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ABSTRACT

Popular Enterprise Resource Planning (ERP) system implementation methods focus on process requirements, system transition, user interface, help desk, and training issues. This research suggests that unless high-level management places equal emphasis on “people oriented” factors (especially at the middle management level) many ERP implementation projects are in jeopardy. Without the commitment of middle management and a proactive change management function, project planning and milestone development can easily become bogged down by political trivialities, which can stall the implementation cycle of a project. The research focuses on two ERP implementations. In both cases middle management served as the unit of analysis.

INTRODUCTION

In order to remain competitive, many organizations are redesigning their business model within the context of a process-oriented enterprise architecture. The aim of top-level managers is to make business processes more...

- Efficient - by devising new strategies for executing the processes,
- Manageable - by devising new organizational structures to support the processes, and
- Understandable - by thoroughly documenting process flows, information flows, policies, procedures and regulations.

In so doing they often turn to Enterprise Resource Planning software to streamline and reduce the cost of their process re-engineering and information system alignment requirements (Scheer, 1992, 1994). This strategy represents a relatively radical business concept that has only gained wide spread acceptance in the US since the mid-1990's. With Enterprise Resource Planning software an organization purchases pre-configured and integrated business processes that are already aligned with a well-defined information system architecture (Keller and Meinhardt, 1994).

1 ERP software is also known in Europe and Asia as Standard Packaged Business software.
Companies such as SAP, Oracle, Peoplesoft, Baan, and others offer their customers a wide variety of business applications (i.e., Financials, Production Planning, Material Management, etc.) that are integrated within a cross-functional business process design.

Since the mid-1990’s many companies have opted for a pre-packaged ERP solution in lieu of a proprietary system development effort. Although the ERP software may not exactly support all complex business processes, many organizations are willing to trade off domain specific and complex functionality in order to realize the benefit of packaged integration along with the cost savings incurred from not developing a proprietary in-house system (Gulledge et al., 1995). The commercial package also offers benefits in the out years because many additional savings will come from a vendor supported upgrade path versus costly legacy maintenance expenditures.

In the US the number of ERP system implementations has risen rapidly in recent years. Most of the US Fortune 1000 companies have opted in favor of pre-packaged business software over traditional development cycles. Many companies have gained a tremendous competitive advantage form integrating their organizational processes around an off-the-shelf ERP software package (Buck-Emden and Galimow, 1996). However many others have failed in their implementations. The trade, industry and academic literature is filled with research about well-publicized ERP implementations that run out of control and eventually fail. Although many well-documented ERP implementation failures can be attributable to overzealous implementation cycles, lack of top-management support, traditional scope creep, inadequate requirements definition and a host of other factors, the focus of this research paper will deal with the importance of middle management in ERP implementation success. Specifically the research tries to identify the factors that drive middle managers to support, or in certain instances, to undermine an ERP vision and thus adjust their priorities accordingly.

Data for this research was collected from two ERP system implementations. The first implementation was deployed in a mid-sized manufacturing company, while the second was deployed in a large public sector organization. In both cases the data was collected through on-site interviews and observation, while the work on each implementation covered a period of several months.

THE TRADITIONAL ORGANIZATIONAL PROCESS MODEL:

To appreciate the value of cross-functional process integration as implemented by ERP one only needs to look at a traditional organizational model (Figure 1). The figure shows a function-oriented organizational structure that has existed in much of the world since the industrial revolution. Each department operates as an autonomous unit and thus executes business functions in a relatively isolated state. In the U.S. analysts lovingly refer to these function domains as “stovepipe” organizations because information is allowed to flow freely within the stovepipe, but it is very difficult to make information flow horizontally between the stovepipes (Gulledge et al., 1999). From a customer’s point of view the lack of information flow between the stovepipes can have very negative consequences. If for example a customer calls the sales department and wants to know the status of an order the sales representative can only provide
immediate feedback if the sales order still resides in the sales department's sphere of influence. However, if the sales order has already been converted to a production order (Production Department) or a stocking unit (Distribution Department) then the sales representative will often have to track down the status of the order by making inter-departmental calls or by querying several stand-alone information systems. This information "search" takes time and customer service suffers in the process.

