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May Tang
Nanyang Technological University

Christina Soh
Nanyang Technological University

Siew-Kein Sia
Nanyang Technological University

Wai Boh
Nanyang Technological University

A CONTINGENCY ANALYSIS OF POST-BUREAUCRATIC CONTROLS IN IT-RELATED CHANGE

May Tang
Siew Kian Sia
Christina Soh
Waifong Boh
Nanyang Business School
Nanyang Technological University
Singapore

Abstract

Recent developments in IT-enabled change have sparked many discussions on the emergence of a new management paradigm beyond bureaucracy. However, many of these studies are anecdotal or descriptive in nature, with few empirical studies. This research attempts to address this problem by developing a contingency framework within which the impact of information technology (IT) implementation on forms of post-bureaucratic controls is examined. It identifies post-bureaucratic control as a portfolio comprising empowerment, and panoptic or ideological control and argues that the emergence of these controls will differ, depending on the nature of the task structuredness and the context of IT-enabled change. It argues that the panoptic visibility afforded by the new technology enables management to decentralize power to employees without completely losing control. However, the ability to textualize behaviors in unstructured tasks is limited. In compensation, management will use ideological control to ensure that organization goals are met. Using a mixed methodology of qualitative and quantitative methods, two organizations, one undergoing an automational change and another a transformational change, were selected as cases to illustrate the framework. This study should prove interesting to researchers as it undertakes an empirical examination of post-bureaucratic controls and proposes a contingency framework to tie up apparent contradictions in findings. It also identifies new forms of control beyond bureaucracy, which practitioners may find are becoming increasingly relevant in a more fluid, uncertain "new economy."

Keywords: Business process transformation, organizational change, managerial control

1. INTRODUCTION

Research in organization control has evolved over the century. Edwards (1981), for example, has described the evolution of control in three broad phases, i.e., from "simple control" in the agricultural age, to "technical control" embedded within assembly lines, through to "bureaucratic control" in many large corporations today. However, recent developments in IT-enabled change have sparked off many discussions on the emergence of a new management paradigm beyond bureaucracy (Applegate et al. 1988; Drucker 1988; Hammer 1990; Huber 1984; Miles and Snow 1986; Toffler 1980). These studies are typically descriptive or anecdotal in nature and predictions often concur along a new control portfolio of greater empowerment with less obtrusive monitoring mechanisms.

In general, empirical examinations into these speculations of such post-bureaucratic controls are few. Even with these largely ethnographic empirical works, the incongruent research themes and inconclusive findings have provided little to explain the emergence of post-bureaucratic controls. As shown in Table 1, many of these studies pursue a specific control focus independently (e.g., empowerment, panoptic control) rather than treating them as a portfolio of control dimensions that may potentially trade-off

