

Meeting Transnational Objectives through Individual Knowledge Search*

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ABSTRACT

We develop a micro-foundations learning approach to the transnational framework. In a study of 105 globally dispersed projects in a multinational enterprise (MNE), we examine the internal, external, and codified knowledge search of project leaders and link these activities to the transnational objectives of responsiveness, learning, and efficiency. Consistent with learning and MNE literatures, we find that searching outside the organization for help with specific tasks of a project increases learning. Codified search helps ensure that the project is done efficiently and that learning occurs as well. Finally, we find that when project leaders search inside the organization for help in completing a project that the project is much more responsive and impactful to the client. These findings show how different transnational objectives require different knowledge search activities, as well as provide a task level understanding of how individuals might facilitate the achievement of these seemingly paradoxical organizational objectives.

"New pressures have transformed the global competitive game, forcing [organizations] to rethink their traditional worldwide strategic approaches...the challenge [is] how to develop the organizational capability to do it."(Bartlett & Ghoshal, 1989: 3-4).

In their initial discussion of transnational organizations over 20 years ago, Bartlett and Ghoshal (1989) emphasized the match between tasks and talent to ensure efficiency, responsiveness, and continuous learning that would allow an organization to compete in a changing global landscape. Today, the transnational model is increasingly seen as an ideal type where the organization is able to capitalize on economies of scale through integrated efficiencies, adapt to dispersed markets through local responsiveness, and continually reinvent itself by learning from its experiences (Ghemewhat, 2008; Evans, Pucik, & Barsoux, 2002; Hocking, Brown, & Harzing, 2007). Although not always achievable from an organizational level, individual tasks can be managed in such a way so as to increase the capability of the organization to meet these transnational objectives (e.g., Schuler, Dowling, & De Cieri, 1993; Stroh & Caligiuri, 1998; Taylor, Beechler, & Napier, 1996). Relatively little, however, is known about the link between individuals and their tasks as they seek knowledge to help reach such objectives (Bjorkman & Barner-Rasmussen, 2004; Minbaeva, Pedersen, Bjorkman, Fey, & Park, 2003; Reiche, Harzing, & Kraimer, 2009; Shenkar & Li, 1999).

From a learning perspective (Argote & Ingram, 2000), individual workers within an organization turn to codified knowledge repositories or personalized knowledge from others inside and outside of the organization to help in completing specific tasks (Polanyi, 1966). The value of this search depends, in part, on the extent to which their search activities help them complete a task more efficiently, responsively, and/or innovatively. The assumption here is that the differential in benefits of knowledge drawn upon by individuals within the organization bears significant enough differences across organizations to warrant potential for competitive

advantage (Kogut & Zander, 1993). In general, this work concludes that knowledge search activities help create value for the multinational enterprise (MNE).

However, the value of this knowledge search can actually differ depending upon the organization's objectives. For example, Haas and Hansen (2007) found that if an organization emphasizes quality of work then workers should focus on interacting with others with lots of experience. Furthermore, if time savings is important, then they should focus on the quality of documents they draw upon instead. In a global context, knowledge workers struggle with similar concerns. For instance, if the organization adopts a transnational strategy (as many organizations are doing today), then the resources they draw upon will likely vary depending not only upon the desire to be efficient, but also to be responsive to the local environment and constantly learning. In an effort to understand how these different objectives might necessitate different knowledge search, we consider the influence of turning to different knowledge resources at the task-unit level within the MNE. At this level, the possibility of achieving all three objectives becomes more apparent as knowledge workers seek the appropriate knowledge resources to complete the various tasks they are involved in on a daily basis (Haas, 2006; Haas & Hansen, 2005; 2007; Orlikowski, 2002). As a result, we try to articulate some of the fundamental elements of a "micro-foundation" for translating MNE-level objectives and resources into task-level knowledge search and outcomes. In this regard, we hope to build on work by Haas and Hansen (2007) and contribute to the call from scholars such as Foss and Pederson (2004) for a better understanding of the micro-foundations of knowledge and performance links in the MNE.

To do this, we first ask how individual knowledge search might create different value for the transnational organization. More specifically, during a project, how do various knowledge sources differ in their impact on a person's ability to deliver a product or solution in an efficient manner, that is responsive to local needs, and that builds new knowledge for future projects? To

answer this question we develop and test a theoretical model which argues that different types of search will have a stronger influence on specific task-level transnational objectives. We examine the internal, external, and codified search of project leaders within a large service-based MNE. Specifically, we use regression analysis to test how their search activities during a given project influence the separate transnational objectives. Consistent with knowledge search and MNE literatures, we found that searching outside the organization for help with specific tasks of a project increases learning more than other searches. Codified search helps more than internal and external contacts to increase the efficiency of a project. Potentially counter intuitive to social capital research, but consistent to local and global search literatures, we also found that searching knowledge from others inside the organization but outside of the local office actually had a stronger influence on a projects responsiveness than searching external contacts or codified knowledge. We discuss the implications of these findings and stress future research directions as a result.

THEORY DEVELOPMENT

Bartlett and Ghoshal (1989) distinguished the transnational organization by its strategic objectives of global efficiency, national responsiveness, and worldwide learning. By focusing on the flow of knowledge between units and local environments firms are able to respond to local market needs, gain efficiencies from standardization, and continually learn in order to maintain a competitive advantage (Adler & Bartholomew, 1992; Harzing, 2000). From a task-level perspective, these objectives can be translated into how well individuals performing specific tasks (e.g., a project) are able to create, share, and integrate during the task (facilitate learning), complete the task in under a projected time-frame and under a certain budget (be efficient), and provide products or services to impact the specific needs of the client (be responsive). In

transnational organizations, these task-level activities are often project based and carried out by individuals or teams (e.g., Snow, Snell, Davison, & Hambrick, 1996). While some work has been done on task-level knowledge inputs and outcomes (e.g., Ancona & Caldwell, 1992; Haas, 2006; Haas & Hansen, 2005; 2007), very little has been done to understand the task level factors involved in pursuing a transnational strategy (Snow, Snell, Davison, & Hambrick, 1999).

As argued by Simon (1976) and later Nonaka (1994), because knowledge resources and activities are largely held by people and not organizations, a task level approach will help understand the micro-foundations of the transnational framework. Such understanding allows organizations to decide how best to facilitate these objectives by peering deeper into how work gets done. For instance, is the knowledge accessed by individuals valuable for some objectives and not others? And does it depend on whether the knowledge is personal or codified? Furthermore, does turning to others both outside and inside the organization help in different ways? Understanding how these objectives are met from a task level also helps to differentiate why individuals within the same subunit may actually differ in their ability to reach these objectives. Implications of which are that even if certain knowledge activities and resources are found at the subunit level, it does not mean that they will equally benefit each task performed in that unit. As such, when knowledge is accessed by individuals to complete a task, the influence of that knowledge at the task level may not be consistent with its influence at the subunit or organization level. Hence, we see situations where two subunits could possess similar organizational knowledge, but meet these objectives differently (cf. Haas & Hansen, 2007). Such variance may be a result of differences in individual knowledge search and how that knowledge is used to complete tasks within the subunit.

