

THE ROLE OF NEW TECHNOLOGY IN CHANGING ORGANIZATIONAL CULTURE: IMPLEMENTING PEOPLESOFT INFORMATION SERVICES IN A UNIVERSITY ENVIRONMENT

Leroy R. Cox, M.S., University of Missouri – Rolla
David G. Spurlock, Ph.D., University of Missouri – Rolla

Abstract

Along with advances in technology come new ways of working. Such results of technological change often lead to subsequent changes in cultural norms and values within the organization. This paper presents preliminary results from a case study illustrating the effects of the recent and ongoing implementation of the PeopleSoft enterprise resource planning (ERP) software on aspects of the workplace culture at the University of Missouri – Rolla. Cultural norms and values specific to particular organizational units and processes (e.g., speed, flexibility) are compared and contrasted with each other. Lessons learned and predictions for future developments are provided.

Introduction

A skill tantamount to turning a profit in today's business environment is the ability to anticipate, respond to, and react to the growing demands of the marketplace. Business strategies that encompass this ability more often than not spell a venture's success as well as govern the venture's survival (Nah, Lau, & Kuang, 2001). The world of higher education can be viewed in the same light. Higher education arguably may be viewed as a business, governed by a fiduciary relationship between the institution and its numerous stakeholders. The elitist system of old whereby only the privileged could take advantage of the college experience has long given way to a system of mass education, characterized by a diverse student population made up of individuals from various backgrounds and age ranges. This increased demand for education, coupled with reductions in government funding in recent years, has led to changes in the governance and management of higher education institutions. A portion of these new strategies involves the adoption of state-of-the-art information technology to reduce duplication of efforts and resources.

Enterprise Resource Planning (ERP) systems have been praised as the biggest evolution in the world of information technology over the last decade (Thavapragasam, 2003; Davenport, 2000). They enable companies to manage the efficient and effective use of resources, including materials, human resources, and finances. Among its most important attributes are its abilities to automate and integrate an organization's

business processes; share common data and practices across the entire enterprise; and produce and access information in a real-time environment. Given these positive "reviews", and the continuing pressure to make due with less, it makes sense that higher education institutions have begun to adopt these systems. But getting to the "greener pastures" facilitated by the use of ERP systems is not always easy. The difficulties and high failure rate in implementing ERP systems have been widely cited in the literature (Davenport, 1998), and it is suggested that the organizational culture of the enterprise in which the system is to be implemented plays an important role (Skok and Doring, 2001; Soh, Kien & Tay-Yap, 2000).

The goal of this paper will be to understand how the culture has changed since the implementation of an ERP system, PeopleSoft, on the University of Missouri – Rolla (UMR) campus. Due to the timing of this research, we are only assessing factors relevant to end users, identified as administrative staff users, at the post-implementation stage of the ERP life cycle.

Literature Review

ERP Systems. Enterprise resource planning (ERP) systems are configurable information systems packages that integrate information and information-based resources within and across functional areas in organizations (Allen, Kern, & Havenand, 2002). They enable companies to manage the efficient use of resources, including materials, human resources, and finances (Nah, Lau, & Kuang, 2001) by providing a total, integrated solution for the company's information processing needs. This is accomplished through the system's ability to automate and restructure the business's processes by providing reference models and process templates. ERP systems support a process-oriented view of the business as opposed to the traditional function-oriented view, which results in the standardization of many processes across the enterprise (Nah, Lau, & Kuang, 2001).

Proponents of ERP argue that the new system, through the use of a single system interface, makes everything appear as one to the user, which is a great advantage over traditional systems. In many organizations, information flows throughout the

organization in disparate subsystems, resulting in fragmentation and duplication of resources and services. ERP solves this problem, as its focus on integration and cross-media information services reduce confusion and waste, allows for the sharing of common data and practices across the enterprise, and enables the access of information in a real-time environment, thus allowing businesses to respond rapidly to changing environments. These system attributes bring with them the promise of improved decision-making in terms of speed and accuracy, improved control of operations, improved enterprise-wide dissemination of information, and decreasing costs.

Implementation of ERP packages requires extensive business process re-engineering and process alignment to the system templates. Markus and Tanis (2000) identified four phases of an ERP life cycle: *chartering*, where decisions are made that define the problems in the current system and the constraints of the proposed solution; *project*, which entails getting the system and end users up and running; *shakedown*, or eliminating the “bugs” in the system and getting back to normal operations; and “*onward and upward*” – maintaining the system, supporting users, evaluating results, and upgrading the system as necessary. Each phase brings its own set of complexities. Dramatic organizational, cultural, and human changes need to happen, and, whereas ERP systems are most often purchased as commercial off-the-shelf packages, the systems have to be customized, at great cost, to the environment in which they will be used. Throughout the implementation process, consultants must be employed to help end users understand the new system as well as solve any incidental problems that may arise.

