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Approaching Strategic Misalignment from Organizational View of Business Processes

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ABSTRACT

Enterprise software system (ESS) design is premised upon an embedded business process model, a *system model*, which embodies the ESS designers' *a priori* view of best business practices in the intended context. In contrast, an organization's existing business model reflects its own *a priori* view of best practices. This *native model* is the aggregate of the organization's business processes and operationalizes management intentions. Business processes are the primary building blocks of both models. Understanding process disparity between these models may improve the understanding of misalignment between ESS and the organization. Researches and practitioners continue to struggle to explain *how* IT resources contribute to business performance and how to realize business performance from strategic IT investments. Misalignment between the strategic potential afforded by IT resources and business performance can be understood by an approach that centers on business process.

Keywords

Business process, process-based misalignment, native model, system model, enterprise software, strategic potential

INTRODUCTION

Why do so many organizations overestimate their ability to implement enterprise software solutions (ESS)? Many very capable management teams, such as those at Dell Computer, Boeing, Dow Chemical, Mobile Europe, Applied Materials, Hershey, FoxMeyer Drug, and Kellogg's have suffered well-documented ESS implementation failures; ultimately abandoning those ESS implementations completely, with their organizations suffering multi-million dollar losses as a consequence (Chen, 2001; Bulkeley, 1996; Abdinnour-Helm, Lengnick-Hall, & Lengnick-Hall, 2003). Implementation failure is not, however, limited to these few high-profile examples. Langenwalter (2000) indicates the overall percentage of ESS implementation failure ranges from 40% to over 60%. Ptak and Schragenheim (1999) indicate the implementation failure rate ranges from 60% to 90% when failure is measured in terms of the realization of expected ROI. While some firms achieve the result they expect from their ESS implementation, many do not.

The enterprise software systems (ESS) market footprint is enormous. ESS development, implementation, operation, support, and maintenance collectively comprise a multibillion dollar industry (Rosemann, Vessey, & Weber, 2004). A recent market report noted that enterprise software systems sales alone would reach $232 billion globally in 2010, growing to $297 billion by 2014 (Gartner Group, 2010). Broadly defined, ESS are function-specific (i.e. Accounting, HR, Supply Chain) industry-specific (i.e. Manufacturing, Retail, Healthcare) software solutions, intended to address organization-level problems for organizations of any size (Captera, 2010). Common ESS categories include: customer relationship management (CRM), digital content creation (DCC), enterprise resource planning (ERP), office suites, supply-chain management (SCM), project and portfolio management (PMM), and content communication and collaboration management.

For organizations who implement ESS, usability issues abound, manifesting themselves in a variety of ways. At a recent meeting of Oracle's Usability Advisory Board, Oracle gathered twenty top CIOs, CEOs', architects, and analysts directly responsible for ESS implementation within their organizations, and asked them to identify their top usability issues arising from their ESS implementations (Wichansky, 2009). The participants represented a broad swath of industries; the airline and insurance industries, a medical equipment manufacturer, a pharmaceutical product developer, the academic community, government agencies, and usability experts. Their comments were not limited to Oracle products, but spoke to a variety of other ESS providers as well; such as PeopleSoft, Microsoft, JD Edwards, Google, Open Source, and others, whose ESS products are used within their organizations. The top five issues identified by the advisory board are listed in figure 1.

1.	Customers perceive that the user interfaces of enterprise software are inconsistent and difficult to navigate.
2.	Customers think that some functionality is missing or inappropriate to their tasks.
3.	Performance problems with enterprise software are perceived to cause productivity losses to workers.
4.	Preformed workflows seldom conform to actual business processes.
5.	Collaboration is possible, but difficult.

Figure 1 - Top Five ESS Usability Issues - (Wichansky, 2009)

Despite compelling evidence for the high rate of implementation failure and ongoing systematic usability issues, organizations continue to be drawn to the ESS siren call, seduced by promises of rapid implementation, high overall software quality, and enterprise-level integration. Strategic management of an organization's IS resources relies on the appropriate design, implementation and execution of business processes to operationalize strategy. However, as noted in figure 1, missing or inappropriate functionality and the misalignment of workflows and business processes contributes to incomplete realization of the potential of IT investments into business performance.