Though potentially creating confusion inside the MNE, these differences in knowledge search can actually lead to advantages over competitors. For instance, the knowledge held by

contacts inside and outside the organization tends to be tacit in nature (cf. Harzing, 2000). This type of knowledge enables differentiation from competitors because it is difficult to imitate (e.g., Subramaniam & Venkatraman, 2001). It cannot be owned by the firm. Instead, it is owned by individuals and must be shared by individuals. On the other hand, some knowledge is codifiable and can be captured in electronic databases, manuals, and procedures. Accessing this type of knowledge can also be beneficial to a transnational organization as it can be embedded in the organization and more easily accessible in terms of search costs (Nonaka, 1994).

As a result, three main types of knowledge resources are important to examine from a transnational perspective. The first type of knowledge search is found in turning to external contacts. Turning to contacts outside the company acts as a form of global search (Rosenkopf & Nerkar, 2001) that allows the individual to access knowledge that is potentially new to the firm. The second type of knowledge search is to turn to others inside the organization. Turning to internal others such as experts and people who have experienced similar problems provides knowledge that can potentially be valuable to improve existing tasks. In many ways, such knowledge is akin to a local search where continuous improvements can be made as tasks increasingly look alike and are in need of refinement (March & Simon, 1958). The third type of knowledge search is found in codified knowledge such as electronic outlining of past projects and what they did to succeed, manuals on how to effectively complete a project, and processes showing people appropriate steps to successfully complete a project. Deliberate search for codified, as well as internal and external personal knowledge represents both tacit and explicit information that may be vital for MNE value creation. In fact, Ancona and Caldwell (1988) argue that a focused knowledge search comes directly from current task demands. The decision to search for each of these types of knowledge comes from the individual who is dependent upon these resources outside of their current knowledge to ensure that specific objectives are met

(Allen, 1977). By examining these three types of knowledge search, we are able to capture potential means of knowledge search that can be seen as both tacit and explicit (Kogut & Zander, 1993).

HYPOTHESES

From a theoretical perspective, we attempt to link transnational objectives to external, internal, and codified knowledge search. The hypotheses were based largely on previous literature but also upon in-depth interviews with over 64 managers and project supervisors who were not a part of the quantitative sample used for testing.

Learning

Recent research using the knowledge-based view has established that while knowledge creation, transfer and integration (Kogut & Zander, 1992) may be conceptually separate activities, they are closely complimentary (e.g., Cohen & Levinthal, 1990). As a result, Almeida, Song and Grant (2002) view the MNE as an international network whose primary responsibility is to build (generate, transfer, integrate) knowledge. They consider this approach to offer “a much richer view of the processes through which MNC’s create value from knowledge” (148). From this perspective, task-level learning is seen as how much new knowledge an individual is responsible for generating, transferring, and integrating during a given task. Such learning during a task or project may not be vital for every project, but overall an organization that is not able to constantly renew its knowledge base will fall into learning myopia (Levinthal & March, 1993). Learning myopia for a transnational organization means that it falls into the trap of only responding to immediate client needs and driving efficiencies—both of which can improve performance but limit future improvements. Project leaders ensure learning as they search for

knowledge to complete a project. Such learning is manifest in changes to the knowledge base of the project leader as they complete a task. As a result, knowledge is generated, transferred, and integrated in a way that builds new knowledge reserves for the MNE.

One of the most discussed ways to increase learning is through social or personal interaction. Social interaction is often discussed in terms of dyadic relationships between two or more individuals. The interaction can vary along a key set of dimensions, including intensity of connection, contact frequency, and social similarity. More than not, contact frequency is used to determine the level of social interaction. Building on this foundation, Argote, McEvily, and Reagans (2003) examine whether knowledge is perceived as external or internal to the organization. Drawing these boundaries on knowledge affects its usefulness to the individual and the organization. For example, Kang, Morris, and Snell (2007) argue that when knowledge workers inside an organization turn to others both inside and outside the organization that they build new knowledge that can create differentiated value for the organization.

From an internal search perspective, knowledge workers who turn to contacts inside the organization will build knowledge that allows organizations to constantly refine existing knowledge stocks and improve how it is used (Schumpeter, 1961). In cases such as this, learning results from the worker conducting what is called a “localized” search. Localized search for knowledge workers is demonstrated in a narrow range of technical knowledge that allows them to pursue well defined solutions in existing knowledge bases. According to Schultz (2000), the resultant learning is usually more certain in outcomes, but more relevant to the task at hand. Nonetheless, focusing only on internal contacts runs the risk of building only small amounts of knowledge. This is because these contacts usually lead to incremental knowledge building that, while more certain, are less helpful in renewing knowledge (March, 1991).

On the other hand, turning to external contacts outside the organization is likely to have a much greater impact on the worker's ability to learn, especially in highly complex and changing environments such as the MNE (Luo & Peng, 1999). Menon and Pfeffer (2003) argue that workers are more likely to value knowledge from external, rather than internal, sources. This is often the case in knowledge intensive industries where status comes largely from new and innovative ideas that others are able to build. These ideas may not necessarily be all that effective, but they provide visibility in an arena where knowledge is king. Furthermore, Kang, Morris, and Snell (2007) argue that workers who turn to contacts outside the organization for knowledge are more likely to bring in new and innovative ideas to the organization. Such personal interactions are based on relatively broad and general knowledge search, which enables workers to expand knowledge pools and/or enhance new recombinatory mechanisms (Danneels, 2002; Eisenhardt & Martin, 2000; Teece, 2007). In other words, more knowledge is able to be generated, transferred, and integrated.

Not only will project leaders turn to people who possess tacit knowledge, but they will also turn to documents, systems, and processes containing codified knowledge. According to Schulz (2003), codified knowledge has the potential to reduce the effort required to process incoming information. This potentially helps project leaders "process new incoming knowledge faster because it facilitates and speeds up the establishment of linkages between old and new knowledge" (Schulz, 2003: 446). For example, a process or template for completing a project allows the worker to know where and what type of knowledge to look for to complete the project. Additionally, a database query allows workers to use multiple indexes and search functions that allow them to localize and retrieve existing knowledge. In other words, codified knowledge provides linkages for workers to facilitate greater learning within the project. Hence, we hypothesize the following:

H1: Drawing upon external contacts is likely to have a stronger impact on learning than drawing upon codified knowledge and internal contacts.

Responsiveness. The responsiveness of a project is largely determined on whether or not the service or product delivered to the client has the impact it was meant to have. The impact is often measured by how much it reaches the contextually specific needs of the client in terms of did the project help the client to improve their business, improve their standing in the business community, or improve the local business environment. For instance, if a project leader was working with a large rubber products manufacturing company to help improve the capacity of its supply chains, responsiveness would be assessed based on how well the leader was able to select and link the right local suppliers to the manufacturing plant. To do so requires knowledge of the local supplier networks, the national laws under which contracts are negotiated and enforced, and a strong understanding of the rubber products industry in that country.

