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Aligning Organizational Requirements with Enterprise Systems Capabilities: The Role of Domain-Specific Knowledge

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ALIGNING ORGANIZATIONAL REQUIREMENTS WITH ENTERPRISE SYSTEM’S CAPABILITIES: THE ROLE OF DOMAIN-SPECIFIC KNOWLEDGE

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Abstract
Lack of alignment between organizational requirements and Enterprise System (ES) package capabilities appears to be a key factor in problematic ES implementations that have been showcased frequently in the press. We present a model that describes an effective alignment process as one in which the level of the customer’s and vendor’s shared understanding of both organizational requirements and ES package capabilities leads to a high-quality evaluation of fit between the customer’s requirements and the capabilities of the ES package. We then focus on the role of domain-specific knowledge as a major factor influencing the effectiveness and efficiency of the alignment process. We present two cases representing significantly different levels of domain-specific knowledge that support this notion.

Keywords: ES alignment, organizational requirements, business processes, ES package capabilities, domain-specific knowledge, well- and ill-structured problems, weak and strong problem-solving strategies
Introduction

Despite an increasing number of organizations adopting Enterprise Systems (ESs) successfully (e.g., Mabert et al. 2001), their selection and subsequent implementation remain high-risk endeavors. ES implementation projects often run late, exceed budget, and fail to meet stakeholder expectations (e.g., Appleton, 1997; Davenport, 2000, Markus and Tanis 2000; Markus et al. 2000). Some even fail completely (e.g., Scott and Vessey, 2002).

A number of researchers have argued that lack of alignment (or fit) of ES functionality with organizational requirements is a major reason that ES implementation projects experience problems (e.g., Rolland and Prakash, 2000; Soh et al., 2000). This paper forms part of on-going conceptual and empirical work we are undertaking to better understand the concept of alignment in ES implementation projects and to devise theoretically based measures of alignment. We present a model of our ongoing research that conceives of alignment as a process of mutual learning in the engagement between customer and vendor (and/or their agents) as they seek to understand organizational requirements for an ES implementation. In the context of this model, we examine one factor that appears to be instrumental in improving the efficacy of that learning process: the role of domain-specific knowledge, which is knowledge of the business to which the ES is to be applied. Specifically, this paper seeks to explain theoretically, and demonstrate empirically, the importance of domain-specific knowledge in evaluating the quality of the fit between ES capabilities and the organization’s requirements. Our central argument is that a company that uses well-developed (that is, strong) domain-specific knowledge to determine its organizational requirements can reduce the complexity of the alignment process significantly, thereby engaging in a more-parsimonious and potentially more-effective process of aligning organizational requirements with ES package capabilities. In this light, our overall research question is the following: “What impact does domain-specific knowledge have on the process of aligning organizational requirements and ES package capabilities?”

To gain preliminary insights into the issue of alignment in ES implementations, we have been examining that phase of the ES implementation process that is involved in a major way in evaluating the fit or alignment of the ES capabilities with the organization’s requirements—specifically, the ES acquisition processes. In this paper, we report case-study analyses of two companies that differed substantially in their levels of domain-specific knowledge. The results manifest the findings we have obtained in other case studies we have conducted. We found that the organization with strong domain-specific knowledge was able to engage in a well-structured, parsimonious alignment process by specifying its strategic business processes. On the other hand, the organization with less well-developed (i.e., weak) domain-specific knowledge engaged in a fuzzy, lengthy comprehensive search process to try to tease out the requirements for its projected ES implementation.

Overall Theoretical Model

Figure 1 shows the theoretical model that underpins our work (Dreiling et al. 2007). The model focuses on the quality of the evaluation of fit between ES capabilities and organizational requirements. Because the alignment, or fit, of IS to business needs has been a major issue for both research and practice over a number of years, the evaluation of fit during any systems engagement, and more particularly, complex ES implementations, is a key issue for both customer and vendor. Two fundamental premises underlie and frame this model. The first is that vendors and customers (and/or their agents) are motivated to engage with each other as a means of managing the risk that surrounds the acquisition and deployment of an ES. As a result, they will continue to take risk-mitigation actions while the cost of these actions is less than the reduction in expected loss that results from undertaking the actions.

