Acquiring Local Knowledge for International Projects

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ABSTRACT
The construction market offers numerous opportunities for firms seeking to expand internationally. One can witness the amazing growth of “mega-cities” firsthand by observing skies filled with cranes in the Middle East, China, and other resource-rich developing countries. Projections for future demand in infrastructure and the built environment indicate that there will be increasing demands for firms to engage in projects around the world. There are tremendous opportunities for firms in the international construction market, but international construction projects also face numerous uncertainties and risks. These projects bring together teams working in unfamiliar environments with differing regulations, norms and cultural beliefs, which can lead to increased misunderstandings and costs. A key strategy that successful global firms adopt to reduce these costs is to increase their capabilities for acquiring and sharing information and knowledge about each local environment in which they have worked to use on their portfolio of international projects. This study compiles and analyzes data from 15 case studies of international firms engaged in global infrastructure development to identify the types of local and regional knowledge managers perceive to be most important to the success of their international projects. The firms covered in the case studies are of three types: real estate developers, contractors and engineers. These three firm types have different responsibilities and are involved in different phases of the project lifecycle. The paper concludes with the different kinds of knowledge that each firm type finds most critical to acquire and share in order to enhance the success of their global projects.

KEYWORDS: International Business; Institutions; Knowledge Management; Organizational Learning

INTRODUCTION
Projections of increased population growth, urbanization and needed infrastructure around the world provide opportunities for firms within the AEC sector to expand internationally. For instance, demographers expect over a billion more inhabitants on earth in the next decade, particularly in emerging market countries (Sachs 2005). This growth will require increased spending on infrastructure and facilities to meet people’s basic needs while allowing for economic growth and expansion. According to Morgan Stanley’s predictions, emerging market countries will spend US$22 Trillion (present dollar values) on infrastructure in the next ten years alone (Economist 2008). Many firms are responding to these opportunities and seeing their revenues increase. The top 225 international firms revenues increased 18.5% from 2005 to 2006 for projects outside their home markets (Reina and Tulacz 2007).

As exciting as these predictions and opportunities appear, international projects also involve many uncertainties and risks not found on domestic construction projects. These projects engage participants from differing backgrounds and cultures who work together in unfamiliar locations, increasing risks and costs when doing business abroad (Flyvbjerg et al. 2003; Orr and Scott 2008). Firms entering foreign markets are therefore thought to be at a disadvantage due to their lack of familiarity with the local environment, which is often termed the ‘liability of foreignness’ (Zaheer 1995). Understanding these differences and nuances in different countries where they plan to work is therefore expected to reduce these risks, thereby increasing the success of global projects.

This study uses qualitative case studies with fifteen international firms to permit a wide view of the differences encountered on global infrastructure projects to answer two research questions: (1) What kinds of local knowledge do managers perceive to be most important on
their global projects? (2) How does the importance of knowledge vary by company type? Future work related to this research will investigate: (3) How are firms acquiring this knowledge? (4) How do firms transfer this knowledge within the firm? (5) Can we develop a theoretical framework to explain and predict how this varies by firm type?

The paper first discusses the international business and project management literature, emphasizing the risks and differences encountered on international projects. The research methodology and firms studied are then presented. Finally, the paper presents the results regarding the types of knowledge managers perceive to be important by company type. This research contributes to the international project management literature by expanding focus on “normative” and “cultural-cognitive” (Scott 2001) risks in addition to “regulative” (political and legal) risks. And finally, it shows that not all kinds of firms are alike in the internationalization process by highlighting differences according to firm type.

POINTS OF DEPARTURE
The research focus on important types of knowledge for international projects and international business expansion naturally leads to prior international project literature that identified risks and differences. The prior work in this area is presented below.