Despite these implementation issues, ERP is a booming business. Its power to automate core business processes is seen as a preferred way of replacing previously developed proprietary systems. Allen, Kern, & Havenhand (2002) report statistics noting that the ERP market was worth \$15.68 billion in 1998, and was likely to continue its growth at the rate of 36% annually to an estimated \$72 billion by the end of the year 2002.

The literature with regard to ERP systems is not a continuous set of narratives about the successes realized from these systems. Quite the contrary is found, as cases that document the failure to successfully implement this new technology are heavily documented (Davenport, 2000; Nielsen, 2002). These reports have led researchers to identify critical success factors necessary to implement ERP systems. The common theme to this research has been that the problems with this new technology may be beyond technical, but may include behavioral components. Historically, packaged software was seen to fulfill

functional roles within the organization. ERP systems, consisting of multi-language, multi-legislative (i.e., rules-driven) software modules, offer process integration across an organization. As a result, companies are doing more than installing a new computer system, but are in fact changing the way the company is organized and often against the prevailing company culture (Davenport, 2000).

Organizational Culture. In a review of the literature regarding organizational culture, Olie (1995) states that most authors agree on the following characteristics: culture is a characteristic of a collection of individuals who share common beliefs, values, and ideas; culture is learned by members of a group when they become a member; culture has a historical dimension that develops over time and is partly the product of the organization’s history and demographics; and culture has different layers. Hofstede (1991) identified four different layers of culture in symbols, rituals, values, and heroes (Skok & Doring, 2001). Shein (1992, 12) expands this definition, stating that organizational culture is “a pattern of shared basic assumptions that the group learned as its solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.” Culture has been shown to have influence in terms of selection and retention of employees (Greer, 2001; O’Reilly, Chatman, & Caldwell, 1991), as firms seek to hire individuals that will be the right fit with their coworkers, the job, and the organization. The thinking is that if the right people are hired, turnover will be low; research has supported this hypothesis (Greer, 2001; Sheridan, 1992; Stum, 1995). Culture has also been examined in terms of its effect on competitive advantage (Chan, Shaffer, & Snape, 2004; Barney, 1986).

Commonly used terms relating to culture emphasize one of its critical aspects – the idea that certain things in groups are shared or held in common. In light of this, major categories of overt phenomena associated with culture are as follows (Shein, 1992): observed behavioral regularities when people interact (the language they use, the customs and traditions that evolve, and the rituals that they employ in a variety of situations); group norms (implicit standards and values that evolve in working groups); the espoused values (articulated, publicly-announced principles and values that the group claims to be trying to achieve); formal philosophy (the broad policies and ideological principles that guide a group’s actions toward stakeholders); rules of the game (implicit rules for getting along in the organization – the “ropes” that a new member must learn to become an accepted

member; the way things are done around here); climate (the feeling that is conveyed in a group by the physical layout and the way in which members of the organization interact with each other); embedded skills (the competence group members display in accomplishing certain tasks); habits of thinking, mental models, and/or linguistic paradigms; shared meanings (the emergent understandings that are created by group members as they interact); and “root” meanings or integrating symbols (ideas, feelings, and images groups develop to characterize themselves, that may or may not be appreciated, but become embodied in buildings, office layout, and other material artifacts of the group). Each of these elements by itself can be used to characterize a group, but ‘organizational culture’ implies that shared feelings are deep and stable, which means that they are less conscious, and therefore less tangible, and less visible.

Organizational culture often becomes the image that an organization projects to the rest of the world. However, this image differs with different points of view. At a certain size, the variations among the subgroups of an organization are substantial, suggesting that it is not appropriate to talk of the culture of an IBM or General Motors. Subcultures are defined as “subsets of an organization’s members who interact regularly with one another, identify themselves as a distinct group within the organization, share a set of problems, and routinely take action on the basis of collective understandings unique to the group” (Palthe & Kossek, 2003; Van Maanen & Barley, 1985). There may be, in organizations that have various subunits, numerous subcultures that develop as a normal process of evolution – the gap between top management and the shop floor can be very wide. Some of those subcultures may resist or deny predominant organizational values, thereby undermining or constraining the implementation of new workplace strategies or technologies (Palthe & Kossek, 2003; Shein, 1992).

The implementation of ERP systems results in large-scale changes for the organization. This is especially the case in an organization such as a university, which can have as many subcultures as it has departments or disciplines (Silver, 2003). It is imperative to know the cultural implications, with regard to the end users of the ERP system, so the benefits of the system can be fully realized.

Methodology

Since the purpose of this research is to explore the effects of ERP implementation on subsets of the organizational culture of a university, a case study research method was pursued. Because PeopleSoft implementation at UMR has been ongoing for approximately four years now, this research seeks to

understand how the culture has changed among the institution’s administrative staff. These workers were chosen because their responsibilities, which include monitoring and updating various kinds of financial information and handling human resources issues (such as new hires among students, professors and staff), require them to spend the most time with PeopleSoft.