In this paper, we investigate this misalignment from a business process perspective. That IT investments do not have a causal relationship with business performance is well supported in the literature. A process view allows for analysis of the misalignment between the ESS system view and the organization's native view of business processes, as found in Robey and Markus' (1988) technological and organizational imperative. We report on initial interviews with organizational leaders on their perceptions of the misalignment from a process perspective and provide analysis using an absorptive capacity theoretical framework. Preliminary results are presented here, which indicate the utility of the analysis approach and identify research directions for further empirical investigation.

THEORETICAL FOUNDATION AND ANALYTICAL FRAMEWORK

Management's Role

An organization's decision to invest in an ESS is a resource allocation issue. Management invests in capacity, as embodied within the ESS, with the expectation that capacity can be operationalized as the organizational capability to deliver business process performance (Weick, 1979).

Strategic management literature has long recognized four primitives of strategic action; goal setting, allocation of capacity, the establishment of milestones, and the formation of specific business processes with which to operationalize the strategy (Porter, 1991; Kaplan & Norton, 1992; Ethiraj, Kale, Krishnan, & Singh, 2005; Tallon, 2007). Top management within an organization sets goals based on strategy, allocates necessary resources, and tasks its organization to "make it so" with the expectation that the organization will translate provisioned capacity into operational capability.

In systems design, translation of capacity into capability has traditionally been achieved using some variant of the SDLC. Within the SDLC, requirements are modeled to create specifications, which then instruct the development and testing of new modules so that appropriate functionality is achieved to operationalize management's strategic goals. Actualization of management's strategies within information systems has typically been the purview of the CIO, the top information systems officer, or a steering committee dedicated to the task.

Organizations adopting an ESS, however, are consumers of software rather than producers (Sawyer, 2001). No longer in control of software development, organizations must make market-based evaluations regarding the appropriateness of an ESS for their organization's specific needs. Further, since the decision to purchase an ESS represents a significant financial and organizational commitment, that decision necessarily and directly involves senior management. Sawyer (2001) observes that as the cost of IT increases, "decisions are increasingly made by senior, not only IT, managers."

Senior management's instinct that the technological capacity afforded by ESS is directly operationalized in their organization for business performance, is misguided. Top management's difficulty visualizing the unpredictably complex social interactions between the ESS and the organization is a major cause of ESS implementation failure (Griffin, 1999; Markus & Robey, 1988; Hong & Kim, 2002). This is to be expected, as the organization and the ESS each serve different masters. Thus, from a process perspective, the analysis of the misalignment between the workflows innately assumed by ESS and the organizational business processes is a useful perspective. IT resources generate value after they are absorbed in the organization (Brynjolfsson, 1993). This absorption includes the assimilation of the technological resource into the business processes that the organization uses to deliver value to customers. Academic and practitioner literature indicate (Langenwalter, 2000; Tallon, 2007; Rosemann, Vessey, & Weber, 2004; Bulkeley, 1996) that understanding and delivering such translation of the promise of the ESS *system model view* into the organization's *native model view* is on-going work, central to strategic issues in IT management.

Systems Model View

At its core, ESS design is premised upon an embedded business model. That model represents the ESS designers' a priori understanding of best business practices in the intended context for the system. These best practices are often based on industry exemplars of best-of-breed technologies and best business practices available, theoretical research, trade association standards, or the experience of the developer. Rosemann et al. (2004) note that capabilities of an ESS express the 'world view' of its' embedded business model. That "world view" is referred to in this study as the *systems model* view.

ESS are designed to accommodate the needs of many organizations, supporting generic business processes which might differ considerably from the way any particular organization does business (Brehm, Heinzl, & Markus, 2000). The degree of generalization or specialization of an ESS is determined by the breadth of the audience for which it is targeted. The systems model view represents the investments made by organizations into strategic IT resources.