International Project Risks
Most of the international business research has focused on the risks associated with conducting business abroad. For instance, Pennings (1994) found that differences in economic development, regulatory traditions, and political and social infrastructure all increase the risk involved in foreign expansion. The international project literature is no different—the majority of international project research in the Architecture-Engineering-Construction (AEC) literature focuses on risks that affect contractors engaged in international projects. Studies have identified critical risks in several categories of international work, including risks associated with China’s BOT projects (Shou Qing et al. 1999), international joint venture risks (Bing et al. 1999), risks affecting construction cost performance (Baloi and Price 2003), contractual issues (Chan and Tse 2003), opportunities and threats of international construction (Gunhan and Arditi 2005) and profit-influencing factors (Han et al. 2007).

The bulk of this work focuses on the political, economic and legal factors affecting contractors in international work. When cultural or social risks or differences are mentioned or analyzed, they are described in general terms. In addition, the research methods often rely on prior literature reviews and surveys to assess these risks. Recently, the work of Mahalingam and Levitt (2007) employed a single case study with a real estate developer to begin to compare and identify broader challenges encountered on global projects, including social and normative differences that can increase project risks. This research builds upon the important work of other scholars to expand and understand the various differences and risks involved on international projects. This research uses qualitative methods with open-ended questions to allow managers to describe any types of differences, risks and knowledge they perceive to be important, enabling naturally occurring phenomena to appear, and allowing the results to expand on the more normative and cultural factors. In addition, developers and engineers are studied with contractors to expand the research on international projects within the AEC sector and attend to variances between firm types.

RESEARCH METHODOLOGY
The research uses a case-based methodology because it provides a level of in-depth analysis that survey methods on larger samples cannot attain, and thus offers the prospect of rich, new insights (Eisenhardt 1989; Yin 2003) for this early stage of research in this area. In addition,
we used semi-structured but open-ended questions that allowed informants to respond without constraints and provide additional detail. In addition, this method responds to the question of “How?” which focuses on the organizational and institutional processes that occur naturally.

We chose three types of companies to study within the AEC sector: engineers, contractors and real estate developers/owners. The company types defined the limits of population; in addition, varying firm type achieved theoretical replication, allowing the study to highlight differences and expand prior literature to include engineering consultants and developers. The study uses at least three companies of each type of firm to achieve literal replication and ensure that the findings were replicated within each company type. Please refer to Table 1 below for additional details of the case studies.

<table>
<thead>
<tr>
<th>Company (Coded*)</th>
<th>Primary location of interviews</th>
<th># of Informants</th>
<th># Countries with Offices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Real Estate Developers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tottenham Court</td>
<td>UK</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Holborn</td>
<td>UK</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Goodge Street</td>
<td>USA</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Southgate</td>
<td>Norway</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Contractors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St Pauls</td>
<td>Sweden / UK</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>Leicester Square</td>
<td>India</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Charing Cross</td>
<td>Greece</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>Oxford Circus</td>
<td>Japan</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>St James Park</td>
<td>Japan</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td><strong>Engineering Consultants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyde Park</td>
<td>South Africa</td>
<td>27*</td>
<td>15</td>
</tr>
<tr>
<td>Farringdon</td>
<td>USA</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>Angel</td>
<td>UK / USA</td>
<td>8</td>
<td>36</td>
</tr>
<tr>
<td>Picadilly Circus</td>
<td>UK / USA</td>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>Fulham Broadway</td>
<td>Finland</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Paddington</td>
<td>Finland / Thailand</td>
<td>3</td>
<td>29</td>
</tr>
</tbody>
</table>

*Company names are disguised to protect confidentiality.

** The five most substantive of these 27 interviews were coded for this analysis.

Table 1: Case Study Information

The first author conducted the case studies in company offices from September, 2007 through August of 2008. Subsequent phone interviews with informants in other office locations were also conducted during this time. The case studies primarily consisted of interviews with key informants and collection of documents and secondary data that was either available publically or provided by the informants. Using ethnographic interviewing techniques proposed by Spradley (1979), we asked descriptive, semi-structured but open-ended questions to informants within global firms. In total, 84 informants were interviewed (often more than once), who had past or current experience on global projects, were involved in the overall strategy of the firm, or were involved in a knowledge management initiative. By engaging informants and getting them to describe their projects, firms, and how they obtain knowledge on a daily basis for their international projects, rich, detailed and real-life scenarios were collected. The audiotapes were transcribed and imported along with collected documentation into a qualitative software coding program, QSR NVivo®. After importation, the study began a dynamic, multi-month process of topic and analytic coding to assign references within the transcripts and documentation to appropriate categories. The case analysis process followed a combination of qualitative data analysis strategies recommended by Miles and Huberman (1994), Eisenhardt (1989) and Yin (2003).