Though bringing in higher potential for learning, turning to external contacts for help during a project is likely to bring in higher costs in terms of responsiveness. For example, Schulz (2001) described that turning to external partners for knowledge has an unknown potential to affect everything and nothing. In other words, while external contacts may help bring in new and innovative ideas, there is relatively little certainty in terms of whether or not the learning will immediately affect current activities. This is especially significant in the case of tasks or projects that are short term and require immediate and certain benefits. Even Levinthal and March (1993) point out that overreliance on external or technologically global search will ordinarily prevent a firm from gaining the full returns of its knowledge. As a result, relying on external contacts to help complete a project may not be all that effective in meeting immediate needs of a client.

On the other hand, scholars have found that knowledge sought from individuals perceived to be part of the same organization was more effective in improving immediate performance of the focal unit than if it were sought from external contacts (Darr & Kurtzberg, 2000). In fact, Kogut and Zander (1993) argued that the absorptive capacity of cross-border units inside the firm for technical know-how is higher than that of cross-boundary external contacts, an effect that increases in significance as the transferred knowledge becomes more tacit. Furthermore, Tallman and Fadmoe-Lindquist (2002) found that common architectural knowledge is found inside organizations, regardless of geographical distance, and that this overlap in technical knowledge allows individuals and units to transfer more detailed tacit knowledge. As a result, Kang, Morris and Snell (2007) argued that being able to respond to specific client needs will improve as people interact with others inside the organization who share similar architectural knowledge. Kogut and Zander (1993) also point out that internal interaction across borders provides an option to expand the organization to new business domains within the existing local market.

For example, people who interact often with members of other units may spend much of their time discussing needs of clients and how to better meet those needs. This is especially helpful in highly dispersed organizations where different units were started later than others. Many times, knowledge gained from dealing with multiple client problems can be transferred to new units who have less experience and knowledge about solving particular problems. As Shane (2000) found, knowledge of prior client problems influences the discovery of solutions to existing client problems. Organizational members who turn to cross-border internal contacts for advice on problems they've solved for other clients will have more information to draw upon that has already been proven to make an impact on clients. Essentially, as people turn to others who have similar technical or architectural knowledge, but in different locations, they are able to

respond to the technical needs of the client with whom they are working. As a result, Tallman argues that under the knowledge-based view of the MNE, a firm's key source of competitive advantage is found in this architectural knowledge found across internal units of an organization and used to respond to client needs. In essence, project leaders who turn to others inside the firm to help with a project often do so because those people possess experience dealing with similar projects or issues that the project leader may be facing (Haas & Hansen, 2007). This may have allowed them to relate more strongly to the local countries in which they operate. Hence, we hypothesize the following:

H2: Drawing upon internal contacts is likely to have a stronger impact on responsiveness than drawing upon codified knowledge and external contacts.

Efficiency

Translating efficiency from the organizational level to the project level requires a shorter-term perspective. In this sense, we are interested in the combined aspects of time and resources saved during a project. From a transnational perspective, these savings in aggregate form are critical to the competitive advantage of the MNE. For example, when project leaders are working to develop a product or service for a client it is vital that this gets done with minimal expense and time for the client who is usually in dire straits to have the promised product.

Regarding personal knowledge, some may argue that internal contacts help to improve efficiency of the firm. For example, Barkema and Vermeulen (1998) showed that the diverse perspective from exposure to various geographically dispersed contacts helps organizations develop knowledge structures about how to more efficiently operate in a new setting.

Furthermore, Bartlett and Ghoshal (1989) originally argued that global efficiency comes from being able to integrate ideas from various parts of the organization that allow the organization to realize economies of scale. However, task level work is less likely to realize these economies of

scale when project specific and require that knowledge already be integrated into the system through codified databases, systems, and processes (Morris et al., 2009). As a result, such deductions may not hold for the task level of analysis.

Instead, codified knowledge that is information that has already been captured and integrated into the organization is more likely to generate efficiency benefits. Haas and Hansen (2007) found that sales teams that access electronic documents save time by not having to undertake basic data gathering and analysis. The mechanism through which electronic document access affects time savings during a task is reuse, defined as the amount of knowledge the person can incorporate into their project output (Cowan & Foray, 1997). For example, the organization we examined in this study had developed a problem solving process template that gave clear directions in what steps needed to be taken to solve a client's problem. While providing added work in some regards, these templates reduced work for individuals in trying to figure out all aspects that needed to be covered before moving on in the process.

According to information processing theory, codified knowledge in the form of internal data bases, publications, processes, and routines tend to be built around a culture of efficiency and standardization that can potentially improve project efficiency in that less time, money, and talent are required to coordinate problem solving activities (O'Reilly, 1980). Hence, we see many organizations today that turn largely to IT and process-based solutions to managing their knowledge in an effort to increase efficiency. From this perspective, codified knowledge helps a project leader to avoid duplicating work that has already been done by others inside the organization. In this sense, knowledge from others inside the organization must first be captured and integrated already in codified form in order to achieve benefits of scale and scope. Hence, we hypothesize the following:

H3: Drawing upon codified knowledge is likely to have a stronger impact on efficiency than drawing upon external and internal contacts.

METHODS

Sample

To test these hypotheses we used a multi-method study of project level learning, responsiveness, and efficiency within a large investment and management consulting services organization employing over 3000 individuals. It is a globally operating financial service organization that also offers management consulting services to businesses and governments in emerging markets. More specifically, the organization provides loans, equity, structured finance, risk management products, and management advisory services to build business in developing countries. In 2008 it had an investment portfolio of \$32.4 billion, representing 1,490 investments in 122 countries.

Within this organization we focused on the management consulting division. Most of the work carried out in the consulting division is done by project leaders primarily located in the countries in which the services are offered. The project leaders typically manage projects by themselves with support from two or three administrative and research staff. These staff work closely with the project leader, but do not play a key role in decisions made regarding the project. Project leaders are encouraged by the organization to access knowledge resources such as internal contacts who have done similar projects, external governments and organizations, and internal documents and processes. Such sources of knowledge are assumed to provide valuable information key to a project's success.

The study consisted of surveys and archival data. The archival data consisted of demographic, financial and outcome data for each project. Using the archival database of recently completed projects (projects completed within two years) we randomly surveyed 378 project leaders to obtain information on their knowledge search activities and learning. To

eliminate concerns for common method bias, we also surveyed the project leader supervisors in regards to the learning items. Furthermore, because projects tend to be complex in nature we asked leaders to respond to their degree of search at three contiguous stages of the project. This helped them improve recall of search activities by only needing to remember a specific cut of the project. We then tested whether their responses were consistent across stages and collapsed them into an aggregate measure using principle component factor analysis. We received responses from 189 individuals (50% response rate) regarding 325 distinct projects. After accounting for missing data from project leaders and archives the total number of projects with full data was 105. The dramatic drop in completed surveys is due to the fact that responsiveness measures were collected by the organization one to two years after the project was completed. Hence, many of the projects we surveyed had not yet collected responsiveness measures on the projects.