Table 1. Literature Review of Empirical Studies

Author/Year	Research Methods	Findings on Impact of IT-Enabled Change on Control
1. Doolin (1999)	Case Study	**Greater Empowerment** • The IT-enabled change was accompanied by an increase in decentralization of decision-making power to individual patient clinics.
2. Schwarz (1999)	Case Studies	**No Empowerment** • The new IT system was not accompanied by any change in the distribution of decision-making power.
3. Sewell (1998)	Case Study	**Greater Panoptic Control**
4. Sayer and Harvey (1997)	Case study	**Greater Panoptic Control**
5. Pascale et al. (1997)	Case Study	**Greater Ideological Control** • Organization transformation aimed to increase the employees understanding the aims and goals of the organization and how they contribute to the organizations success, thus increasing their belief in the values of the organization.
6. Pinsonneault and Kramer (1993)	Case Study	**Less Empowerment** • IT was used to automate the information gathering function of the middle managers. These middle managers were eliminated and top management used the information to access the information directly, thus centralizing the decision making power at the top and reducing empowerment.
7. Orlikowski (1993)	Organizational Ethnography	**Greater Empowerment** • The use of CASE tools in system increased the job scope of programmers and hence increased the level of empowerment.
8. Hammer and Champy (1993, p. 171)	Case Study	**Greater Ideological Control** • IT-enabled transformation was accompanied by deep cultural and strategic changes, which encouraged managers to share the values of the organization.
9. Dean et al. (1992)	Field Survey	**Inconclusive Impact on Empowerment** • IT was found to increase the decentralization of decision-making power but at the same time increase the level of formalization as well.
10. Zuboff (1988)	Case Study	**Greater Panoptic Control**
11. Dawson (1988)	Case Study	**Less Empowerment and Greater Panoptic Control** • IT subsumed the information gathering duties of supervisors and allowed top management to gather the information themselves and eliminate the middle managers. The IT system also allowed detailed tracking of work performance of workers.
12. Crowsten et al. (1986)	Case Study	**Less Empowerment** • IT increased the centralization of decision making.
13. Carter (1984)	Survey	**Less empowerment** in large and medium organizations. **Greater Empowerment** in small organizations.
15. Hirschhorn (1984)	Case Study	**Greater Empowerment** • IT facilitated the decentralization of decision making power to self managing teams.
16. Foster and Flynn (1984)	Case Study	**Greater Empowerment and Greater Panoptic Control**
17. Robey (1981)	Case Studies	**No Change In Empowerment** • IT was not observed to impact the distribution of authority in most cases but when it does, IT centralizes authority.

against each other. Moreover, the apparent contradictions among these findings remain unresolved. For example, while Orlikowski (1991) noted a control form that "facilitates decentralization on one hand and centralizes knowledge and power on the other," Schwarz (1999) noted "the constancy of organizational hierarchy" in that IT tends to supplement rather than eliminate existing control.

What remains unsurfaced in the diverse findings of these studies is the potential contingency conditions through which post-bureaucratic controls emerge. Sia et. al's (1999) empirical investigation of the transformation of a tax authority, for example, suggested task structuredness as a potential moderator to these observations. Their findings noted that panoptic control prevails as an "add-on" to the existing structure for routine tasks while a simultaneous presence of strong empowerment and tighter panoptic control was noted in non-routine tasks. Thus, there is a need to develop a theoretical framework not only to tie together the disparate observations on post-bureaucratic controls, but also to serve as a frame of reference for future investigative work.

2. THEORETICAL BACKGROUND

Given its emergent nature, a precise definition of post-bureaucratic control is understandably vague and elusive. For this study, we have conceptualized it as a portfolio comprising three commonly predicted elements : empowerment (Bowen and Lawler 1992; Fry and Slocum 1984; Miller and Droge 1986), panoptic (Dandeker 1990; Poster 1990; Sewell 1998; Zuboff 1988), and ideological control (Czarniawska-Joerges 1988; Mowday et al. 1982; Rosen and Baroudi 1992; Walton 1985). The dimensions of each of these elements are elaborated in Table 2.

The new dynamism in the information age is expected to demand greater empowerment (i.e., downward redistribution of decision making authority) for workers to respond to contingencies, with more subtle and unobtrusive means of control through panoptic control[1] (i.e., the heightened workplace visibility through embedded system access or workflow dependencies) and ideological control (i.e., the appeal to shared values and the sense of belonging to align workplace behaviors).

Drawing on a comprehensive review of past literature, this study proposes a theoretical framework to investigate the emergence of post-bureaucratic control based on two contingency conditions, the nature of task structuredness and the context of IT-enabled change (see Figure 1).