**IMPORTANT TYPES OF KNOWLEDGE ON INTERNATIONAL PROJECTS**

To answer the first question, “What types of knowledge are important for firms engaged in an international project?”, specific knowledge was coded that: (a) the firm directly collects on their global projects, (b) the manager directly indicated was important, or (c) caused differences or
difficulties on the project, indicating that the knowledge was retrospectively important. Ultimately, we ended up with the coding categories shown in Table 2. Out of all sources, the percentage of coding for each of these elements varied between four to nine percent, indicating that of the majority of companies faced these different elements, making each type of knowledge important to realize and collect on international work.

**Important International Project Knowledge by Firm Type**
Throughout our coding and analysis, we noted that although all types of knowledge listed are important to each kind of firm, different types of firm's perceived different types of knowledge to be more or less important for their role during international projects. From this insight, we compared the results of company types with knowledge types and will give examples of the top three knowledge types for each type of firm (see Table 2).

**Real Estate Developers/Owners**
For real estate developers and owners, important types of knowledge included Social Norms, Expectations and Local Preferences, Cultural Issues, and Approval Processes. These types of knowledge are rooted deeply in the local area and need to be taken into account when deciding on the type, location and plan of a development within a city, region or country. For owners and real estate developers, particularly of buildings, each development is completely unique, requiring adjustment and change. As one informant noted,

*Real estate development is a local business. It is not like selling McDonalds, or opening up a Starbucks coffee. We needed the local know-how because we’re creating something that can't be changed. Starbucks can change the taste of the coffee if they get it wrong- but if you get it wrong when you build a building, it is steel and concrete and will sit there without being leased. In real estate, without exception to be successful, you have to think and act locally.*

The category "Social Norms, Expectations and Local Preferences" includes everything from how you are expected to act in the local context- for example, at meetings and in introductions to people- to local preferences for office design and layout. Obviously, this can have a tremendous impact on the success of a development. If it is not accepted by the local population, the development will be a failure due to lack of interest and leasing opportunities. Informants talked about everything from typical floor plate adjustments (for instance, German employees have a right to natural light by law which will reduce the typical floor plate), to ceiling heights (European ceiling heights are often higher than in the US), to operable windows and mechanical system adjustments to toilet partition sizing.

*Even though you may have built zillions of buildings...you will very quickly find out ... that locally they don’t want a 50 story building because they don’t like height or they don’t like big floors because, for instance in Europe every secretary... has be right next to a glass window on the outside. So, automatically, social mores start to create a design of a product. So even though you knew what to build in New York you have to adjust your product to fit what the market wants.*
Table 2: Important Types of Knowledge for International Projects

The "Cultural" code includes everything from cultural beliefs to different concepts and meanings found in different areas to cultural disputes. For real estate developers, the main areas of importance reside within concepts and meanings and cultural beliefs. They have a real need to understand the minds of their customers, for instance with marketing campaigns and sales, as well as the people that they work with in the area. One informant talked about issues in setting apart buildings based on the lack of understanding of what is included in rentable square feet:

In the States, it’s a very sophisticated formula, so when one building says you have 21,000 sq. ft. of usable space of our building by BOMA standards, you can go to any other building and ask them what their usable square footage on their floor is per BOMA and they’ll tell you, and the numbers mean something, you can compare them. In India, that doesn’t exist. In India, developers literally just tell you what you’re renting, what your rentable area is and you have no idea what that relates to. There’s no transparency as far as how they came up with that number, what the number relates to or what’s included or not included in that number.