The second is that the ES evaluation process essentially is a joint learning process that involves a vendor and a customer (and/or their agents). The vendor seeks to better understand the requirements of the customer’s organization, while the customer, in turn, seeks to better understand the capabilities of the vendor’s ES in relation to its needs.

The core of this model is that during the ES alignment process vendor and customer attain a level of shared understanding of both the customer’s business processes and the capabilities of the ES package in order to conduct an evaluation of the fit of the package with the organization’s needs. The level of shared understanding is an emergent construct that results from bidirectional associations among the customer’s understanding of both their own business processes and the ES package capabilities and the vendor’s understanding of their ES package capabilities and the customer’s business processes. The individual levels of understanding eventually reach an equilibrium such that the greater the level of the individual understandings of requirements and package capabilities, the greater the equilibrium level of shared understanding, and therefore the higher the quality of the evaluation of the resulting fit.
Role of Domain-Specific Knowledge in the ES Alignment Process

Based on our observation in a number of our case studies that domain-specific knowledge is a significant factor influencing the alignment process, we now present theory to explain that role. Domain-specific knowledge is fundamental to all disciplines (e.g., Alexander and Judy 1988). Prior research has shown that thinking is dominated by content and skills that are domain-specific (e.g., McPeck 1990). Lack of domain-specific knowledge results in the use of inelegant problem-solving strategies (e.g., Alexander and Judy 1988) that are less effective and efficient than they might otherwise be.

Two theoretical perspectives provide insight into the alignment process in the presence and absence of domain-specific knowledge: the notions of (a) well- and ill-structured problems and (b) weak and strong problem-solving strategies.

Well-structured problems are those that have a well-defined initial state, clearly-defined goal state, well-defined, constrained set of transformation functions to guide the solution process, well-defined evaluation processes, and an optimal solution path (Greeno 1978; Sinnott 1989; Voss and Post 1988). Further, the information needed to solve the problem is contained in the problem statement. On the other hand, ill-structured problems are those for which the initial and goal states are vaguely defined or unclear (Voss and Post 1988). They have multiple solutions and solution paths, or no solution at all (Kitchner 1983). Further, the problem statement does not contain all the information needed for their solution; hence, it is not clear what actions are required to achieve a solution (Chi and Glaser 1985). Hence, more effective and efficient problem solving will take place when solving well-structured problems.

Fundamentally, systems implementations are a problem-solving activity in which a problem in a given domain is transformed by the implementation process into a solution in the computing domain. Approaches to problem solving are classified as either strong or weak. Strong approaches are those designed to address a specific type of problem, while weak approaches are general and apply to many types of problems (Newell 1969). If a specific problem were well-structured, the inherent structure of the problem would make it relatively simple to devise an appropriate, or strong, solution approach. On the other hand, if such a problem were ill-structured, an appropriate solution approach would not be readily forthcoming, and the problem-solving approach would therefore be weak. Hence, effective and efficient problem solutions can be facilitated by converting ill-structured problems to well-structured problems that can be solved using strong problem-solving approaches.

The crux of our argument lies in the fact that domain-specific knowledge allows us to view the process of alignment between organizational requirements and the capabilities of an ES package as a well-structured problem. In such a case, an organization knows what it wants and how to get it. As a result, the ES package selection team can employ a strong (that is, streamlined) problem-solving strategy that focuses on crucial, or strategic, business processes, which are areas where
uncertainty needs to be reduced. On the other hand, alignment between organizational requirements and ES package capabilities may be viewed as an ill-structured problem when domain-specific knowledge is absent. In general terms, the organization lacks a clear picture of the initial starting point and the final outcome; therefore, the process of solving the problem is not well-defined. As a result, the ES package selection team can manage uncertainty only by using weak, generic approaches to problem solving. Hence, these approaches lack a clear focus, thereby resulting in lengthy requirements specifications.