Email was used to solicit the participation of administrative assistants from the various departments across campus. All responding administrative assistants were female. Semi-structured interviews were used to collect data. Each interviewee responded to a set of questions as presented by the researcher; each interview took approximately half an hour.

Questions asked with regard to PeopleSoft were designed such that the interviewer would get a good idea as to how the administrative assistant used PeopleSoft (e.g., what function does PeopleSoft perform for your department?), and the ways that PeopleSoft changed their workplace in terms of work habits and culture (e.g., how has PeopleSoft changed the way things are done in your department?). For the purpose of this paper, because we felt that some dimensions of culture would be irrelevant to the subjects that were to be interviewed, we constrained culture to the espoused values of these workers (e.g., what do workers in the department value or take pride in?), and the ways that things are done around the departments in which they worked.

Results

Of the sixteen email requests that were sent, eight administrative assistants agreed to be interviewed. Of the eight, seven were employed in engineering departments, and one was employed in the school’s Speech Communication Center, which serves the function of screening prospective graduate teaching assistants throughout campus. These employees had been with the university an average of 18 years – only one employee had been with the university for less than ten years (4 years), while two had been with the university, in various positions, for twenty-seven years.

Respondents were first asked about their tenure in their current position and the tasks they perform. Those who had been with the university the longest reported having moved through various departments and employment levels before reaching their current position. In this position, they are responsible for handling appointment paperwork for graduates and undergraduates (in terms of how students are supported by the department); overseeing and reviewing department credit card accounts; scheduling for courses; keeping student records; ensuring textbook orders and updates as necessary; performing basic accounting and budgeting, particularly as it relates to individual professors’ budgets; maintaining payroll and

departmental record of sick leave and vacation; preparing various human resources paperwork; being current in business procedures of the university, to include attending required seminars and meetings; as well as supervising department secretaries.

The respondents were asked to identify the values of the workers in their departments (in particular, the rest of the support staff) and the general atmosphere of the department. Such values as honesty, flexibility in terms of how they complete their work, being able to answer students' questions or direct them to areas where they could find answers, and performing their jobs to the best of their abilities was important to them. In addition, most respondents mentioned the laid back and comfortable atmosphere of the department as helping to produce a more familial culture where people would help one another if the situation required it. One respondent told the story of how, when her department chair asks that the workers stay overtime to complete a project that workers were happy to do so because they knew the value of their work. Also, she recounted the story of how, when the department chairman became ill, the rest of the department workers rallied to help him as well as ensure the work of the department was completed.

Each respondent also mentioned that having the necessary skills helped new workers to better assimilate into the department culture. Each one expected new hires (in particular, department secretaries) to have the requisite software and people skills that would allow them to support their portion of the work load.

When asked about PeopleSoft, all respondents were unified in that they did not like the software. In terms of the cultural values expressed, they felt that PeopleSoft has taken time away from what they have enjoyed most about their jobs – helping students and doing a quality job. Most often mentioned were the ways in which PeopleSoft has changed the manner by which they go about doing their work, such that they no longer have the immediate assurance that they are doing a quality job.

The legacy systems replaced by PeopleSoft were, for the most part, web-based and accessible via either Internet Explorer or Netscape Navigator. As a result, the administrative assistants, especially those who had more than four years work experience on campus, had developed numerous shortcuts for navigating these systems. The links they most often visited were saved via the web browser's "Favorites" option, which allowed them to give specific and easily memorized labels to these links. PeopleSoft changed this, as the system is governed by numerous modules and interfaces (called "bread crumbs") that require the users to learn new jargon and codes to successfully navigate the system. "Things aren't where they

normally are," or "things are called by the names we aren't used to" were the most common complaints. Therefore, a great amount of time is spent trying to find the particular screen upon which they need to enter data, or calling someone to, in essence, get directions as to where they are trying to go.

A couple of respondents mentioned that, due to the time delay in updating the system with various changes, they have resorted to keeping their own sets of files with regard to what changes they have made to the system. This was most common with budgetary information, such as changes to professors' available funds. The PeopleSoft accounting module could take "as long as a month, depending on the payroll cycle," to update this information. These "shadow systems," as they have been called (Sherman, 2004) result in time spent updating not only the PeopleSoft system, but also the individual files they have developed so that ready information is on hand to disseminate to affected parties.

PeopleSoft has resulted in administrative assistants performing numerous tasks that were the responsibility of other individuals in other departments on campus. This was most often the case with financial information. Administrative assistants are now responsible for procurement and budgetary information – one assistant reported keeping track of approximately \$5,500 per month in procurement charges last year. This decentralization of tasks has resulted in more work for administrative assistants, but "no increase in pay to accommodate the increase in workload." Lowered morale was reported among those interviewed.