Measures

Secondary data from the organization was collected for the control variables as well as efficiency and responsiveness. For the independent and learning measures, we sent out the surveys asking project leaders and project supervisors about their knowledge search activities and learning.

Dependent Variables

Learning. The measurement used for learning was developed from the knowledge-based perspective and is consistent with what Argote, McEvily, and Reagans (2003) consider to be appropriate learning outcomes for both individuals and organizations. These outcomes consist of knowledge generation, transfer, and integration. We measured these three items by asking the extent to which new knowledge was generated, transferred, and integrated during the three

phases of the project. A 5-point Likert scale was used. We collapsed the three phases (alpha=.84) and then using confirmatory factor analysis found that all three items were greater than .7 (generate=.85, transfer=.94, integrate=.97) in support of scale reliability (Nunnally, 1978). To alleviate concerns for common method bias, we sampled the supervisors of the project leaders on the same learning measures. These surveys were sent out based on the responses from project leaders. Unfortunately, we only received 44 matching responses from the supervisors and were thus not able to include the supervisor measures in the data analysis. Nonetheless, we assessed the reliability and consistency of the supervisors' assessments of learning with the project leaders' assessments. All three items produced one common factor in a factor analysis and met consistency thresholds above .7 (generation: alpha=.85; transfer: alpha=.84; integration: alpha=.86) (Allen & Yen, 2002: Introduction to Measurement Theory. Long Grove, IL: Waveland Press).

Responsiveness. Responsiveness was measured by the organization through a semi-autonomous metrics and evaluation unit. It is measured by assessing whether a particular project actually produced impactful results for the client(s). In other words, the outcome must be responsive to the project intervention. The company uses multiple measures such as client surveys and local sector or industry assessments to determine whether the project can actually be linked to improvements for the local business or business environment. For example, if the project was to reengineer a large manufacturing firm, then the impact would be determined by quantitative measures of the short and long-term cost savings in supplier chains as well as the qualitative measures of whether the company is effectively implementing their new strategy and people in the firm understand that strategy. Measures would also include surveys of the manufacturing company's customers to see if the quality of service or product has gone up. In other words, changes that can be quantified are assigned a numerical value (dollar amounts,

stock performance, etc); otherwise, they are captured by monitoring the occurrence of a qualitative, yet specific, trigger (such as the receipt of certification for a plant's environmental management system or the introduction of new technology).

Prior to project start, its expected client impact is identified, and indicators are selected to capture intended results. Baselines and targets are established. Targets are formulated to be realized within a year once the project is complete. To the extent possible, annual expected values are also filled in. Once all responsiveness measures that are generally mapped under economic performance have been rated similarly by looking at the achievement of their respective indicators, a rating is assigned to the economic performance component (e.g., excellent, average, poor). The database had a fairly even distribution of highly responsive projects (17) and less responsive projects (42), with 68 projects of average responsiveness.

Efficiency. Efficiency was also measured by the metrics and evaluations unit, but was measured directly after the project was completed and consisted of whether the project was under its projected budget and time frame. These measures consisted of three separate factors that examined (1) time spent on the project, (2) budgeted amount spent on the project, and (3) efficient use of resources. The company created an overall 4-point scale efficiency measure based on these three factors. As only a few cases ever received the lowest rating we collapsed it into a 3 point-scale. This is also consistent with conversations with the metrics and evaluation department who verified that project efficiency was commonly thought of in three categories of high, normal, and low efficiency projects. The database had a fairly even distribution of highly efficient projects (20) and less efficient projects (23), with 84 projects of average efficiency.

Independent Variables

We asked the project leaders to respond to three definable task stages of each of their projects and to indicate the extent to which they agree with statements regarding how much they drew upon a resource during a given stage. The scale was based around a 5-point Likert format of 1: “strongly disagree” to 5: “strongly agree” for each of the constructs. We then collapsed these three task stages to get one measure of each type of knowledge use.

Internal and External Knowledge. To measure internal and external knowledge we used a behavioral-based question that was based on 64 interviews with project leaders and managers on who they turn to for knowledge in the firm. Through our interviews we found that people in the organization recognized a strong tension between turning to others outside of their office but inside the organization versus turning to people outside the organization but closer to the local project. This was even demonstrated in a local/global initiative that was organization wide trying to get people to bring in knowledge from the external environment but also turn to other offices.

To measure these personal contacts we asked the project leaders about the frequency to which they turned to both internal and external contacts. Specifically, for internal contacts we asked project leader to respond to “the extent to which...[they] used...internal contacts (i.e., colleagues in other offices)” during each phase of the project. For external contacts we asked them to respond to “the extent to which...[they] used...external/local contacts (i.e., outside [the organization])” during each phase of the project. Both constructs collapsed across phases above .7 (internal knowledge: alpha = .86, external knowledge: alpha = .85).

Codified Knowledge. The measures for codified knowledge are based on previous measures by Subramaniam and Youndt (2005) looking at the issues of (1) processes, (2) documentation, and (3) electronic data systems. We asked the project leaders to what extent “databases/records”, “formalized processes/procedures”, and “internal publications/media” were

used in each project phase. We also gave examples of all the independent variables to make sure they understood what we were asking. We collapsed the variables across phases ($\alpha=.92$). Also, because of their strong theoretical and statistical interdependency we collapsed the three variables into a single codified knowledge measure that supported scale reliability ($\alpha=.82$).

Control Variables. We controlled for numerous factors that might also influence the impact of knowledge resources on various outcomes. The first is the number of support staff to help with the project. In many ways this number can be equivalent to team size, but is on average quite small with roughly 2 members to support each project leader. Number of project support members was controlled because larger numbers of supporting members may have greater knowledge resources, but also may face additional process challenges. Project duration was included as longer projects may lock project leaders more into routines, and thus be less likely to learn or, alternatively, “may have honed their processes over time and become more effective as a result” (Zellmer-Bruhn & Gibson, 2006: 510). We also controlled for project budgets as projects with larger budgets may have greater access to resources and be able to perform more efficiently. We used the logarithmic transformation for number of staff, duration, and budget to accommodate the small but important number of larger projects. Together these variables also control for the overall complexity and scope of the project.

We controlled for region of operation as some regional offices are newer than others and more likely to find value in knowledge than projects operating in more established regions. These regions also corresponded with the administrative structure of the organization and thus they are likely to relate to the knowledge resources and flows embedded in the firm. We also control for type of project using the firm’s own classification scheme of industry focus. Controlling for industry is important as some industry related projects may need to be more responsive to the local environment.

Model Selection

Table 1 displays descriptive statistics and correlations for each of the variables used in the study. To test for selection and response bias in our initial sampling through the multiple rounds of surveying we ran T-tests for three important control variables, project funding, project duration, and staff size. The only systematic bias that appears in these variables is that project duration increased at each stage of the data collection process. Consequently, we end up with a sample that over to some degree represents the longer projects. To inspect the possibility that there was significant selection bias in the projects reported on by the project leaders we compared all the primary knowledge—internal contacts, external contacts, and codified knowledge—variables for respondents and non-respondents. Only one, the scale for internal contacts, showed a statistically significant difference between the two groups and the absolute difference was rather small. In general, we feel our useable sample is representative of the overall project portfolio of the organization.