Research Method

Given the exploratory nature of our research, we have been conducting case-study analyses to better understand the effects of domain-specific knowledge on how clearly organizations can specify their requirements during an ES selection process and the subsequent effects on the quality of the ES evaluation conducted. In this paper, we present our findings for two of those ES acquisitions. One had strong domain-specific knowledge, while the other had weak domain-specific knowledge.

EnergyCo completed its SAP implementation eight years ago, while Progressive-City City Council (PCC) has just finalized its ES acquisition process (pseudonyms). In EnergyCo, we conducted a semi-structured interview of 80 minutes’ duration with the then Manager of Business Information Systems (effectively the corporate CIO), Roberta Roberts (pseudonym). Roberts played the leading role in the ES implementation, and she continues to work for the company. In PCC, we are currently conducting a longitudinal case study of the ES selection and implementation processes. We have conducted interviews with multiple business process owners and managers, as well as power users and light users, and with implementation partner personnel such as the project manager, organizational change manager, and benefits realization manager. In both cases, we also had access to relevant documents.

Case Studies Illustrating the Effect of Domain-Specific Knowledge on the ES Alignment Process

We present, in turn, our case analyses of the alignment processes used by our two case companies, in which we contrast the focused, streamlined processes used by EnergyCo, which had strong domain-specific knowledge, and the haphazard processes used by PCC, which had weak domain-specific knowledge.

ES Acquisition at EnergyCo

In 1995, when the electricity industry in Queensland, Australia was disaggregated to form separate electricity generation, transmission, and distribution businesses, EnergyCo assumed responsibility for electricity transmission. It is a government-owned corporation characterized by capital-intensive assets and significant expertise in project management. At the time of disaggregation, a comprehensive information systems implementation project was in progress. The system, which focused on the largest of the three businesses—namely, power generation, was completed following disaggregation.

The focus on the power generation business meant that the package chosen was not well suited to the transmission business. Further, integration support subsequent to implementation fell by the wayside leaving EnergyCo with a system that worked for the short term only. Due to IT staff cuts on disaggregation, the organization could not take on the work itself. Moreover, a longer-term problem became evident in that a Y2K upgrade was not available for one of the three major component systems.

Following disaggregation, EnergyCo appointed a new CEO, a former pre-sales consultant with a local ES solution provider. He was knowledgeable in IT and also understood the potential, processes, and difficulties associated with ES implementations. The CEO possessed considerable, specific knowledge of ES package capabilities, while Roberts knew both the business and IT in general. Hence, the pair possessed significant domain-specific knowledge and knowledge about ES
package capabilities. Further, they had gained significant expertise in selecting and implementing large integrated systems in the earlier, failed project. In 1997, they made a decision to implement a new system rather than attempt to upgrade the old system.

With significant internal expertise, and the standard, government processes that were in place for contracting, EnergyCo conducted its own package selection and implementation processes. Three major high-level strategies were established: 1) to contract directly with the primary software vendor instead of a third-party consultant (as on the prior occasion); 2) to request an integrated solution, leaving open the possibility of either an integrated ES or a best-of-breed solution with the contractor taking responsibility for the integration; and 3) to describe the requirements in terms of their key areas of concern (i.e., their three strategic business processes) and to accept standard support for the organization’s other processes. On the latter, Roberts stated:

“…there were a number of possibilities. Each of them was a big player, and was already running in many organizations around the world. So it would be senseless for us to go to great effort in specifying details about our requirements for how we process accounts payable, or how we run a payroll ... We thought, ‘Every business does that, so the systems can do it. Let’s take that as a given. What we’ll focus on are our core business processes.”