Informants also frequently discussed the concept of time, which often became an issue with people they worked with or hired. One developer commented:

We’ve had serious arguments with our partners, and they… philosophically believe that Americans are nuts for worrying so much about the finish deadline—they think it’s an emotional waste to worry about what month a project is going to be finished.

Another indicated:

I’ve noticed [in India] that people’s perception of time is definitely a lot more elastic than the Western perception of time. In the western culture two days means two days whereas in emerging markets, two days could mean two days plus or minus another two days…So, it’s been an issue of risk perception and risk tolerance levels.

Approval processes fall between categories- requiring not only regulative knowledge, but also knowledge of the norms. For instance, the process of obtaining approvals is often not transparent and requires prior experience or intimate knowledge of the party granting approval.

<table>
<thead>
<tr>
<th>Important Knowledge by Firm Type</th>
<th>All Firms</th>
<th>Developer</th>
<th>Contractor</th>
<th>Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approval Processes</td>
<td>8%</td>
<td>11%</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Climate &amp; Conditions</td>
<td>4%</td>
<td>0%</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td>Cultural</td>
<td>8%</td>
<td>13%</td>
<td>6%</td>
<td>12%</td>
</tr>
<tr>
<td>Design Const Standards</td>
<td>9%</td>
<td>10%</td>
<td>6%</td>
<td>12%</td>
</tr>
<tr>
<td>Industry Organization</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td>Knowledge of Government</td>
<td>6%</td>
<td>8%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>Language</td>
<td>4%</td>
<td>0%</td>
<td>2%</td>
<td>8%</td>
</tr>
<tr>
<td>Laws &amp; Regulations</td>
<td>8%</td>
<td>8%</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>Logistics</td>
<td>7%</td>
<td>4%</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td>Market Knowledge</td>
<td>4%</td>
<td>6%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>M&amp;L and Labor</td>
<td>8%</td>
<td>5%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Operating Laws</td>
<td>8%</td>
<td>4%</td>
<td>13%</td>
<td>4%</td>
</tr>
<tr>
<td>Relationships</td>
<td>4%</td>
<td>5%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Social Norms &amp; Local Preferences</td>
<td>8%</td>
<td>18%</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Work Practices</td>
<td>8%</td>
<td>3%</td>
<td>9%</td>
<td>14%</td>
</tr>
</tbody>
</table>

(N=40) (N=92) (N=72)
Some developers talked about the difficulties of developing in China in the late 1990’s due to the fact that the “rule book” was still being written. This required almost 200 approvals, but changed on a day to day basis. Others talked about the challenge of acquiring clean land to build property and the unique land entitlements in different areas. For instance, in Prague, there were claims of land ownership prior to the Nazi invasion in World War II. One informant talked described a similar challenge in India:

> In new developments, the biggest challenge has been finding land with clean title. This forced us to partner with locals who own land and who can prove that they have a clean title to a piece of land, have gone through the government approval process and who have been sanctioned for a specific buildable area. You need to ensure that the land that is truly clean and is sanctioned by the government as buildable area. This is something that we knew was difficult—but we had no idea how difficult!

Another informant described his frustration in attempting to figure out and deal with different approval processes—and even the meaning of receiving approval. In the example below, he talks about having permission from the planning commission, but still needing approvals from other city and regional departments. And even after getting the approvals, he would be responsible for ensuring upgrades to the city’s infrastructure.

> Sometimes this leads to frustration... clearly even if you’ve done some analysis when you are acquiring a site you may not be aware of the different hurdles or zoning requirements in that country and you can become stuck because it means that your development program could be delayed or face additional cost or create problems to deal with. No developer likes surprises.

Clearly, real estate developers and owners want to acquire knowledge related to their customer’s expectations and beliefs as well as the meanings, norms and approval processes of the many people they need to work with in order to complete the development. Their general goal is to complete a building that will be accepted and leased in the marketplace to generate long term revenue, which has a long time horizon.