Nevo and Wade (2010) suggest that IT resources, such as ESS, must be combined with organizational resources to create IT-enabled resources for the organization. They recognize the process level as an intermediate level of the business value of IT. Critical review of the resource-based view of strategic management (Priem & Butler, 2001) identifies that organizations do not derive transformative guidance from the resource-based view on how to convert strategic investments into business performance. Researches and practitioners continue to struggle to explain *how* IT resources contribute to business performance and how to realize business performance from strategic investments in IT.

In this paper, we take the view that the process is the central point of assimilation between IT resources and the individual firm's performance. From this view, it follows that the search for misalignment between the strategic potential afforded by IT resources, such as the system model view in ESS, and the business performance driven by organization's native model view can center on the business process as the analytical unit.

Native Model View

An organization's existing business model, or native model, reflects its a priori view of best practices. The native model is the aggregate of the organization's business processes; processes which operationalize management intentions.

These processes help an organization differentiate itself from its competitors. Winter (1990) characterizes organizations as historical entities, possessing organizational skills and routines which function as organizational memory, thus allowing an organization to repetitively execute a sequence of productive activities without trouble. Andrews (1987) posits that the 'distinctive competence' of an organization is more than what it can do; it is what it can do particularly well.

Porter (1992) describes business processes as an organization's principal source of competitive advantage. Davenport (1998) argues that competitive advantage might suffer from alignment, rather than misalignment, between the *native model* and the *system model*. He posits that it would be very difficult for organizations within the same industry using the same ESS to differentiate themselves based on differences in their business processes; processes which would likely be nearly identical. Thus, competitive advantage is derived from heterogeneous processes in the native model, while the enterprise software system model enforces homogeneity of processes among organizations.

Business processes are contextual, informed by the factors which govern a particular business activity. They represent an organization's evolved response to a problem within a specific environment, governed by specific laws, regulations, customs and practices (Davenport and Short, 1990). Thus, the native model is contextually exact, addressing business problems in the precise context from which they arise. Sia and Soh (2002) identify context specificity as one dimension of alignment between the system model and the native model, suggesting several categories of context specificity; country specificity, sector specificity, industry specificity, and organization specificity, each representing progressively greater degrees of alignment

between models. For example, an organization adopting an ESS targeted toward their industry might find its' *system model* processes more similar to their *native model* processes than one targeted toward another.

The term misalignment, in the context of this study, refers to the degree of dissimilarity between the business processes of the system model and the organization's native model. Misalignment is the focus of this study.

ANALYSIS

Model Misalignment

Despite widespread consensus among researchers and practitioners that alignment of organizational needs and system capabilities is critical to implementation success, researchers continue to wrestle with the specific nature of model misalignment. This is due, in part, to the complexity of interplay between models, processes, and contexts. Proper conceptualization of its nature requires selection of an appropriate unit of analysis.

Several researchers examine ESS and organization misalignment ontologically. This approach aims to categorize that which exists within the organization and the ESS into ontological models, so that the resulting models can be compared to identify matches, deficiencies, or surpluses of capabilities between the two (Sia et al.,2002; Bajwa, Garcia, & Mooney, 2004; Rosemann et al.,2004). While ontological models are useful to identify differences in the content of the systems, they are poorly suited to examining the differences between the business processes fundamental to those systems. Business processes are rule-based, epistemological rather than ontological in nature. This is a critical distinction, as business processes are the primary building blocks of the ESS *system model* of the organization's *native model;* the common denominator among those models.