The fact that the company could focus on its three strategic business processes is evidence of the existence of significant levels of domain-specific knowledge. These key areas of concern were asset management, capital projects, and work management or maintenance. In the other areas, they simply “looked for ‘show stoppers,’ not best fit.” EnergyCo’s focus on just the company’s strategic business processes rendered the problem well-structured, with the result that they could use strong problem-solving processes tailored specifically to meet their needs.

EnergyCo engaged in a formal ES selection process, which involved registration of interest followed by a tendering process. The registration request (12 pages in length) was written by the CEO who, as noted earlier, had considerable experience in preparing such documents. The 12-14 responses received were assessed based on nine high-level criteria, resulting in the short-listing of three vendors. The tendering process with the three short-listed vendors also focused on the three major areas of concern. Scenarios were developed for each, and the processes to support each area were to be run at the vendor’s site supported by EnergyCo-specific data in order to demonstrate process integration. EnergyCo regarded the scenarios as the key to the alignment process.

A short specification was also developed that recorded the need for “other” functionality such as payroll, financial management, and some aspects of human resources, as well as the technical environment in which the implemented system was expected to run. Further information included costs, the desire for a long-term relationship with the vendor, and how the contract would be structured. Following six weeks’ preparation, each short-listed vendor made a three-day presentation to EnergyCo, as well as providing substantial written documentation. The focus was on what the package could accomplish rather than how it achieved it. The required non-core processes were assessed by means of standard vendor presentations on the functionality their packages possessed. Company representatives were told to “think about any particular unique things that EnergyCo may do and demonstrate” that these could be accommodated by their packaged solution. A number of other teams assessed non-functional requirements, such as implementation methodology, maintenance and support services, costs, and the vendor’s long-term development strategy for its package.

The selection decision involved five high-level criteria assessed independently, each with its own evaluation and decision mechanisms: functional capabilities (i.e., scenarios and show-stoppers), technical fit, value for money, strategic relationship with the vendor, and meeting of timeframes and requirements. Crucial misfits occurred in strategic areas. For example, one contender was eliminated because the package offering was not integrated sufficiently, while the maturity and capability of the tendering organization was an issue for a second vendor. Functionality was not the key issue in the final decision.

A decision was made to implement SAP. The implementation, which took nine months, was deemed to be highly successful.

ES Acquisition at PCC

Progressive-City (PC) is experiencing significant development and population growth based on its strong technology, manufacturing, and education base. PC is engaging in innovative ventures that include a business and technology emphasis at two university campuses, a developing aerospace precinct, and a new state-of-the-art industrial estate. Tourism in the area is expected to experience continued growth based on its world-class museum, art gallery, festivals, parks, and wineries. PC is
already recognized internationally and is experiencing considerable interest in terms of trade and investment. The population is expected to exceed 300,000 by 2026 (from the 2006 level of 140,000).

PCC has over 1,200 employees who deliver an extensive set of services to the community that include management and use of land activities, assessment and regulation of health services, animal management, management of cemeteries, provision of community and cultural services, and provision of library and information services.

In 2005, PCC and the PC community prepared a Community Roadmap (PC 2020 and Beyond), which outlined a series of strategies and actions to ensure they could meet growing community needs. The Roadmap was comprehensive, focusing on six major themes: natural environment, growth management, strong and diverse economy, community spirit and well-being, infrastructure and services, and integrated transport and movement.

Major problems with PCC’s existing systems, infrastructure, and business processes included (a) outdated and inconsistent information management across Council; (b) a core council system that was over 18 years old and met only an estimated 20-25% of business needs; and (c) limited opportunities for information integration, analysis, business reporting, and alignment of business processes.