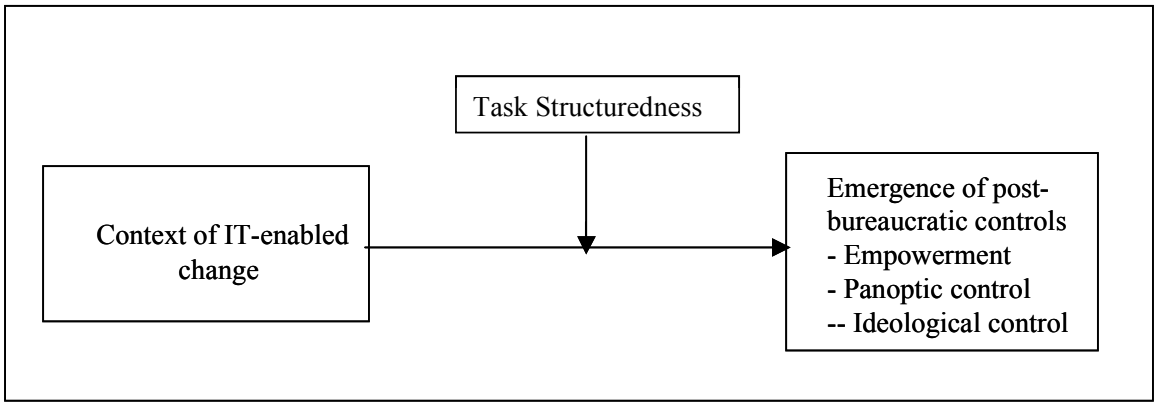

Figure 1. Theoretical Framework

[1]Zuboff (1988) noted the implementation of IT not only automates work rules but also simultaneously produces a new layer of information that textualizes workplace behaviors. Eisenhardt (1985) noted a similar concept of investing in systems that provide behavioral observability as a control. The automation and execution of tasks in the new "informated" environment gives rise to a new visibility, which induces astate of consciousness that enables the exercise of disciplinary power (Foucault 1977). Many authors have provided evidence of the enhanced management surveillance from the implementation of computer-based system (Doolin 1999; Sayer and Harvey 1997; Sewell and Wilkinson 1992; Wilson 1995).

Table 2. Dimensions and Examples of Post Bureaucratic Controls

Post Bureaucratic Control	Dimension	Example
Panoptic Control—the heightened workplace visibility through embedded system access or workflow dependencies	Management visibility (Dandeker 1990; Huber 1990; Zuboff 1988)	Activity based costing method of calculating revenues.
	Peer visibility (Sewell 1998; Sewell and Wilkinson 1992)	Expanded information access and greater work interdependence.
	System tracking ability (Dandeker 1990)	Real time comprehensive data available on a single database.
Ideological Control—the appeal to shared values and the sense of belonging to align workplace behaviors	Closeness of communication: Increased frequency and decreased formality of interacting with superiors. (Ouchi 1980, 1981)	Prison officers able to communicate directly with Deputy Director of Prisons through e-mail.
	Peer socialization process (Ouchi 1979, 1980)	Increased socialization through organization of corporate workshops, road shows, speeches, communicating values and beliefs of the prisons.
	Internalization of core values and beliefs of the organization (Czarniawska-Joerges 1988; Ouchi 1980; Rosen and Baroudi 1992)	Strong identification with core values, adoption of organizational values as employees own.
	Sense of belonging (Durkheim 1933; Ouchi 1980)	Greater feelings of belonging where members of the organization experience a sense of solidarity and community.
Empowerment—downward redistribution of decision making authority	Greater job discretion (Bowen and Lawler 1992; Miller and Droge 1986)	Ability to initiate job actions, e.g., printing of labels, reports, etc., at their discretion.
	Decreased procedural formality through enhanced user flexibility (Miller and Droge 1986)	Greater flexibility in entering and accessing data through numerous drop down menus and icons.
	Decreased procedural formality through reduced validation checks (Miller and Droge 1986)	Reduced validation checks in the new system such that users have a "value added role" where they exercise greater discretion and responsibility.

2.1 Nature of Task Structuredness and Unobtrusive Control

Prior work, and more recently Sia et. al (1999), has suggested the moderating impacts of task structuredness on organizational control. The concept encompasses the dimensions of task analyzability and task variety (Perrow 1967). The extent of task structuredness is proposed to have an impact on the nature of unobtrusive control that can be applied. The ability of IT to "textualize" (Zuboff 1988) unstructured tasks is limited, i.e., despite computerization of some forms, the system must always provide leeway and flexibility to allow other possible ways of processing. Tracking of work outcomes in an unstructured scenario to reflect employee performance is also incomplete and problematic. Thus, while the panopticon visibility may be adequate in compensating any loss of control in a structured task, it is insufficient in an unstructured scenario. In such a scenario, many authors have suggested the emergence of informal control, e.g., clan control (Ouchi 1977), self control (Kirsch 1996), ideational control (Rosen and Baroudi 1992). Borrowing the term from Czarniawska-Joerges (1988), we have grouped these informal control types together as "ideological control," which encompasses the underlying socialized interests and alignment of shared values.