**Contractors**

Contractors were less uniform in the types of knowledge they needed for international projects; however, the top three categories included: Operating Laws; Material and Labor Quality, Availability and Cost; and Logistics; followed closely by Work Practices and Approval Processes. These types of knowledge tie intimately to the actual construction phase of the project with important knowledge relating to everyday working operations, finding necessary labor and equipment and ensuring timely delivery of products and materials to the site.

Operating laws included multiple daughter codes of labor laws, taxation, customs, company registration, tax laws, money repatriation, insurance policies, land laws and contractual differences. The most noted of these laws was labor laws, which focus on the requirements to hire local labor, the ability to mobilize international labor (which often addresses which nationalities are allowed to work there) and the availability of work permits. Contractors discussed everything from South Africa’s Black Economic Empowerment (BEE) regulation, which requires subcontracting a portion of the work to Black South Africans, to immigration policies and local labor requirements:

> The immigration policy [is also very important] for workers because construction is still quite people intensive…So we need to determine if they will allow people to come in and out freely or if they require that we use only locals. This makes a big
difference. If they insist that you use only local people and the work culture is not conducive to using local labor, we are in trouble.

Another contractor discussed the requirement for diverse labor pools, particularly in the Gulf, to ensure that contractors were not exploiting only the cheapest labor available in the world:

The problem of obtaining visas for workmen is the single biggest factor which will influence your progress... a work visa... especially in the UAE has a cap on the number of people that you can employ from one country. So, suppose I have 100 Koreans, 100 Filipinos, or 100 people from Bangladesh. Then I can't bring in the 101st guy unless I have at least 40 or 50 people from another nationality.

The operating laws will influence the amount of labor and equipment required from the local area, and from this requirement comes the necessity to understand the cost, quality and availability of labor, materials and parts within an area. This can include available equipment, as this informant discussed:

I managed a pipeline project in Botswana in Africa. The market conditions were such that we couldn't mobilize our standard construction equipment and operate it efficiently due to a lack of spare parts. Even though all our construction equipment was made by Caterpillar of the USA, the equipment is made to different standards and the spare parts would not fit.

This coding category also includes knowledge about productivity norms:

Productivity norms are very different. If you are used to American welders, you might know that an American welder can do [X] flanges of 6'' pipes in half an hour. Well, in Azerbaijan, the same scope of work might take an hour and a half. So you have to be really careful and understand these differences in productivity norms... it affects all parts of your project.

Logistics is also of utmost importance to contractors. They need to know how they will ship and transport resources, mobilize at the site location, work with currency and banks, ensure safety and security and set up camps for workers.

We need to find a place to live... we have to figure out how to set up a camp for people to come and start doing the work... We have to figure out deals with airlines because we'll have masses of people coming in (about the project can have 1000 or more expats)... we need to figure out how to bank and deal with money- opening bank accounts, paying labor, etc.....

Overall, the contractors were concerned primarily with operating laws and processes, availability of equipment and labor to complete their work, work practices and the logistics of constructing the project. In other words, they were concerned with completing the work contracted to them within the laws and norms of the area. This concern is highly location-specific and is limited to the scope and duration set forth in the contract.

**Engineers**

Engineers indicated the importance of, and differences encountered in Work Practices, Cultural Differences, and Design and Construction Standards and Permit Processes.

Design and Construction Standards and Permit Processes are important for engineers in order to adhere to specified standards and create a design that meets local requirements. There were some discussions of the differences and problems resulting from metric versus imperial units, but most discussions revolved around regional standard differences. One person talked about the different standards for concrete in the UK vs. Hong Kong:
The local tweaks on your technical stuff [are important to understand], you know the local Hong Kong office for instance… for some bizarre reason concrete shrinks more in Hong Kong than it does in UK. No, it doesn’t! But they have within their local codes of practices and regulations a higher value for shrinkage of concrete than you do in the British standards.

Engineers also mentioned the importance of understanding capabilities and work practices within a local area in order to create a buildable design. One informant described an issue that occurred when working in a design-build contract with a French contractor on a project in Hong Kong:

[The contractor] was used to high quality precision machines in Paris for reinforcement bending so that you could optimize the use of reinforcement and wanted to do the same thing in Hong Kong. They contracted with the lowest priced subcontractor who said they could do it to that specification--but the subcontractor couldn’t do it to our specification so the reinforcement didn’t fit inside the cage.