Understanding the disparity between processes of these models is therefore tantamount to understanding their misalignment, and consequently that between the ESS and the organization. Misalignment between organizations and ESS systems has been studied through a variety of lenses, in organizational literature, supply-chain literature, etc., but seldom from a process perspective. This provides the motivation for our analysis to addresses: "*how can we better understand the misalignment between an organization's native business model and an enterprise software system model, as manifest in their processes*?" Misalignment has significant implications toward the success of an ESS implementation. Given the enormous market share and high-stakes risk-reward for organizations adopting enterprise software systems, there is pressing need for a theoretical framework with which to understand process misalignment. Enterprise software systems deserve serious and continuing research attention, as the consequences of the success or failure of these systems is felt in financial, human, technical, and strategic terms. The goal of this research is to explicate a theoretical model of process alignment between the organization and ESS: the native and the system model.

Practitioner Coping Strategies

A critical challenge in deriving the value propositions of ESS is the adaptation of system and native models (Hong & Kim, 2002). However, ESS' are typically closed systems, not meant to be modified. Programmatic changes to ESS are strongly discouraged by vendors (Brehm et al., 2000). Typically, the only customization sanctioned by the ESS designer is that which can be achieved using configuration parameters within the software. Therefore, organizations implementing ESS must fit their business processes and operational philosophies to those of the ESS, rather than the ESS to the organization.

Organizations implementing enterprise software necessarily invoke some degree of creative destruction, lifting portions of their existing business model out by its roots, and splicing the enterprise software's system model in its place. While the native processes being replaced are contextually exact, those embedded in the system model are generalized to a more generic context. Thus, while the anticipated result of ESS implementation might be some combination of improved functionality, increased capability, or normative process improvement, the mixing of these models introduces some degree of misalignment.

The practitioner community acknowledges misalignments between embedded models, and anticipates the manifestation of that misalignment during ESS implementation. Common coping mechanisms and strategies have evolved to minimize their impact. A multi-million dollar cottage industry has grown around providing services intended to minimize the consequence of model misalignment (Gartner Group, 2010).

Some services are intended to reduce misalignment by pulling the organization closer to the system model view; training, consultation, process reengineering, and process analysis. Each of these serves to realign the native model toward the system

model. Conversely, table one contains a partial list of mechanisms with which organizations adapt the ESS, pulling it closer to the native model view.

Collectively, these adaptive mechanisms and strategies work from both sides to reduce the gap between the native model and the system model. Despite the capability of these mechanisms to reconcile the native model and the system model, the issues put forth by practitioners (figure 2) suggest reconciliation, for them at least, has yet to be wholly satisfactory.

Mechanism	Description	Example
Configuration (customization, in SAP parlance)	Setting of parameters (or tables), in order to choose between different executions of processes and functions in the software package	Define organizational units; create standard reports; formulate available- to-promise logic; use of a standard interface to an archive system
Bolt-ons	Implementation of third-party package designed to work with ERP system and provide industry-specific functionality	Provide ability to track inventory by product dimensions (e.g., 2 500 m. lengths of cable do not equal 1 1000 m. length)
Screen masks	Creating of new screen masks for input and output (soft copy) of data	Integrate three screens into one
Extended reporting	Programming of extended data output and reporting options	Design new report with sales revenues for specific criteria
Workflow programming	Creating of non-standard workflows	Set up automated engineering change order approval process
User exits	Programming of additional software code in an open interface	Develop a statistical function for calculating particular metrics
ERP Programming	Programming of additional applications, without changing the source code (using the computer language of the vendor)	Create a program that calculates the phases of the moon for use in production scheduling
Interface Development	Programming of interfaces to legacy systems or 3rd party products	Interface with custom-build shop floor-system or with a CRM package
Package code Modification	Changing the source-codes ranging from small change to change whole modules	Change error message in warning; modify production planning

Figure 2 - Typology of Adaptive Mechanisms (Brehm, Heinzl, & Markus, 2000)

Case-Studies : Illustrative Vignettes

In this paper, we study two cases to examine the misalignment between the system and native models and its consequences for the organizations. The methodological approach followed is guided by Eisenhardt (1989). The cases, for which vignettes are presented below, are theoretically sampled based on convincing grounding of the conceptualization of misalignment in the evidence observed and presented here. Preliminary interviews and with multiple representatives of the organizations and direct observations by multiple investigators are the primary data collection methods. Data collection is flexible to allow identification of emergent themes and unique features. The cases are examined using the constructs of the native and systems models outlined in our study. Analysis is with-in case to develop preliminary observations from the two cases which are presented below. Our on-going work continues to develop a deeper understanding of the reasons for the misalignment and resultant issues illustrated below.