2.2 Context of IT-Enabled Change and Empowerment

On the other hand, from a managerial imperative perspective (Markus and Robey 1988), we argue that the impact of IT is simultaneously dependent on the context in which it is implemented. We distinguish automational versus transformational change

along the dimensions of significant changes in strategy definition (Romanelli and Tushman 1994; Venkatraman 1994—e.g., market refocus), structural organization (Orlikowski 1993; Romanelli and Tushman 1994—e.g., from functional to process) and cultural mindset (Hammer 1996—e.g., customer service orientation). It is proposed that the context of IT-enabled change acts as a springboard for empowerment to take off. In an automational context, much of what was done previously is recast into the new IT medium. Thus, the system is likely to be a reinforcement of existing organizational control with little increase in empowerment. On the other hand, transformational change often entails simultaneous shift to a customer-focus strategy, a structure that facilitates the recombination of the mental and manual work, and a culture of greater employee involvement and self-management. Many writers have suggested that such transformational changes have led to greater empowerment (Child 1984; Davenport and Linder 1992; Davenport and Short1990; Drucker 1988; Hammer and Champy 1993; Robey 1981). As noted by Hammer and Champy (1993, p. 70), "people working in a (transformational) reengineered process are, of necessity, empowered."

The interaction of the two contingency conditions produces a 2*2 grid (see Table 3). Quadrant 1 (structured task, e.g., computerized transactional systems) and quadrant 2 (an unstructured task, e.g., CASE tools among IS consultants) depict the scenario of automational change. Given the automational focus, we propose that there will be little change in empowerment and hence little need for increase in ideological control. Panoptic control, resulting from the "informating" impacts of computerization, will emerge as an unplanned add on to existing control. Following prior arguments, we hypothesize that the degree of panoptic control will be larger for structured tasks than unstructured tasks.

On the other hand, quadrant 3 depicts a transformational change on a structured task (e.g., reengineered transactional systems). The transformational change is expected to lead to a substantial increase in empowerment. In a complex and dynamic business environment (i.e., increasing need for control), such empowerment in transformational change creates a need for management to balance for the loss of control. Given the large compensatory increase in panoptic control, there is little need to invest in ideological control. Hence, no change in ideological control is expected. Finally, quadrant 4 depicts a transformational IT-enabled change on unstructured task (e.g., knowledge management system in professional consulting firms). In this case, we expect ideological control to increase given the inability of the information panopticon to fully "textualize" workplace behavior.

This normative framework attempts to capture the outcome of rational choices that managers would make within the confines of existing technological and organizational structures. This RIP however does not attempt to validate the entire framework. Specifically, this study attempts to surface the differential impacts of the context of IT-enabled change on organizational control in a structured task environment. The research question is "would organizational control evolve differently in a transformational context versus an automation context?

Table 3. Impact of Context of Change and Task on Post-Bureaucratic Controls

		Nature of Task	
		Structured Task	**Unstructured Task**
		Panoptic Add On	
Context of IT-Enabled Change	**Automational**	Quadrant 1 • Increase in panoptic control • No change in empowerment • No change in ideological control	Quadrant 2 • Limited increase in panoptic control • No change in empowerment • No change in ideological control
	Transformational	Quadrant 3 **Panoptic-Driven "Empowerment"** • Large increase in panoptic control • Increase in empowerment • No change in ideological control	Quadrant 4 **Ideology-Driven "Empowerment"** • Increase in panoptic control • Increase in empowerment • Increase in ideological control