[Insert Tables 1 & 2 about here]

RESULTS

To test our hypotheses regarding the relationship between knowledge resources and transnational outcomes, we tested a number of different models and specifications. The models were all robust in that the findings were similar across the board. As a result, to examine the relationship between knowledge resources and the three transnational outcomes we report the generalized least squares regression with robust standard errors. To adjust for the potential correlation in errors associated with having a single respondent report on up to 3 projects we clustered the errors by project leader.

The analyses show that our hypotheses were supported (see Figure 1). In particular, hypothesis 1a and 1b were supported. The use of external contacts as well as codified knowledge was significantly related to learning. We also found support for hypothesis 2. When project leaders sought help from internal contacts the project was more likely to be responsive to the client's needs. Finally, in regards to project efficiency, we found full support for hypothesis 3. Drawing on codified knowledge increased the likelihood that the project would be completed more efficiently.

[Insert Table 3 about here]

DISCUSSION

The primary findings of this study are that combined knowledge search in terms of internal contacts, external contacts, and codified knowledge offer different types of value in terms of achieving transnational objectives. Such value was determined by assessing what knowledge resources were sought for help in completing a project and linking these search activities to project-level outcomes. Such findings show three things: (1) that knowledge resources vary in the value they produce based on the interested outcome, (2) that the value of knowledge search activities must take into account an organization's strategic intent, and (3) that only measures at the task level tracking knowledge resource search will allow us to truly understand how organizations might overcome the transnational tensions of being responsive, efficient, and continuously learning.

The implications of such findings point to the value of making sure knowledge workers conduct the right knowledge search to complete their projects. Turning to external contacts represents a type of global search where the knowledge worker is going outside of her technical knowledge boundaries to see what new ideas she could add to the existing operations. Such global search leads to greater organizational learning as these ideas are brought in and applied to

the existing project. Such knowledge facilitates further learning and reduces the risk of rigidity in the organization adapting itself over time. Furthermore, turning to external contacts for continuous learning allows individuals to develop the micro-foundations of a of an organization's dynamic capabilities (Felin & Hesterly, 2007). On the other hand, internal contacts and codified knowledge may not be as useful in learning as these resources are geared more toward exploitative types of knowledge that do not provide much in terms of knowledge building (Kang et al., 2007).

Turning to internal contacts for help in completing a project also offers benefit to the organization, but not in the same way as turning to external contacts. Internal contacts represent a more local search in terms of technological knowledge. As knowledge workers draw upon tacit knowledge embedded in the minds of colleagues they are able to able to modify and adapt work to be more relevant to the client and specific context. This is because these contacts share a common architectural knowledge of how the work needs to be structured and delivered to the client. Drawing upon experiences of others who have "been there" and "done that" offers helpful advice that, unlike knowledge from external contacts, can be applied in a much shorter time frame. In this regard, while external contacts (especially those that are geographically close) could potentially help in a project's responsiveness, such learning takes too long to be all that applicable to meeting specific needs of the client. Furthermore, because codified knowledge is explicit and not rich in specifics, it may not be as useful to a knowledge worker's ability to be responsive to the client (Tallman & Fadmoel-Lindquist, 2002).

Finally, while turning to codified knowledge may not be as useful for responsiveness, it may be useful to improving a project's efficiency and learning. In many ways, codified knowledge provides an enabling environment for continuous learning. Processes and systems that offer templates and guidelines for how work is to be done can dramatically increase an

individual's ability to learn (Jensen & Szulanski, 2004). Most importantly, when knowledge workers turn to codified knowledge they are likely to be much more efficient in their work. This is due to the fact that they are relying on guidelines, manuals, and databases for information they need to proceed with a project and get that project done on time, under budget, and with optimal use of resources. In a sense, while codified knowledge may even be detrimental at times to a knowledge worker's ability to be adaptable to the local needs, it provides greater structure in terms of setting up a way for workers to both learn and do their work efficiently.

Limitations

The results of our study point to some specific limitations and possibilities for future research. First, the study used a retrospective, longitudinal design (Menard, 1991). Respondents were asked to reflect on recent, but prior, projects they had or were working on at the time. Project leaders were asked to reflect on what level of knowledge resource search they conducted during recently completed project stages. While potential rater bias can emerge from asking about prior activities, the study was unlikely to present such biases because (1) projects completed more than 1.5 years prior were eliminated and the average time that needed to be recalled was less than one year, (2) respondents were promised confidentiality, and (3) informants were asked factual rather than opinion questions (Catlin & Ingram, 1988). While retrospective designs have been widely argued to provide valid and reliable information (Miller, Cardinal, & Glick, 1997), future research could address this limitation by tracking project process data as it occurs over time.

Also, the generalizability of the study results might be limited due to its reliance on a single industry and firm. While Dess, Ireland, & Hitt (1990) recommend focusing on a single industry and context when testing resource-based theory models, our findings are specific to a

contextual setting in a professional service organization (cf., Haas & Hansen, 2007; Hansen et al., 1999; Moore & Birkinshaw, 1998; Werr & Stjernberg, 2003). Such findings should also be tested in other settings where project efficiency during the project is determined differently or not at all—providing an opportunity to explore how firms in other industries might value their knowledge activities within the project process. For example, R&D projects in some firms may not be as sensitive to budget, time, and talent efficiency indicators for efficiency and more sensitive to innovativeness or creativity.

Implications

Our attempt in this paper was to better understand how to value outcomes deemed relevant by multinational scholars. The implications of which are quite consequential. If senior management is not able to determine the value of their knowledge workers' activities then they do not know how to help reach specific objectives for the organization. They may inadvertently change something that is critical or not be able to respond to poorly used knowledge resources. For example, through downsizing, restructuring, shifting strategies, etc.; they may eliminate some effective resource channels or incentivize incorrect behaviors.

To shed light on these issues, we tested a model to help us understand the value of different knowledge resources as a function of three outcomes significant to MNEs. Such a framework is useful to both academics and practitioners in helping develop a better understanding of the value of different knowledge management interventions based on the nature of the task and the needs presented to a knowledge worker. For example, when a project leader is confronted with a novel project that presents a great deal of uncertainty and there is a need for learning, the framework would help them to understand which resources are most valuable.

CONCLUSION

In this paper we provided a task-level approach to better understand how global organizations might achieve transnational objectives simultaneously through multiple projects emphasizing various aspects of efficiency, learning, and responsiveness. We showed that not all knowledge resource searches are equal and that while all may collectively lead to an organization achieving its transnational objectives, in the daily work of individuals within these organizations, certain resources are more valuable for different objectives. As a result, we see how knowledge accessed by workers facilitates these seemingly disparate strategic objectives. This understanding allowed us to articulate some of the fundamental elements of a “micro-foundation” for translating MNE-level objectives and resources into task-level knowledge search and outcomes. As a result, we submit that the main factor to improving how transnational objectives are met in a global organization is to improve how individuals complete work tasks in terms of efficiency, responsiveness, and learning. This framework allows practitioners and scholars to better understand how such situations might be handled with greater value added.