In seeking a replacement systems solution, PCC sought the services of an implementation partner who suggested they needed an ES. At the beginning of 2005, the implementation partner developed an information architecture to determine application requirements. As the foundation for meeting the needs of the growing community, PCC decided in November 2005 to engage in a multi-phase, multi-year Business Transformation Program (BTP) with an ES at the core, supported by a number of other “lines-of-business” applications. The BTP established an ES project team that combined PCC and implementation-partner expertise. It included a change management manager, a business process manager, a benefits realization manager, and nine business analysts and other supporting staff (including technical specialists).

We report here on the acquisition process, which consists of Requirements Determination and ES Selection. This phase ended on August 24, 2006 with the announcement of the selected vendor/consultant pair. Contract negotiations were finalized on February 28, 2007.

Prior to Requirements Determination and ES Selection, PCC conducted a market briefing, attended by approximately 20 vendors and consultants who viewed PCC as an attractive medium-large customer. The first sub-phase was the expression of interest (EOI), which was issued for both the ES and the lines-of-business applications. This document, written by implementation partner, was 30 pages in length and generated interest from 10 consultant-vendor teams.

The major activity during Requirements Determination and ES Selection was to determine the initial requirements for the ES. Business areas were divided into five functional reference groups (FRGs) (corresponding to the five modules to be implemented) and one technical reference group. Workshops in the five functional areas, which involved business representatives and project team members (i.e., business analysts), were conducted using a set of generic, vendor-based ES functionality templates. This approach was used in the hope that it would mitigate time pressure resulting from the ambitious schedule, as well as allowing business representatives to become familiar with the ES capabilities available in today’s packages. Three rounds of workshops were held with three levels of business representatives, from process owners to power and light users. The participants ranked functionality relevant to PCC as mandatory, highly desirable, desirable, and nice to have. An overall weighting was calculated for each of the five functional areas. In the final step, a senior management panel produced weightings for the five modules. Contrast this lengthy, time-consuming, and weak requirements determination process, which reflects an ill-structured problem area, with that of EnergyCo, which already knew the strategic business processes on which to focus, and which could therefore treat the problem as well-structured, and engage in a strong problem-solving process.

The outcome of this requirements determination exercise was used as the basis for preparing the request-for-tender (RFT) document. The ES vendor-consultant teams were given two weeks to respond. As part of the RFT response process, the vendors/consultants mapped the capabilities of the system they were proposing into the initial set of functional requirements in the form of the annotated templates. Their response to each requirement took the form of supported, not supported, supported with third party, supported but not priced, supported in a future release, or further customization required. The result was a matrix that displayed the importance of the requirements and the corresponding system’s capabilities. All three vendor-consultant pairs were invited to develop demonstrations of their software.

While the vendor-consultant pairs were responding to the RFT, the internal team engaged in the second major sub-phase of the acquisition process—namely, building scenarios. The starting point was a number of artifacts from a SWOT analysis used to develop the information architecture. Scenarios allow vendors to demonstrate their software, particularly those aspects that the organization uses frequently, those that are quite complex, and those from which they derive value. The FRGs developed scenarios for each major module by focusing on mandatory and highly desirable functionalities. Approximately 1,100 scenarios resulted, most at the operational level (such as master file record management for product code, vendor, and customer, and creation of contracts and requisitions).
Formal scoring of the proposals revealed few differences in functionality among the three packages proposed, and all respondents were given two weeks to prepare demonstrations of the business scenarios. The FRG business representatives evaluated the vendors during the demonstration sessions. The evaluation and selection of the vendor also considered other factors, such as overall integration of the solution, technical capabilities, financial viability, architectural alignment, complexity, completeness, consistency, confidence, and ease of use.

Following the announcement of the selected vendor/consultant pair on August 24, 2006, the project moved into the Prototype sub-phase of the original acquisition phase, which consisted of As-is Discovery, followed by the building of a small prototype. Upon completion, the project will move into the final, physical implementation phase.

Discussion

Table 1 presents a cross-case comparison of ES acquisition processes examined in this study.