3. RESEARCH METHODOLOGY

To illustrate the effects within quadrants 1 and 3, two contrasting IT-enabled changes are presented: a hospital that underwent an automational change and a prison service that underwent transformational change. In both scenarios, we controlled for task structuredness by studying the operational systems, which dealt with highly structured transactional processes. We selected these two organizations, based on theoretical sampling techniques, for their similarities and differences (Glaser and Strauss 1967). As government organizations, both operate in an environment with intense accountability and close scrutiny of the public and, hence, high emphasis on control. A summary of environmental factors surrounding the change is presented in Table 4. Both systems were implemented within a year of each other and had an organization-wide scope.

Table 4. Environmental Factors Facing the Hospital During Change

Concept	Factor	
Environmental Context	Customers	• Government restructured hospital catering to women and children.
	Competitors	• Others restructured hospitals as well as privately run hospitals.
	Government policy	• Introduction of restructured hospital scheme in early 1990s. • Became a restructured hospital in 1990. • Introduction of case mix subvention method (1999).
Organizational Context	Corporate Strategies	• Cost effective use of resources to deliver healthcare to women and children.
	Structure and culture of the firm	• Functionally organized with each department maintaining its own data and having a distinct set of duties.
Control Context	Control strategies being used	• Focused on cost effectiveness and efficient use of resources.
	Rationales for these control strategies (cost effectiveness, Innovation)	• Need to respond to government pressure for more cost-effective healthcare.
Adopting and using new information systems	Adopting a new system	• Adopted an integrated Enterprise resource system (ERP) system.
	Schedule of adopting the system	• Had to replace hospitals legacy systems with integrated ERP systems in 1.5 to 2 years. • Contract to implement system signed in December 1997. • January 1999: rollout of finance and materials management systems. • July 1999: rollout of patient accounting and management module.
	Rationale for adopting new system	• Adopted the new system largely to avoid the millennium bug. • Integration benefits and reduced maintenance were secondary reasons for the adoption of the ERP system.
Consequences of adopting new system	Management reactions	• Mixed reactions to audit trail ability. • Greater access to information.
	User reactions	• Realized that there was greater access to other departments information. • Greater pressure due to tighter linkages in workflow.

3.1 Site 1: Automational IT Change

The first site is a hospital that specializes in Obstetrics, Gynecology, and Neonatology. The old mainframe system (handling admission, transfer, discharge, and accounting) had been in use for 13 years. Due to its lack of Year 2000 (Y2K) compliance and the fragmented IT infrastructure, the hospital decided to adopt a hospital inpatient management module in an enterprise resource planning (ERP) suite. The system was implemented over a period of one and a half years. Much of the implementation exercise focused on soliciting the existing work requirements to see how best they could be accommodated within the ERP module. There was generally little initiative or resources to redesign work procedures. The lack of resources meant that the functional

organization set-up was not changed, even though the new system imposed a process structure. There was little emphasis placed on strategic or cultural changes. After implementation, Information Systems Department (ISD) personnel commented "the users still have the same old mentality."

3.2 Site 2: Transformational IT Change

The second site is the Department of Prison Services, under the Ministry of Home Affairs. With the new focus on security, humanity, and rehabilitation, the department has set a vision for itself to become a world-class prison service. The new Prisons Management System (admission, accommodation, tracking, and discharge) has been developed as part of a larger business process reengineering effort. With strong support from the new prison director, teams were established and charged with the responsibility of revamping "the old way of doing things." Part of the change management process also includes structural reorganization and a campaign program to imbibe a caring and counseling culture, as well as to instill pride and professionalism among the prison officers.

Adopting an intensive case study approach, we collected both quantitative and qualitative data to investigate the context of IT-enabled change and the dynamics of organizational controls. There were three phases of data collection. The document reviews focused on collecting project implementation data such as e-mail and meeting minutes. Semi-structured interviews of key personnel, such as users and consultants, were conducted, guided by the preliminary framework and prior literature. Due to the sensitivity and emotional controversy, explicit reference to the concepts of panoptic and ideological was intentionally avoided in the interviews. Instead, the interviewees were encouraged to talk about the nature of the work arrangements before and after the IT-enabled change, leaving the onus of interpretation to the researchers. The last stage of data collection consists of a quantitative survey to test our emerging hypotheses.