The Independent Automobile Dealership

To better understand process misalignment manifestations, consider the following example from interviews with an independent dealer principal. The dealer recently sought to adopt a new accounting package, as the vendor for his previous package had ceased providing support. Several national vendors cater to his industry, offering industry specific solutions. However, these solutions were far too expensive to deploy in his small non-franchised operation. RR and ADP, vendors with the largest market-share in this vertical, both offer multi-user, multi-department integrated solutions. However, the smallest solution requires hardware purchases: servers, workstations, networking gear, and printers. The vendors also require large monthly software usage and support charges. The solutions integrate a dealership's parts department, service department, finance office, accounting department, HR, and sales department. Although industry appropriate, they are of the wrong scope for an organization with only a handful of employees; a mechanic, a bookkeeper, and a few salespeople.

Ready-to-install software packages have always been more acceptable for smaller enterprises for a variety of historical, technical, and economic reasons (Brehm et al., 2000). In this case, however, most ready-to-install accounting packages cannot treat the dealer's inventory in an industry-appropriate manner. Popular ready-to-install accounting packages expect each item in the dealer's inventory to be assigned a specific item cost, something quite typical for other retailers. Automobile dealerships, however, require reconditioning charges to be added to the cost of each vehicle in real time, as the reconditioning occurs. While it is possible in most ready-to-install accounting packages to add individual charges to a generic cost of sales account so that they can be applied in aggregate at the end of the accounting cycle, the actual cost of the vehicle would not be ascertainable at the time of sale. The dealer, therefore, searched for an accounting solution of appropriate scope which was also capable of treating vehicle inventory in a manner aligned with the organization's existing business model and the industry.

Initially queries of other dealers in the community revealed that most neighbors simply chose to sublet accounting to outside firms. State dealer associations directed him to several regional software vendors that cater specifically to independent automobile dealerships. Those vendors did not offer integrated accounting solutions, but rather point-of-sale systems for automobile sales. The internet offered a list of ready-to-install accounting packages and required calling each vendor individually to determine the appropriateness of the solution for the business need. After *many* calls, the dealer discovers an accounting solution for *homebuilders*. Homebuilders, like automobile dealers, accumulate new charges to each home in their inventory as work is completed. By treating each vehicle in inventory as an ongoing construction project, the package designed for homebuilders was repurposed by the dealer to serve his organization's needs. This example highlights the level of misalignment with organizational and software business models – System and Native Model.

Several key context-related issues became apparent in this example. Initially, the dealer confronted difficulty regarding scope and scale. While there were ESS providers who offer industry-specific solutions, the solutions were wrong-sized for his organization, and included considerable unneeded functionality. Right-sized solutions within his industry were targeted at a very specific variant, the buy-here-pay-here dealership. While industry appropriate, finance-related specialization made these solutions untenable for the dealer. The dealer's need to accommodate functional requirements normal to his industry caused him to broaden his search to both generic solutions, and solutions from similar industries, where he ultimately found accommodation in software intended for homebuilders. There were, however, demonstrable consequences associated with repurposing an ESS to a context for which it was not intended. Elements of the user interface were contextually inappropriate for his organization, as were certain system processes. For example, although the accounting package allowed customization of the chart of accounts, it did not allow customization of certain journals. Similarly, some of the dealership's native processes needed to be reengineered to work within the new system. Some native processes were broken into smaller pieces, and performed piecemeal in the new ESS. The dealer was fortunate that to some degree, all existing processes were accommodated in the new software and none were made extrinsic to the system. He expressed some concern that should he need to train a new bookkeeper in the future, training that individual to translate between the organization's processes and the

system's processes would be significantly more challenging as a result of the new system's lack of appropriate context specificity. While nearly all ESS accounting packages offer functionality to accommodate inventory, expense, and sale of goods, only a few possess processes aligned with the *native model* processes of the dealer. This dealer experienced three of the five issues identified by the Oracle Usability group in figure 1.