REFERENCES

- Aaker, D. A. 1989. Managing assets and skills: The key to a sustainable competitive advantage. California Management Review, 31(2): 91-107.
- Anand, N., Gardner, H. K., & Morris, T. 2007, Knowledge-Based Innovation: emergence and embedding of new practice areas in management consulting firms. Academy of Management Journal, 50(2): 406-428.
- Abbott, A. 1988. . The system of professions: An essay on the division of expert labor University of Chicago Press.
- Adler, M. D. & Posner, E. A. 2006. New foundations of cost-benefit analysis. 39-52.
- Aharoni, Y. 1993. In search for the unique: Can firm-specific advantages be evaluated? University of Chicago Press, 30(1): 31-50.
- Ahuja, G. 2000. The duality of collaboration: Inducements and opportunities in the formation of interfirm linkages. Strategic Management Journal, 21(3): 317-343.
- Argyris, C. & Schon, D. A. 1978. Organizational learning - a theory of action perspective. Addison-Wesley.
- Arrow, K. J. 1974. Limited knowledge and economic analysis. American Economic Review, 64(1): 1-10.
- Barney, J. B. 1991. Firm resources and sustained competitive advantage. Journal of Management, 17(1): 99-120.
- Bartlett, C. A., & Ghoshal, S. 1989. Managing Across Borders: The Transnational Solution: Hutchinson Business Books.
- Birkinshaw, J. 1997. Entrepreneurship in multinational corporations: The characteristics of subsidiary indicatives. Strategic Management Journal, 18(3): 207-229.
- Block, P. H. 2000. Flawless consulting (2nd ed.) San Francisco: Josey-Bass/Pfeiffer.
- Burt, R. S. 2004. Structural Holes and Good Ideas. American Journal of Sociology, 110-349.
- Catlin, G., & Ingram, S. 1988. The effects of CATI on costs and data quality: A comparison of CATI and paper methods in centralized interviewing. Groves et al. (eds.), Telephone Survey Methodology, 437-456.
- Cohen, W., Levinthal, D. 1990. Absorptive Capacity: A new perspective on learning and innovation. Administrative Science Quarterly, 35: 128-152.
- Cowan, R., & Foray, D. 1997. The economics of codification and the diffusion of knowledge. Industrial and Corporate Change, 6(3): 595-622.
- Davenport, T. H. 2005. Thinking for a Living: How to Get Better Performance and Results from Knowledge Workers. Harvard Business School Press, Boston.
- Dess, G., G., Ireland, R. D., & Hitt, M. A. 1990. Industry effects and strategic management research. Journal of Management, 16(1): 7-28.
- Dierickx, I. & Cool, K. 1989. Asset stock accumulation and sustainability of competitive advantage. Management Science, 35(12): 1504-1514.

- Dougherty, D. 1992. Interpretative barriers to successful product innovation in large firms. . Organization Science, 3: 179-202.
- Felin, T., & Hesterly, W. S. 2007. The knowledge-based view, nested heterogeneity, and new value creation: Philosophical considerations on the locus of knowledge. The Academy of Management Review, 32(1): 195.
- Ferguson, T. D., Deephouse, D. L., & Ferguson, W. L. 2000. Do strategic groups differ in reputation? Strategic Management Journal, 21(12): 1195-1214.
- Fleming, L., O. Sorenson, 2000. Science as a map in technological search. Manuscript, Harvard Business School, Boston, MA.
- Gavetti, G., D. E. Levinthal, 2000. Looking forward and looking backward: Cognitive and experiential search. Administrative Science Quarterly. 45: 113–137.
- Ghoshal, S. & Bartlett, C. A. 1990. The multinational corporation as an interorganizational network. Academy of Management Review, 15(4): 626-646.
- Ghoshal, S., & Nohria, N. 1989. Internal differentiation within multinational corporations. Strategic Management Journal, 10(4): 323-337.
- Glazer, R. 1998. Measuring the Knower: Towards a theory of knowledge equity. California Management Review, 40(3): 175-194.
- Grant, R. M. 1996. Toward a knowledge-based theory of the firm. Strategic Management Journal, 17(Winter): 109-122.
- Grant, R. M. 1996. The knowledge-based view of the firm: Implications for management practice. Long Range Planning, 30(3): 450-454.
- Greenwood, R., Li, S. X., Prakash, R., & Deephouse, D. L. 2005. Reputation, diversification, and organizational explanations of performance in professional service firms. Organization Science, 16(6): 661-673.
- Haas, M. R., & Hansen, M. T. 2007. Different knowledge, different benefits: toward a productivity perspective on knowledge sharing in organizations. Strategic Management Journal, 28(11): 1133-1153.
- Henderson, R. M., K. B. Clark, 1990. Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. Administrative Science Quarterly, 35: 9–30.
- Hansen, M. T., Nohria, N., & Tierney, T. 1999. What's your strategy for managing knowledge? Harvard Business Review: p.106-116.
- Hansen, M.T., Mors, M.L., Lovas, B. 2005. Knowledge sharing in organizations: Multiple networks, multiple phases. Academy of Management Journal.
- Hansen, M., Podolny, J., & Pfeffer, J., 2001. So many ties, so little time: a task contingency perspective on the value of social capital in organizations. Working Paper, Harvard Business School, Boston, MA.
- Hedlund, G. 1986. The hypermodel MNC: A heterarchy? . Human Resource Management Journal, 25(1): 9-35.

- Hitt, M. A., Ireland, R. D., Camp, S. M., & Sexton, D. L. 2001. Guest Editors' Introduction to the Special Issue: Strategic Entrepreneurship: Entrepreneurial Strategies for Wealth Creation. Strategic Management Journal, 22(6-7): 479-491.
- Hymer, S. 1976. *The International Operations of National Firms*. Cambridge, MA: MIT Press.
- Jensen, R., & Szulanski, G. 2004. Stickiness and the adaptation of organizational practices in cross-border knowledge transfers. Journal of International Business Studies, 35(6): 508-523.
- Kang, S. K., Morris, S. S., & Snell, S. A. 2007. Relational archetypes, organizational learning, and value creation: Extending the human resource architecture. . Academy of Management Review, 32(1): 236-256.
- Kindleberger, C.P. 1969. *American Business Abroad: Six lectures on Direct Investment*. New Haven: Yale University Press.
- King, A. W. & Zeithaml, C. P. 2003. Measuring organizational knowledge: A conceptual and methodological framework. . Strategic Management Journal, 24(8): 763-772.
- Leonard-Barton, D. (1995). *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation*. Boston: Harvard Business School Press.
- Lowendahl, B. R., Revang, O., & Fosstenlokken, S. W. 2001. Knowledge and value creation in professional service firms: A framework for analysis. Human Relations, 54: 911-931.
- Luo, Y., & Peng, M. W. 1999. Learning to Compete in a Transition Economy: Experience, Environment, and Performance. Journal of International Business Studies, 30(2): 269-295.
- March, J. G. 1991. Exploration and exploitation in organizational learning. Organization Science, 2(1): 71-87.
- McEvily, B. & Zaheer, A. 1999. Bridging ties: A source of firm heterogeneity in competitive capabilities. Strategic Management Journal, 20(12): 1133-1156.
- Menard, S. 1991. Longitudinal Research. Newbury Park: Sage Publications.
- Miller, C.C., Cardinal, L.B., & Glick, W. H. 1997. Retrospective reports in organizational research: A reexamination of recent evidence. Academy of Management Journal, 40(1): 189-204.
- Mills, P. K., & Moberg, D. J. 1982 Perspectives on the technology of service operations. The Academy of Management Review, 7(3): 467-478.
- Moore, K., & Birkenshaw, J. 1998. Managing Knowledge in Global Service Firms: Centers of Excellence. Academy of Management Executive, 12(4): 81-92.
- Moorman, C., & Miner, A. S. 1998. Organizational Improvisation and Organizational Memory. Academy of Management Review, 23(4): 698-723.
- Morris, T., & Empson, L. 1998. Organisation and expertise: an exploration of knowledge bases and the management of accounting and consulting firms. Accounting, Organizations and Society, 23(5-6): 609-634.
- Nahapiet, J. & Ghoshal, S. 1998. Social capital, intellectual capital, and the organizational advantage. Academy of Management Review, 23: 242-266.
- Nelson, R. R., & Winter, S. G. 1982. An Evolutionary Theory of Economic Change. Harvard University Press, Cambridge, MA.