Figure 1. The Traditional Organization

The Traditional Organization

Modern functional "stovepipe" units are the result of a competitive organizational culture. In the traditional business culture it is the individual business units that must compete for, and constantly justify the resources that they expend. To meet those demands and in order to remain competitive against other units, functional managers will put in place many artificial barriers designed to limit personal interaction and information flow between the units. The barriers can take many forms. The most common of which is the proliferation and eventual institutionalization of domain oriented regulatory and policy constraints (Sommer and Gulledege, 1999). Top-level functional managers will often implement local de-facto policies and regulations that are designed to constrain the interaction of employees with other units. The constraints manifest themselves in decreased cross-functional transparency.
THE MIDDLE MANAGEMENT “CHECK STATION”:
In addition to the regulatory and policy constraints, top-level functional managers will often put in place information system and personnel management models that are designed to keep cross-functional information flow to a minimum. System constraints are usually implemented as “standalone” information architectures that are not compatible with those of other business units, thus creating an “island of automation” within the corporate landscape. To further restrict cross-functional interaction many mid-level management positions are created to act as information brokers with other departments or business units. These mid-level managerial “check-stations” exist solely for the purpose of managing the information flow dictates of top-management (Sommer, 1998) (Figure 2).

Figure 2
The Traditional Organization w/ Check Stations

Since the functional stovepipe is mostly autonomous in its personnel and system implementation practices the “island of automation” and “check-station” model have been very successful in helping top-management keep total control of their respective domains. The practice of functional management was very successful up until the 1990’s and continues to be very effective in many public sector organizations. However, during the mid-1990’s many public and private sector organizations were faced with increasing pressure to become more efficient and streamlined. Increasing competitive pressures from abroad and decreasing revenues have forced many organizations to reevaluate their business models. The traditional concept of competitive
advantage was re-examined and refocused on customer service and business process streamlining. Within this context traditional competitive advantage was heavily dependent on a combination of one or more measurable factors such as:

- Product demand,
- R&D capabilities,
- Quality and experience of employees,
- Managerial capabilities, and
- Technology.

However, in the late 1990s it became more apparent that business and markets exist on a global scale, with competition steadily increasing from many international sources. This global competition forced many organizations to search for increasingly smaller and more sophisticated sources of competitive advantage. In response to these global pressures many companies have redefined competitive advantage in terms of their organizational learning capabilities. That is, they have decided to measure competitive advantage as a function of how well their organizational cultures initiate and/or adapt to change (e.g., change in market conditions, competition, new product development, etc.) (Sommer, 1998). To realize such change, organizational processes (and the technology that enables them) must be continually reevaluated and modified to reflect the needs of new integrated customer/supplier relationships. To that end a new management and business technology solution was needed.

ENTERPRISE RESOURCE PLANNING AND THE NEW ORGANIZATION:

Since the traditional “stovepipe” and “check station” business model did not support process integration and customer service, many businesses turned to standard, pre-packaged software (ERP) products that supported cross-functional information flows in an integrated information system architecture. This model presented several advantages for it offered...

1. Pre-packaged (pre-defined) business processes that were supported by an integrated information system.
2. Cross-functional visibility into all business aspects of the enterprise.
3. Standardized system support and upgrade cycles that reduced IS complexity and development costs.
4. Integration with existing personal productivity and web-based e-business solutions.

The intent of ERP is to move the organizational focus away from a functional orientation and towards a horizontal, process oriented, and customer centric view (Gulledge et al, 1999) (Figure 3).
Figure 3 shows that in a process managed organization management responsibilities are geared toward the successful management of a value chain as it moves from one functional area to another. This new organizational model has very profound managerial consequences. Although the functional stovepipe structures still exist, the traditional power structure will be drastically changed under a process centric management model. The change happens at the process ownership level. In order to maintain a cross-functional process management style a process owner must be given responsibility for the efficient execution and maintenance of the business function. This puts the process owner in direct conflict with old-style functional managers that used the isolated stovepipe to consolidate and keep power. Since the new process owner is responsible for a business process that crosses several, or all functional areas, many of the old style management structures become candidates for reorganization, downsizing or even elimination.

ERP systems force an organizational structure that breaks down functional stovepipes and eliminates “islands of automation”. Within this structure many of the traditional middle management “check stations” become unnecessary. This fact is made perfectly clear when we look at the dizzying array of middle management layoffs that occurred in the mid- to late 1990’s (Sommer, 1998). White-collar middle management positions at the staff level were being eliminated in
large numbers because the functional power structures that supported these positions no longer existed. At the same time traditional line managers also felt the repercussions of an ERP-based process management model. Although the old stovepipe line management hierarchies still existed, their functional duties were now focused on supporting new cross-functional processes and the all powerful process owner. In effect it was the process owners that gained power while former, functionally oriented middle managers were directed to support the process owners.

MIDDLE MANAGEMENT STRIKES BACK:

The commercial success, publicity and marketing of ERP systems has led many organizations to take a serious interest in using the technology to streamline their information technology expenditures and streamlining their business processes. Although many middle managers will agree with this “cost and efficiency” premise, they become less than enthusiastic with the concept once they fully understand the repercussions of a process oriented organizational structure. The realization that ERP software provides tight control and high visibility into all aspects of the business does not align with the traditional management concepts advocated by most mid-level management cultures. In many organizations these cultures have flourished simply because they controlled critical processes, assets, and information in an autonomous and isolated manner. Opening up the process to external scrutiny and oversight is in direct conflict with this middle management power structure. Hence, ERP becomes a concept that threatens the existence of that power structure.