Professors are now able to enter students' grades directly into the system for review and approval by the department chairperson before final submission to the Registrar's office for processing. This new protocol, which has been in place for just one semester, cuts out the old system of having grades submitted by hand, but there is still a learning curve for professors. As a result, administrative assistants reported that they received numerous calls from professors asking about this procedure, as well as the codes or new abbreviations that would allow them to find certain pieces of information on the system. Now, a certain portion of the administrative assistant's work involves tracking down answers to the questions submitted by the professors in her department, and, in some cases, providing informal training to those users of the system. In departments that have numerous office personnel, this does not seem to be a major intrusion into the normal work life, but in smaller departments, this can be a real disturbance to the daily work flow.

All administrative assistants interviewed reported dissatisfaction with the training they received concerning the new system, in that more of a hands-on

approach would have been preferred. This has contributed to the lowered morale mentioned earlier. Training took place with the launch of a new phase in the project. For example, when procurement came online, there was training regarding that and all the functions that would be affected by this change. Training consisted of having all the administrative staff members report to a computer lab on campus where they would be told about the features of the new system, and these new features would be demonstrated. The reasoning for less of a hands-on approach was always that the system was not ready to accommodate the users, or a training module had not yet been finalized. Once the demonstration was over, users were given a manual and told to "play with the system." Whereas all administrative assistants reported satisfaction with the training materials found in the manual, they still find themselves having to contact someone from the IT department whenever they encounter a new system module, a "bug" in the system, or whenever they needed information regarding the codes programmed into the system.

Finally, the administrative assistants noted that they were not always kept abreast of the newest changes to the system, so this resulted in the spending a lot of time trying to understand what these changes were and the effects of these changes. For example, one administrative assistant related a story of how she was kicked out an account on the system with no notice whatsoever. When she tried to pay a student from this account, she found that not only were there no funds in the account, but she was not allowed in the system at all. She ended up spending a lot of time on the phone with the various departments involved (IT, HR, etc.) which resulted in the student not getting paid for five weeks.

Conclusion

These preliminary findings show that new technology has an effect on organizational culture. The respondents' reports indicate that, whereas the core values underlying their culture did not drastically change, the more obvious measures of culture (such as the general ways in which things were done) had changed. Workers are no longer able to be as flexible in their work, or perform tasks with the speed they once enjoyed due to the new interfaces, modules, and codes required by the new software. For the manager looking to implement ERP software, these results suggest areas on which emphasis can be placed. All too often decisions are made to make changes to the manner in which people work without much consideration given to the individuals that have to endure those changes. In the case of PeopleSoft implementation, proper training and support systems

are necessary to better acquaint the end user with the new software.

There are some limitations to this study that should be discussed. For this preliminary study, the subset of employees interviewed represents a specific portion of organizational culture at the department level; the desire to do good work in a timely fashion was a value common to all interviewees. However, this does not translate to the overall university culture. Subsequent research on this issue would involve identifying specific cultural variables relevant to this university. As a means of doing this, we will need to expand the study to include more members of the university community (faculty members, students, administrators). Once these cultural elements are identified, we can better understand the impact that new technology has on this environment, as well as the requirements necessary to implement future technological innovations.

Culture takes time to develop, and takes time to change. The results reported are transient in nature, as they may be due more to the change itself rather than a cultural shift. A longitudinal study that specifies different time periods over which to assess the campus population may give a better indication as to how ERP implementation has affected the campus culture -- it would have been ideal to have asked this question four to five years ago when the first systems were changed to PeopleSoft. Would our results, which are mostly complaints, be realized one year from now, after everyone has had a chance to work with the new software? How about two years from now? And would there be an appreciable difference in relevant campus culture variables that can be attributed directly to the ERP software implementation?

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About the Authors

Leroy R. Cox is a PhD student in the Engineering Management Department at the University of Missouri – Rolla. He holds Bachelors degrees in Mechanical Engineering and Engineering Management, and a Master's degree in Systems Engineering, all from UMR. He has industry experience in the areas of process improvement / reengineering and mechanical design. His research interests include organizational behavior, virtual teams, and managing people in organizations.

David G. Spurlock is an assistant professor with the Engineering Management Department at the University of Missouri-Rolla and has over ten years of industry experience in systems engineering and project management. Prior to joining the faculty at UMR, he taught at the University of Illinois at Urbana-Champaign where he earned a Ph.D. in organizational psychology. He also holds an M.A. in psychology from Pepperdine University, and a Bachelor's degree in electrical engineering (magna cum laude) from the University of Dayton. His research interests include individual and group judgment and decision making processes; managing people in organizations; organizational change, organizational development, and program evaluation; and the influence of technological change on workplace behavior.