Table 1 shows the two case studies on which we report are well-matched: both take place in government-owned businesses; both engaged in package-enabled implementations; and both followed a formal, government-specified acquisition process. Nonetheless, the routes each organization took to package selection were very different. EnergyCo engaged in a pro-active stance. Specifically, it decided to examine in detail only its strategic business processes and to simply accept that “other” functionality (and processes) would be available. Nonetheless, it searched for show stoppers—that is, unique requirements typically not covered in ES packages. This approach demonstrates strong domain-specific knowledge that allowed EnergyCo to concentrate its efforts and to treat the acquisition process as a well-structured problem that it could address using strong problem-solving strategies. PCC, on the other hand, examined package functionality as an aid to determining needed functions. It engaged in detailed examinations and evaluation processes. Weak domain-specific knowledge rendered the problem ill-structured, which resulted in the use of weak problem-solving strategies.

Three major differences in the two package acquisition examples may explain why EnergyCo could treat its acquisition process as a well-structured problem while PCC could not. First, a few years earlier, EnergyCo had been through an ES implementation that failed to meet its (changed) needs. That learning process was so effective that it chose not to use consultants to help in either selecting or implementing the ES. In contrast, PCC had not done any systems implementation for almost two decades. Hence, it did not have the opportunity to learn about ES prior to its implementation. Second, EnergyCo’s learning experience was demonstrated vividly in the way it approached the ES alignment process. It examined in detail only its three strategic business processes. This focused approach contrasts with that of PCC, which examined templates containing all the functionality provided by ESs and analyzed all in depth (that is, PCC did not differentiate, ex-ante, among critical functions, those that were necessary but not critical, and those that were not necessary). Third, although the ES modules sought by both organizations are typical of ES implementations, the activities in which a city council engages (e.g., waste management, cemetery management) are unlike those of other businesses.

Because of these differences, PCC’s ES implementation is of considerably higher risk than that undertaken by EnergyCo. It is about to enter the implementation phase; but unlike EnergyCo it has not yet identified the business processes that will be implemented. Hence, it would appear that the organization must still go through a business process determination phase prior to configuring the software. Note, however, that a number of methodologies determine business processes as the second in a five-phase implementation process (see, e.g., SAP’s ASAP methodology, which presents “Business Blueprint” as the second in a series of five implementation phases).

Implications for Research and Practice

With respect to our conceptual model, the two case analyses reported here suggest that shared understanding can be reached by placing different emphases on the constructs in the equilibrium portion of our model. For example, EnergyCo drove its own alignment process, which therefore emphasized the customer’s understanding of its strategic business processes and the customer’s understanding of ES capabilities, and the relationship between them. Nonetheless, due to the salience of the customer’s representation of its needs, the two parties developed a high equilibrium level of shared understanding that resulted in a high-quality evaluation of fit. In PCC’s acquisition process, however, the ES package selection team engaged in an extensive learning exercise involving all four constructs in the equilibrium portion of the model. The individual
Table 1. Cross-Case Findings of Similarities and Differences in ES Acquisition