The survey made use of a retrospective pre-test design (Sprangers and Hoogstraten 1989). Such designs rather than the traditional pre-test/post-test designs are adopted in impact and evaluation studies of innovation and organizational change (Gutek and Winter 1992; Pohl 1982) to avoid the problem of response shifts. Clear instructions in the survey ensured that respondents were properly anchored with the before and after time frame.

The survey measured various dimensions of three variables: the perceived level of empowerment and panoptic and ideological control before and after the IT-enabled change (see Table 5). The responses are rated on a five-point Likert scale. Where feasible, control operationalizations are from validated sources. Results of the survey will be analyzed using a repeated measure MANOVA analysis to test the stated hypotheses.

Table 5. Dimensions for Each Construct in Survey

Empowerment Questions measure the following dimensions • Redistribution of decision making power (three items, adapted from Sia et al. 1999) • Extent of job discretion (three items, adapted from construct developed by Walton 1985)
Ideological Control Questions measure the following dimensions (adapted from Mowday et al. 1982) • The extent to which the individual shares the vales of the organization (four items) • The sense of belonging which the individual feels towards the organization (four items)
Panoptic Control Questions measure the following dimensions (adapted from surveillance capacity concept, Dandeker 1990) • The information quality provided by the new system (four items) • The visibility of work to the management (five items) • The visibility of work to peers (four items)

Table 6. Summary of Qualitative Data

Key Construct	Count of Key Users Giving Evidence of Construct (N = 28)	Representative Quotes
Increase in Empowerment	Supportive: 3	**Redistribution of Decision Making Power to the Users** • "Whereas the old system had only one mandatory screen flow, the ERP system now has many drop down menus and icons and it is up to the user to call up the screen which he wants to see. But the enhanced flexibility means that we have to rely on the users' discretion to ensure data accuracy." • "Before the ERP system, when we admitted a patient into a ward, we had to send the admission form to the admissions department and wait for them to process it and print sticky labels to identify the patient. Now, the admissions are done directly by the wards. Not only is there an improvement in workflow (because we don't have to wait for the forms to return from the admissions department) but we also can decide how many sticky labels to print for each patient. Patients with more serious ailments require more labels but admissions may not know this." • "All the information is now online and users can help themselves to the information rather than waiting for us to generate the report for them. But some users don't want to look for the information themselves, because it means more work for them. They would rather the ISD staff generate the reports." **Greater Job Discretion** • "Users have greater discretion in doing their work but all the reporting lines are exactly the same."
	Contradictory: 3	**Lack of Redistribution of Decision Making Power** • "The only structural change we had was the creation of a new executive role to deal with the increased workload. Other than that, all the previous reporting lines remained the same." • "With the new ERP system, users should have been given the discretion to handle cases from beginning to end, that is the entire process, because that is the way ERP is organized. They would have been able to see the whole process and correct errors faster. But the department structure was still organized by blocks. There was an unwillingness to reorganize the department and give users more discretion because we have had the same department structure for the past 20 years and there was a shortage of manpower to carry out the change."
Increase in Ideological Control	Supportive: 2	**Efforts to Encourage Users to Share Organization Goals** • "Due to the greater responsibility and discretion that users have, we have to convince them that they play a value added role and highlight the importance of what they do to ensure that they will carry out their tasks well."