The Regional Health-Care provider

A recent interview with a CIO from a large regional health-care provides further insight regarding process misalignment, its manifestation in his organization and coping mechanisms he employs to minimize its impact. The information systems department in his organization extends software services to external health-care providers and handles all information systems activities associated with patient care, billing, and administration for their own organization. Like other large health-care providers, they must be masters of change management, addressing electronic medical record implementation, changing insurance regulations, evolving privacy laws, as well as changes to the information systems based on strategic initiatives of the board of directors. The organization is currently implementing Epic, a new ESS specific to their vertical, which promises full departmental integration. Implementation is expected to take two years.

This CIO's view of information systems within the organization as constituted of 20% technology and 80% processes. Consequently, his department does not hire analysts based on IT skills, but rather soft skills. He suggests IT skills can be learned, while soft skills are more difficult. While serving many stakeholders, he describes patients as the organization's primary customers, followed by physicians.

This organization uses 100% shrink-wrapped software in all systems. Native business processes are standardized on the system model processes embedded in the shrink-wrapped software. The IT department maintains an interface tying the various components together. By standardizing on shrink-wrapped software, software maintenance is outsourced to the various product vendors. While shrink-wrapped software minimizes support requirements, it also limits flexibility and integration. When users ask for changes to the software, or for different functionality, they are told the IT department will suggest the change to the product vendor. In-house customization is not a practice of the department.

As new software is adopted, workers are expected to adapt. IS job openings are posted to each department in which new software will be implemented, with the hopes of hiring several hundred practitioners from affected departments to be trained in the software as members of the IS team, and subsequently returned to their department as IS facilitators. When asked about modifying software to accommodate existing processes rather than retrain the users, the CIO explained that it costs 7 times more to change software than it does to train or replace people.

To the degree that the strategies of the organization can be accommodated by existing software, the approach taken by this CIO is effective. However, the organization's migration to an industry-specific ESS suggests they recognize the need for a better fit between their native model processes and those of embedded in current systems. They also seek integration across departments. To some degree, this organization's IS users experience all five of the usability issues identified in figure 1. By selecting an ESS specific to their industry and context, better alignment is expected.

SUMMARY

Approximately half of ESS implementations fail. In this research we attempt to address the critical question of why some firms achieve the result they expect from their ESS implementation, while many others do not. A recent meeting of Oracle's Usability Advisory Board found that strategic misalignment and process level misalignments are primary issues that organizations deal with in enterprise level software implementations. Missing or inappropriate functionality and the misaligned of workflows and business processes contribute to incomplete realization of the potential of IT investments into business performance. We investigate such misalignment from a business process perspective. That IT investments do not directly translate to business performance is well supported in the literature. A process view allows analytical examination of the misalignment between the ESS system view and the organization's native view of business processes. While most current research views the transformation of IT resources into performance as black-box, we try to develop an analytical framework based on the misalignment of the system model and the native model to understand how we can begin to reduce the misalignment. The positioning of our argument is novel in its approach to the problem of *why* this misalignment occurs. We integrate multiple extant theories into a cohesive explanation of *why*. We attempt to take an interpretive approach to the literature and the power of stories to help begin to understand the "why" of the misalignment problem – for which the existence has already been established. We provide illustrative vignettes from cases as analytical reports from interviews with organizational leaders on their perceptions of the misalignment from a process perspective. Preliminary results indicate the

importance and utility of the analysis approach and identify research directions for further empirical investigation. Our on-going work further develops the cases to collect more data and better analyze the data so that we can theorize about the concept of misalignment between the systems and native model and its impact of IS success.

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