Cultural beliefs, conceptual meanings and misunderstandings were also important for engineers. Sometimes this was in contractual relationships with others, but at other times this became an issue for engineers within their own company. One informant discussed problems with value engineering due to cognitive cultural mental models:

In Korea …it’s really face saving- they believe that once they put something on paper it’s sacrosanct. So the concept of value engineering can’t exist because nothing could be better than what is on the paper because it’s sacrosanct. You can get kind of crazy trying to deal with face saving, particularly if something really won’t work.

Another informant talked about how understanding a local area’s culture was becoming more important as the emphasis on environmental and social sustainability increased:

In Australia, we tried to find an acceptable route for a new road through Aboriginal land—they spent a lot of time talking to the Aborigines to discover the meanings and ancient cultural importance of the land to determine a route alignment that avoids all the Aboriginal sites and it is therefore acceptable to the local people.

Overall, engineers were interested in completing a design that was locally acceptable and buildable. Their contracts varied and thus affected the type of knowledge that was more or less important to them. Although the client would dictate the design and construction standards within the contract (which many participants noted is frequently based on international standards), the engineers still had to understand the codes and standards in order to complete the design. For the same reason, savvy engineers were interested in gathering information on local work practices to adjust their design accordingly. In addition, understanding culture was very important both within the company and also to meet new goals for sustainable projects. It should be noted that designers who supplied standard designs for specific equipment, such as boilers, did not worry about acquiring this knowledge.

CONCLUSION

Contributions to theory

AEC scholars have primarily concentrated on legal and regulatory aspects of institutional differences on international projects, broadly categorizing cultural differences. This research attempts to expand on these two kinds of differences to examine a broader range of cross-national differences —and, hence, needed knowledge— in international projects. Open-ended questions enabled managers engaged in international work to talk openly about what
knowledge they perceive to be important, either through differences and difficulties encountered or knowledge they strategically collected. This enabled the research to learn about and expand upon the normative differences encountered on international projects in addition to the political, economic and cultural differences encountered. Finally, by studying three types of firms within the AEC sector, this research expands upon prior studies that focused only on contractors, enabling us to analyze important knowledge by company type.

**Contributions to practice**

Many companies agreed to participate in our study due to the impact the findings could have on their international projects. Several informants commented that they had many “Aha!” moments throughout the interviews, and almost everyone wanted to see the results, specifically requesting “lists” of important knowledge that they could use in their data gathering and knowledge collection to evaluate and mitigate the "liability of foreignness" on their international projects. Firms and managers can attend to these differences by focusing on the expanded and detailed knowledge and sources documented in our results. Our hope is that an understanding of these differences, and how to acquire and share knowledge about these differences, will enable firms to better align their projects to the local context, increasing the success rate of international work.

**Limitations**

The sample of firms was substantial for case study research of this type, but there were still limitations. The firms studied and participants interviewed had to agree to participate in the research. In addition, there can be some bias when relying on manager’s perceptions of important knowledge. Specifically, informants may not have realized the importance of some kinds of tacit knowledge about the deeper cognitive cultural influences on global projects. There were also practical limitations—the time and resources to travel, interview, collect, transcribe and analyze the results—that restricted the number of firms in the study.

**Future Research**

The growth of international construction work, combined with the difficulties firms face when expanding internationally, dictates the need to attend to differences encountered and knowledge required. Understanding the knowledge that is important for international projects is therefore critical for project success. We are only beginning to understand and untangle the complex web of knowledge in these projects and many gaps remain to be filled by future research. Future research can attempt to validate and refine the findings and expand the number of companies interviewed. Additional work can also examine the sources and methods used to acquire this knowledge. Instead of only looking at company type, future work can analyzed important types of knowledge according to project scope and the project phase in which the knowledge is needed. And finally, additional work is needed on how this type of knowledge can be transferred within a single firm.

**References**