- Nickerson, J. and T. Zenger, 2004. A knowledge-based theory of the firm: the problem-solving perspective. Organization Science, 15: 617–632.
- O'Reilly, C. A. 1980. Individuals and information overload in organizations: Is more necessarily better? Academy of Management Journal, 23(4): 684-696.
- Orfek, E., & Sarvary M. 2001. Leveraging the Customer Base: creating competitive advantage through knowledge management. Management Science, 47: 1441-1456.
- Orlikowski, W. J. 2002. Knowing in Practice: Enacting a Collective Capability in Distributed Organizing. Organizational Science, 13(3): 249-273.
- Penrose, E. T. 1959. The theory of the growth of the firm. White Plains, NY: M.E. Sharpe, Inc.
- Prahalad, C. K. & Hamel, G. 1990. The core competence of the corporation. Harvard Business Review, 68(3): 79-91.
- Prahalad, C. K., & Hamel, G. 1994. Strategy as a field of study: why search for a new paradigm? Strategic Management Journal, 15(summer): 5-16.
- Shane, S. 2000. Prior Knowledge and the Discovery of Entrepreneurial Opportunities. Organizational Science, 11(4): 448-469.
- Slater, S. F., & Narver, J. C. 1995. Customer-led and market-oriented: let's not confuse the two. Strategic Management Journal, 19(10): 1001-1006.
- Snell, S., Youndt, M., & Wright, P. 1996. Establishing a framework for research in strategic human resource management: Merging resource theory and organizational learning. In G. Ferris (Ed.), Research in Personnel and Human Resource Management, 14: 61-90.
- Spender, J.-C. 1996. Making knowledge the basis of a dynamic theory of the firm. Strategic Management 17: 45-62.
- Subramaniam, M. & Venkatraman, N. 2001. Determinants of transnational new product development capability: Testing the influence of Strategic Management Journal, 22(4): 359.
- Subramaniam, M. & Youndt, M. A. 2005. The influence of intellectual capital on the types of innovative capabilities. Academy of Management Journal, 48(3): 450-463.
- Teece, D.J. 1986. Profiting from technological guideposts and innovation: Implications for integration, collaboration, licensing and public policy. Research Policy, 15: 285-305.
- Turner, K. L., & Makhija, M.V. (2005). The role of organizational controls in managing knowledge. Academy of Management Review, 31(1): 197-217.
- Tsai, W. & Ghoshal, N. 1998. Social capital and value creation: The role of intrafirm networks. Academy of Management Journal, 41: 464-477.
- Von Hippel, E. 1988. Sources of Innovation. New York: Oxford University Press.
- Werr, A., & Stjernberg, A. 2003. Exploring Management Consulting Firms as Knowledge Systems. Organizational Studies, 24(6): 881-908.
- Whitley, R. 2006. Project-based firms: new organizational form or variations on a theme? Industrial and Corporate Change, 15(1): 77-99.

Wiklund, J., & Shepard, D. 2003. Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. Strategic Management Journal, 24(13): 1307-1314.

Zellmer-Bruhn, M. & Gibson, C. 2006. Multinational organization context: Implications for team learning and performance Academy of Management Journal, 49(3): 501-518.