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Differences in Package Acquisition Processes</th>
<th>The Implementation Phase</th>
<th>Preliminary Evaluation of Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnergyCo</td>
<td>Government organization.</td>
<td>Knowledge of required business processes paved the way for the implementation phase.</td>
<td>N/A</td>
</tr>
<tr>
<td>Government organization.</td>
<td>Examined package selection process.</td>
<td>EnergyCo implemented SAP in nine months.</td>
<td>EnergyCo’s implementation was successful; however, the immaturity of the project management model resulted in non-use until an ES package upgrade in 2001.</td>
</tr>
<tr>
<td>Examined package selection process.</td>
<td>Planning a package-enabled (vanilla) implementation.</td>
<td>The implementation phase must now include a business process determination phase.</td>
<td>The high level of shared understanding of organizational requirements and package capabilities resulted in a high-quality evaluation of fit followed by a successful implementation.</td>
</tr>
<tr>
<td>Planning a package-enabled (vanilla) implementation.</td>
<td>Used government package acquisition process.</td>
<td>EnergyCo implemented SAP in nine months.</td>
<td>At this stage, it is not possible to assess whether the desired fit will be achieved. Initial indications are that achieving a good fit is likely to be a difficult process.</td>
</tr>
<tr>
<td>Used government package acquisition process.</td>
<td>Chose to implement financials, asset management, plant maintenance, project management, with some procurement logistics, sales and distribution, HR/payroll, and employee self service.</td>
<td>EnergyCo’s implementation was successful; however, the immaturity of the project management model resulted in non-use until an ES package upgrade in 2001.</td>
<td>The high level of shared understanding of organizational requirements and package capabilities resulted in a high-quality evaluation of fit followed by a successful implementation.</td>
</tr>
<tr>
<td>Chose to implement financials, asset management, plant maintenance, project management, with some procurement logistics, sales and distribution, HR/payroll, and employee self service.</td>
<td>Fundamental Differences in Nature of the Implementation</td>
<td>The implementation phase must now include a business process determination phase.</td>
<td>At this stage, it is not possible to assess whether the desired fit will be achieved. Initial indications are that achieving a good fit is likely to be a difficult process.</td>
</tr>
<tr>
<td>EnergyCo focused on strategic business processes only, at the same time assuming, based on past experience, that other required processes were covered in any ES package.</td>
<td>High domain-specific knowledge.</td>
<td>The implementation phase must now include a business process determination phase.</td>
<td>The high level of shared understanding of organizational requirements and package capabilities resulted in a high-quality evaluation of fit followed by a successful implementation.</td>
</tr>
<tr>
<td>PCC did not differentiate its business processes. Hence the acquisition process examined all processes.</td>
<td>Low domain-specific knowledge.</td>
<td>The implementation phase must now include a business process determination phase.</td>
<td>The high level of shared understanding of organizational requirements and package capabilities resulted in a high-quality evaluation of fit followed by a successful implementation.</td>
</tr>
<tr>
<td>Use of strong problem-solving strategies.</td>
<td>Use of weak problem-solving strategies.</td>
<td>The implementation phase must now include a business process determination phase.</td>
<td>The high level of shared understanding of organizational requirements and package capabilities resulted in a high-quality evaluation of fit followed by a successful implementation.</td>
</tr>
</tbody>
</table>

equilibrium levels of understanding attained and therefore the shared understanding between vendor and customer were low, which resulted in a low-quality evaluation of fit. Our investigation of the role of domain-specific knowledge in improving the quality of the evaluation of fit between ES capabilities and organizational requirements can therefore be explained in terms of the model.

We can identify a number of opportunities for future research. First, to date we have provided only preliminary evidence in support of our claim that strong domain-specific knowledge is a contributing factor in establishing alignment or fit between organizational requirements and package capabilities (Figure 1). Further studies need to be conducted to assess this relationship and to determine other factors that may play a significant role in improving individual levels of understanding. Second, if our model is substantiated in future research, further work needs to be conducted to investigate how to raise the level of domain-specific knowledge in organizations whose knowledge is weak. It is important to note, however, that domain-specific knowledge may rest with either the organization itself or consultants an organization might use. For
example, consultants who use industry templates (e.g., a reference model such as eTOM in the telecommunication industry (http://www.tmforum.org) have significant business knowledge in that domain. Thus, even if a customer does not have a clear picture of its strategic business processes, consultants in the domain most likely do.

From the viewpoint of practice, our research has implications for consultants engaged in ES implementations. It appears that domain-specific knowledge plays a key role in facilitating effective and efficient acquisition implementation processes. First, given that consultants uniformly possess ES package knowledge, consulting companies should place consultants on projects based on the extent of their knowledge of the application domain. Second, the key to successful implementations with novel requirements would appear to be to develop a process to gain sufficient domain-specific knowledge prior to initiating the ES project so that the problem can be treated as well-structured.

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