To effectively deter or stall ERP implementation initiatives this research finds that middle management has devised four key principles that can delay, or to a certain degree “derail” ERP implementation.

1. The “Uniqueness” Principle – This concept suggests that for a business unit to be excluded from ERP standardization, said unit will have to put forth a convincing argument that their processes, products, culture are so unique that standard commercial ERP software would hamper and degrade their overall effectiveness.

2. The “Buy-in but don’t Commit” Principle – This concept suggests that a business unit will have representatives on most ERP decision making committees. The mandate for the representatives is to gather enough strategic information to justify and support the traditional stovepipe business unit structure to higher management while at the same time providing ambiguous support to the company position on ERP. To a lesser extent a secondary mandate involves the spreading of ambiguous, and in certain instances, misleading information to the ERP decision making committee in order to disrupt/prolong the decision making process.

3. The “Focus on the Data” Principle – This concept is intended to re-focus vital business process issues by injecting a requirements mandate that is strictly data driven. By re-base lining requirements from process to data the door is open to very low-level interoperability, data interface, and application integration issues. This low level approach
can effectively stall, and in many cases, conflict with the higher-level ERP business process design. Once the data driven requirements concept is in place it will take a very long time for upper management to refocus the various committees on a business process-driven approach.

4. The “Don’t Make a Decision Until the Last Minute” Principle – This concept is intended to delay any decision making progress to a point where the pressure of time, or upper-level managerial mandates will force action from middle managers. However, by following such an unstructured and reactive decision making path enough confusion and ambiguity can be interjected in the ERP deployment strategy that many of the problems/issues will have to be revisited and revised at a later date. This effectively stalls the ERP effort and introduces increased cost, frustration and confusion.

Since our project focused on one public and one private sector ERP implementation, deriving universal generalities is beyond the scope of this research, but suffice it to say that one or more of the four outlined principles were used with great effect by middle managers in delaying both projects in the ERP planning and blueprinting stages.

AN INCREASED ROLE FOR CHANGE MANAGEMENT:

In lieu of the problems associated with satisfying the concerns of middle management in the ERP planning activity, many organizations are rethinking the importance of the change management function. Many ERP software vendors include change management as a part of their implementation methodology in order to address system transition, user interface, help desk, and training issues – just to name a few. However the methodologies fall short in addressing traditional “people issues” such as...

- Job security,
- Workplace reorganization, and
- Policy and regulatory changes that occur as a result of ERP adoption.

During the course of this research project, we were surprised to learn that none of the change management teams on the projects adequately addressed the critical issue of job security. The fact is that once all of the initial ERP related marketing, campaigning, and posturing is over, and the project is finally approved, problems start to occur immediately. As a matter of course middle managers initially welcome ERP because they see it as a way to increase their internal productivity. In other words they see ERP strictly as a traditional information system implementation, not as a new way of doing business. However, once a project is underway, and managers slowly begin to understand the implications of integrated business software (i.e., increased budget visibility, process vs. function oriented management, streamlined/flattened organizational hierarchies) they become aware that their power base, influence, work center, or
even their job may be at risk. This is precisely what happens when staff functions, such as the middle management “check stations” depicted in figure 2, are eliminated with the introduction of ERP.

To address these issues well in advance high-level organizational management must put in place a policy that provides an “open-book” mandate to the change management team to address all critical “people issues” (such as job security, organizational restructuring, etc.) with a very high priority. The reason behind this strategy is relatively simple: High-level management must convince the rank and file that ERP is not going to be used as an excuse to lay-off, reassign, or eliminate jobs and/or work centers. If this effort is successful, general ERP planning and the traditional change management functions (i.e., user interface, help desk, and training issues) may be much easier to coordinate since the work force will understand and support the intent and motive behind ERP.

CONCLUSION:

Without the confidence and support of middle management, ERP implementation planning can quickly becomes mired in higher cost, team member discontent and critical milestone overruns. A great deal has been written in the academic and private sector literature about the importance of a committed high-level ERP champion. During the course of this research it became clear that although ERP implementations have a much greater chance of succeeding when there is such a high-level management champion (i.e., CEO, CIO, CFO), no amount of high-level support can guarantee constructive mid-level management participation. To engage mid-level management in a proactive manner there must be a direct and open dialog with senior leadership through which the “people issues” are given the same priority as the traditional ERP implementation methodology concerns. To that end, a well-trained change management team that advocates a proactive and balanced (i.e., ERP issues and people issues) agenda is considered to be one of the most critical elements of ERP implementation success.

REFERENCES