Figure 1: Hypothesized Model

Individual Knowledge Search and Task-Level Objectives

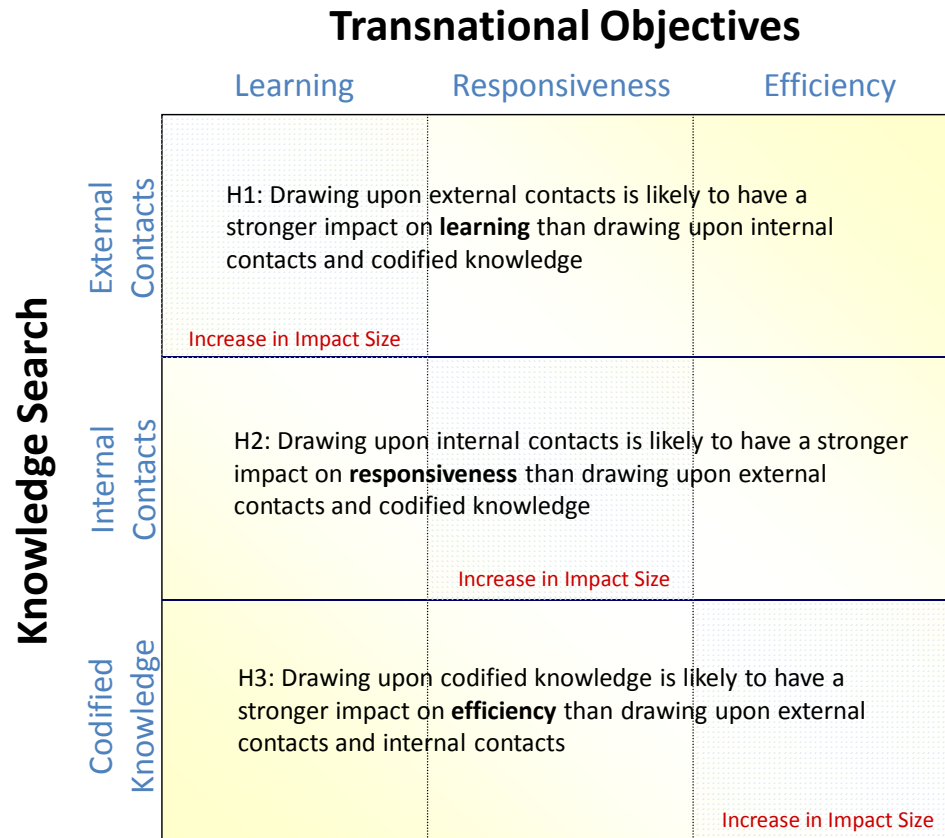


Table 1: Descriptive Statistics and Correlations

	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1 Internal Contacts	3.38	0.98	1	5																			
2 External Contacts	3.43	1.00	1	5	0.18																		
3 Codified Knowledge	2.54	0.96	1	4.55	0.31*	0.38*																	
4 Project Duration (Log10)	2.84	0.33	1.11	3.35	0.06	-0.01	0.20*																
5 Project Funding (Log10)	5.44	0.47	4.17	6.66	-0.10	0.03	0.13	0.48*															
6 Project Staff (Log10)	0.51	0.35	0	1.7	-0.02	0.09	0.10	0.16	0.33*														
7 Business Enabling	0.25	0.44	0	1	0.03	-0.12	0.10	0.24*	0.17	0.01													
8 Business Infrastructure	0.17	0.38	0	1	-0.12	-0.03	0.06	-0.01	0.03	0.12	-0.26												
9 Business Value Add	0.36	0.48	0	1	0.09	0.08	0.01	0.02	-0.13	0.07	-0.43	-0.34											
10 Central and Eastern Europe	0.09	0.29	0	1	-0.05	-0.05	-0.16	0.18*	0.14	0.10	0.12	-0.08	0.09										
11 East Asia and Pacific	0.26	0.44	0	1	-0.05	0.16	0.29*	0.15	-0.05	-0.01	-0.10	0.20*	-0.07	-0.19									
12 Latin America and Caribbean	0.06	0.24	0	1	0.02	-0.04	-0.11	0.00	-0.06	0.00	-0.15	-0.12	0.14	-0.08	-0.15								
13 Middle East and North Africa	0.12	0.32	0	1	-0.19	-0.19	-0.19	-0.33	-0.10	-0.20	-0.04	0.09	-0.22	-0.12	-0.21	-0.09							
14 Southern Africa	0.10	0.30	0	1	0.08	-0.04	0.00	0.08	0.06	-0.13	0.16	-0.15	-0.04	-0.11	-0.20	-0.09	-0.12						
15 Southern Europe	0.20	0.40	0	1	0.14	0.03	-0.02	-0.06	0.06	-0.05	-0.01	-0.02	0.04	-0.16	-0.29	-0.13	-0.18	-0.17					
16 Global	0.02	0.15	0	1	-0.06	0.13	0.06	0.06	0.02	0.09	0.26*	-0.07	-0.12	-0.05	-0.09	-0.04	-0.06	-0.05	-0.08				
17 Responsiveness	1.80	0.66	1	3	0.02	-0.05	-0.06	-0.23	-0.01	0.02	-0.24	0.20*	0.03	-0.07	-0.31	-0.02	0.18*	-0.14	0.30*	0.04			
18 Learning	3.78	0.70	1.72	5	0.16	0.35*	0.29*	0.21*	0.27*	0.31*	0.12	-0.05	-0.07	0.10	-0.07	-0.21	-0.14	-0.04	0.21*	0.16	0.16		
19 Efficiency	1.98	0.58	1	3	-0.09	-0.03	0.06	-0.02	0.10	0.06	-0.16	0.23*	-0.08	0.06	-0.16	-0.05	0.06	-0.08	0.25*	0.01	0.46*	0.26*	

Pairwise Correlation

* Indicated significant at .05 level or better

Table 2: Response Rates and Tests for Selection Bias

	Database Not Sampled	Project Leader Sample	Project Leader Responses
N (by project)	390	706	325
Response Rate			46.0%
N (by respondent)		378	189
Response Rate			50.0%
Log 10 of Funding in US\$	4.95	5.31*	5.4
Log 10 of Duration (days)	2.49	2.66**	2.78*
		T-test compares Project Leader Sample and the Projects left out of the sample	T-test compares Project Leader Responses and Non-responses
* P<.05 **P<.01			

Table 3: Results of Regression Analysis

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Dependent Variable:	Responsiveness		Learning		Efficiency	
Internal Contacts		0.10 (1.74)*		0.10 (1.53)		-0.07 (1.01)
External Contacts		0.00 (0.05)		0.16 (2.58)*		-0.04 (0.68)
Codified Knowledge		-0.03 (0.39)		0.14 (2.27)*		0.14 (2.05)*
Project Duration (Log10)	-0.24 (1.22)	-0.20 (0.92)	0.32 (1.42)	0.38 (1.73)	0.08 (0.40)	0.12 (0.63)
Project Funding (Log10)	0.09 (0.63)	0.16 (1.17)	0.15 (1.04)	0.15 (1.07)	0.05 (0.38)	-0.07 (0.46)
Project Staff (Log10)	0.02 (0.11)	-0.02 (0.10)	0.57 (2.48)*	0.57 (2.78)**	0.10 (0.62)	0.11 (0.64)
Business Enabling	-0.44 (2.55)*	-0.41 (2.20)*	-0.23 (1.04)	-0.23 (1.05)	-0.39 (2.01)*	-0.43 (2.06)*
Business Infrastructure	0.24 (1.15)	0.29 (1.50)	-0.33 (1.47)	-0.30 (1.22)	0.20 (1.19)	0.15 (0.88)
Business Value Add	-0.06 (0.37)	-0.02 (0.10)	-0.25 (1.31)	-0.28 (1.53)	-0.19 (1.37)	-0.15 (1.08)
Central and Eastern Europe	-0.06 (0.30)	-0.08 (0.44)	0.23 (0.85)	0.32 (1.21)	0.33 (1.41)	0.48 (2.08)*
East Asia and Pacific	-0.46 (2.70)**	-0.46 (2.85)**	-0.03 (0.15)	-0.16 (0.82)	-0.08 (0.47)	-0.06 (0.35)
Latin America and Caribbean	-0.15 (0.48)	-0.16 (0.51)	-0.55 (1.25)	-0.49 (1.14)	0.04 (0.16)	0.14 (0.54)
Middle East and North Africa	0.16 (0.58)	0.33 (1.44)	-0.05 (0.17)	0.15 (0.47)	0.20 (0.76)	0.33 (1.21)
Southern Africa	-0.29 (1.36)	-0.34 (1.37)	-0.02 (0.07)	-0.08 (0.30)	0.08 (0.37)	0.04 (0.20)
Southern Europe	0.46 (2.53)*	0.36 (1.89)	0.33 (1.49)	0.33 (1.54)	0.51 (3.07)**	0.67 (3.69)**
Global	0.51 (2.92)**	0.60 (3.04)**	1.12 (3.95)**	1.01 (3.86)**	0.40 (2.08)*	0.50 (2.25)*
Constant	2.15 (3.24)**	1.34 (1.86)	1.93 (2.74)**	0.52 (0.68)	1.41 (2.30)*	1.87 (2.59)*
R-squared	0.37	0.39	0.29	0.45	0.21	0.25

Robust t-statistics in parentheses

**p<0.01, *p<0.05, +p<0.1