Critical Factors in Establishing and Maintaining Trust in Software Outsourcing Relationships

Phong Thanh Nguyen1, Muhammad Ali Babar1,2, June M. Verner2

1 School of Computer Science and Engineering, University of New South Wales, Sydney NSW 2052, Australia
2 National ICT Australia Ltd., Locked Bag 9013, Alexandria NSW 1435, Australia

pnth373@cse.unsw.edu.au, {malibaba, june.verner}@nicta.com.au

ABSTRACT

Trust is considered one of the most important factors for successfully managing software outsourcing relationships. However, there is lack of research into understanding the factors that are considered important in establishing and maintaining trust between clients and vendors. The goal of this research is to gain an understanding of software outsourcing vendors’ perceptions of the importance of factors that are critical to the establishment and maintenance of trust in software outsourcing projects in Vietnam. We used a multiple case study design to guide our research and in-depth interviews to collect qualitative data from 12 Vietnamese software development practitioners drawn from 8 companies that have been developing software for Far Eastern, European, and American clients. Vendor companies identified that cultural understanding, credibility, capabilities, and personal visits are important factors in gaining the initial trust of a client, while cultural understanding, communication strategies, contract conformance, and timely delivery are vital factors in maintaining that trust.

Categories and Subject Descriptors:
D.0 Software - General

General Terms: Management, Human Factors

Keywords: Software outsourcing, managing trust relationships, software development, Vietnamese software developers

1. INTRODUCTION

This paper describes an empirical investigation into the perceptions of software practitioners on the role of trust in software outsourcing relationships. The goal of our research is to gain an understanding of software practitioners’ perceptions of the importance of trust in software outsourcing relationships and the factors that facilitate the establishment and maintenance of trust between a client and vendor. Trust has been identified as an important factor in the success of partnerships, strategic alliances, and networks of firms [6, 8, 20]. It has been suggested that trust is crucial for all business relationships as it enables more open communication, increased performance, higher quality deliverables and greater satisfaction in the decision-making process [9, 16, 21]. Although trust in general has received much attention in other fields such as network organizations (e.g. [1, 15]), organizational management (e.g. [5, 14]), psychology (e.g. [7]), and the social sciences (e.g. [3]), there are few studies into the role of trust in software outsourcing relationships.

Software outsourcing is defined as a situation where a company (a client), contracts out all or part of its software development activities to another company (a vendor), who provides agreed services for remuneration [10, 13, 18]. The trend towards off-shore software outsourcing has been growing steadily since the 1990s and was expected to exceed $150 billion in 2003 (International Data Corp., 2000 cited in [4]). Understanding issues involved in the management of off-shore software outsourcing relationships can help ensure the successful outcome of projects [22] and long lasting relationships between clients and vendors [25].

As noted earlier given the paucity of previous studies into the role of trust in software outsourcing relationships, and the increasing number of outsourcing relationships between companies from different countries with different languages and cultures, we investigate trust in outsourcing relationships by answering the following questions:

- What factors are important for establishing trust in off-shore software outsourcing relationships?
- What factors are important for maintaining and strengthening trust in off-shore software outsourcing relationships?

2. RESEARCH APPROACH

We used a case study approach as the basis of our research strategy because a case study is a powerful and flexible technique, considered suitable for exploratory research both prospectively and retrospectively [19]. Our research is conducted following Yin’s guidelines for the design and execution of multiple case studies [24]. We also referred to the checklist provided by Kitchenham et al. for conducting case studies [11].

We collected data from Vietnamese companies who are involved significantly in software outsourcing. One or more relevant persons from eight organizations were interviewed. We used semi-structured interviews to collect self-reported qualitative data. Because all data in a qualitative study is considered potentially useful, the open-ended questions were used to allow any other relevant information related to software outsourcing to be recorded [12, 23]. Our interview guide was adapted from the questionnaire developed and used by Oza et al. [17]. Our interview guide included a mixture of open-ended and fixed format questions, aimed at identifying
• factors involved in establishing trust and
• factors involved in maintaining trust relationships

in the context of software outsourcing based on practitioners' perceptions.

The data collection phase generated a large amount of qualitative
data which was transcribed and analyzed. While the interviews
were transcribed by one author, another author listened to a few
parts of each interview at random to ensure inter-rater reliability.
After interview transcription, content analysis and frequency
analysis were used to examine the data and produce results.

3. RESULTS

3.1 Demographics
Table 1 shows the profile of the interviewees who participated in
the study. Most of the participants are young with 5 to 8 years
experience in software development and outsourcing. There were
however, some veterans with more than 15 years experience. The
companies are fairly small, with the number of employees varying
from 50 to 150; one company however, has 700 staff. The
companies are relatively new with 5 to 10 years of experience in
the software industry. About half of the participants are involved
in business-oriented relationships with their clients while the
other half are in charge of the technical aspects of the projects.