	Contradictory: 2	**Lack of Ownership in IT-Enabled Change** • "During the meetings, I was very vocal in voicing out my opinion on how the system should be configured to meet the hospital's requirements. However, I was told to "tone down" and now if things go wrong I don't care." **Lack of Shared Sense of Belonging** • "There is not much cooperation or interaction between departments and it is still very much the same as before. When there are mistakes, other departments tend to be blamed."
Increase in Panoptic Control	Supportive: 17	**Increase In Visibility Of Work To Management** • "ERP was designed with the management in mind. The use of ABC in ERP provides the management with a much more detailed and better view of which unit is performing better." • "The audit trail and workload indicators in the ERP system are also better because they are more complete and are accessible in real time, online whereas those in the old system were provided only at the end of the month." • "The online access gives management lot discretion in viewing performance data. They no longer have to go through the ISD to generate reports on performance but can view it easily from their desktop." **Increase In Visibility Of Work To Peers** • "Errors are now more glaring in the new system. With the higher level of interdependence, errors committed in an earlier stage of the process will affect other stages." • "Errors can be spotted through the system as ERP system allows departments to view the data of other departments. The use of the user ID and log means that peers can immediately drill down and check who controls which transaction." **Increase In Tracking Capacity of the New System** • "Information in the system has increased in size and is much more detailed. The system forces staff to input more details about the transaction. The system itself also records who is performing the transaction and when." • "Rather than relying on ISD to write a program to extract the information for them, users can 'help themselves to the information' and generate their own reports to do their work." • "The information generated is more specific (e.g., by a certain category) and can be searched or manipulated more easily (e.g., can search by more criteria)."
	Contradictory: 2	**Decrease in Tracking Capacity of the New System** • "The old system provided a lot of performance reports, which could be customized to our needs. The ERP system only provides standard reports, which were not very suitable. We were given a quota on the number of reports that we could customize and priority was given to the operational reports, as they were essential to our work. We have to do without performance reports now and have to track staff performance manually." • "We can access the system to view the staff performance but we are not familiar enough with the system to do that well."

4. CURRENT STATUS OF THE PROJECT

We are in the last phase of data collection for the hospital and have administered the survey to 500 respondents and have begun collecting data on the second site. Based on the qualitative responses of the 26 interviewees thus far (about 32.5 interview hours), we have summarized the preliminary analysis of the findings in Table 6. Two researchers working independently will code data collected for any instance of the aforementioned categories. Any disagreements would be discussed and resolved.

We have observed an increase in panoptic control but little increase in ideological control and empowerment, providing initial support for our propositions. Increase in panoptic control was largely unplanned. Although the ERP system has increased the amount and accessibility of information and the visibility among interdependent processes, management did not actively seek these advantages. Priority was given to operational needs due to time and budget constraints. However, by experimenting with the system, users have become more aware of the new visibility, of themselves, and of their peers.

Little empowerment of workers was observed. Limited resources were focused on solving the technical problems rather than on implementing strategic changes. However, there were some unplanned instances of empowerment brought on by the new IT system. For example, the process-based workflow of the new system requires some departments to make decisions over a wider range of tasks. Interestingly, the users rejected this, interpreting it as an increase in their workload. Unplanned empowerment also arose for certain system constraints that prevented management from imposing the same rules and procedures that existed in the previous system, e.g., mandatory screen flow. One manager noted the attempt to exert ideological control: "Due to the greater responsibility and discretion that users have, we have to convince them that they play a value added role and highlight the importance of what they do to ensure that they will carry out their tasks well." Similar to Dean et al. (1992) and Schwarz (1999), the new system was observed to facilitate the decentralization of decision making toward users. Other than the above, there were few observations of any increase in ideological control. Users generally understood that the main aim of the IT-enabled change was to avoid the Y2K bug and did not think there were any major cultural or structural changes beyond those required by the system. In fact, several users commented on a "lack of any change in mindset" after the system was implemented.

The qualitative finding is still preliminary and will be triangulated by the survey results. We expect the comparative analysis with the transformational site to be complete by the end of November. There are also plans to extend the study to analyze context of IT-enabled change on less structured tasks.[2] We believe the study should be interesting to both researchers and practitioners as it not only provides empirical glimpses of the evolution of control in an automational and transformational context but also proposes a contingency framework to tie together the apparent contradictions in findings. It also identifies new forms of control beyond bureaucracy, which practitioners may find are becoming increasingly relevant in a more fluid, uncertain "new economy."

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