project success desperately needed a compromise among the actors, but none wanted to relinquish his/her territory and compromise. In addition, the lack of strong political actors amongst the IS function (as evidenced by lower use of political strategies) also meant that there was no one within the project who could provide directions away from the conflict. This could have also contributed to project failure. Had these groups shown more political interest in the project, some positive energy could have channeled up to the higher ranked executives who would have taken positive action. Finally unlike the successful project, political styles of the influential individuals were diverse, which meant that no synergies were achieved that could have led to cooperation amongst these individuals.

DISCUSSION

The objective of this research study was to develop insight into the nature of political dynamics within SM projects in SO and how it can influence the outcome of a project. Our empirical analysis suggests that the political machinations within such projects are largely influenced by political styles and political strategies adopted by the actors. We also found evidence in our empirical study that the nature of such styles and strategies closely resemble the typologies proposed by Kipnis and Schmidt (1998) and Sabherwal and Grover (2005). Analysis of political styles and strategies used by the actors within the two projects also indicate that the former is often used to impact inter-personal relationships while the latter is used typically to exert and preserve a domain of influence. Consequently, there is more frequent use of political stratagems amongst higher management than amongst actors lower in the organizational hierarchy. Our empirical analysis and comparison of the two projects also provide us with some initial insights into how the political process impacts the outcome of our project. Our findings indicate that project success may be contingent on the emergence of a strong political leadership. Further such political leadership needs to be characterized by a sense of internal harmony and alignment of individual political objectives with the greater goals of the project. Our analysis also indicates that certain factors such as (a) an emergence of resonating political styles achieved through similarity or complementarity, (b) synergies achieved due to political strategies (and therefore objectives) amongst the key actors; and, (c) an alignment of political objectives of the key actors with the overall objectives of the project, are conducive to the emergence of strong political leadership.

While admittedly preliminary, we feel that our findings have some practical implications. First, it indicates to organizational leadership in SO that political processes could be harnessed to develop positive synergies within a project. While it may not be practical or feasible to control and reduce political machinations due to individual ambition, the organizational leadership could achieve some synergies through the identification of political styles of individuals within the organization and by developing a project resourcing policy based on achieving resonance of political styles. Second, our research also provides indication that development of political education of individuals need to be strongly considered. Organizations could offer employees training in political affairs in which they are encouraged to understand political climate of given projects, learn who is related to who, what are priorities and thinking of senior management, who are the really power players, and what are favored behaviors in an organization. Such training we believe could lead to the emergence of strong political leaders within the organization.

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