<table>
<thead>
<tr>
<th>Interviewees</th>
<th>Title</th>
<th>Interviewee’s experience in software development</th>
<th>Company</th>
<th>No. of employees in company</th>
<th>Company’s experience of outsourcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project Manager</td>
<td>8-10</td>
<td>C1</td>
<td>80</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Business Unit Manager</td>
<td>5-7</td>
<td>C2</td>
<td>70</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Chief Technology Director</td>
<td>&gt;15</td>
<td>C3</td>
<td>70</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Vice-Director</td>
<td>&gt;20</td>
<td>C4</td>
<td>150</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Business manager</td>
<td>&gt;10</td>
<td>C5</td>
<td>700</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Vice-Director</td>
<td>&gt;15</td>
<td>C5</td>
<td>700</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Chief Technology Director</td>
<td>&gt;20</td>
<td>C6</td>
<td>150</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>Project Manager</td>
<td>5-7</td>
<td>C6</td>
<td>150</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Business Unit Manager</td>
<td>8-10</td>
<td>C7</td>
<td>50</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>Project Leader</td>
<td>5-7</td>
<td>C7</td>
<td>50</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>Divisional Manager</td>
<td>5-7</td>
<td>C8</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>Project Manager</td>
<td>5-7</td>
<td>C8</td>
<td>50</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 1: Demographics of the interviewees and their companies

3.2 Factors Important for Establishing Trust
Table 2 presents factors that the participants of our study perceive
essential for establishing initial trust in software outsourcing
relationships. Table 2 shows that all twelve interviewees consider
that cultural understanding, i.e. knowledge of the norms, beliefs,
business ethos, and skill in the native language of the potential
client, is a vital factor for gaining trust in the initial phase of
relationships.

While cultural understanding was considered a critical factor for
building initial trust by all the interviewees, creditability of a
vendor was also identified as an important factor in order to
initially gain a client’s trust by 92% (11 out of 12) of the
respondents. They suggested that a vendor can gain creditability
in a number of ways such as through good references from
previous or existing customers, certification such as CMMI or
ISO, or being introduced by a highly reputed agent or Vietnamese
working overseas. Most respondents reported that they have
learned from Indian companies that certification is an important
mechanism for building creditability and assists in convincing
clients to trust in their capabilities.

Table 2 shows that a vendor’s capability is another factor
considered important for building initial trust by 75% (9 out of
12) the interviewees. Vendors believe that a client is usually keen
to know a vendor’s capability in at least three areas: technical
capability, people capability and management capability. The
majority of respondents opinioned that if a vendor can prove that
they have the required level of capability in all three areas, there
is higher probability of achieving the initial trust of a client.

Table 2: Factors important to establish trust relationship

<table>
<thead>
<tr>
<th>Initial trust factors</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural understanding</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>Creditability</td>
<td>11</td>
<td>92%</td>
</tr>
<tr>
<td>Capabilities</td>
<td>9</td>
<td>75%</td>
</tr>
<tr>
<td>Pilot project performance</td>
<td>8</td>
<td>67%</td>
</tr>
<tr>
<td>Personal visits</td>
<td>7</td>
<td>58%</td>
</tr>
<tr>
<td>Investment</td>
<td>6</td>
<td>50%</td>
</tr>
</tbody>
</table>

Table 2 also shows that 67% (8 out of 12) interviewees thought
that performance on a pilot project is another important factor for
appeasing the concerns of a potential outsourcing partner
regarding vendor capability. During our research, we noticed that
almost all Vietnamese vendors start their business partnerships
with a pilot project, which is either a proof of concept project or
provides proof of their capability. Vietnamese practitioners
believe that if a potential client is reluctant to trust them based on
references or other factors, offering to do a pilot project is usually
an effective mechanism for expanding the client’s comfort zone.

Other factors mentioned by the vendors as important to achieving
initial trust were personal visits and investment. Table 2 shows
that more than half the participants considered that personal visits
are an important factor in forging trust during the initial stages of
a relationship. The interviewees mentioned that inviting potential clients to visit a vendor’s software development facility provided clients with an opportunity to observe working conditions and meet the practitioners who may be developing the software for them. Vietnamese practitioners consider that exchange visits should involve both technical and managerial staff in order to help establish personal relationships at different organizational levels in both companies. Regarding the investment involved, the interviewees considered that staff training, reliable infrastructure, and process improvement initiatives are the major types of investments that are needed to persuade a new client to trust in the vendor’s ability to develop software of highest quality.

3.3 Factors Important for Maintaining Trust

A vendor needs to not only maintain the trust that a client has put in their capabilities but also to work to strengthen that trust for ongoing business relationships. Thus, a vendor can greatly benefit from focusing on measures that are important in maintaining trust in an ongoing relationship; hence our goal of identifying critical factors for strengthening trust between a client and vendor. In response to our question about factors that play a vital role in maintaining trust relationships, the interviewees identified several factors. However, we present only those factors that were mentioned by at least half of the study participants. Table 3 presents those factors.

Table 3: Factors important to maintain trust relationships

<table>
<thead>
<tr>
<th>Maintaining trust factors</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>Cultural understanding</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>Capabilities</td>
<td>11</td>
<td>92%</td>
</tr>
<tr>
<td>Contract conformance</td>
<td>10</td>
<td>83%</td>
</tr>
<tr>
<td>Quality</td>
<td>10</td>
<td>83%</td>
</tr>
<tr>
<td>Timely delivery</td>
<td>9</td>
<td>75%</td>
</tr>
<tr>
<td>Development processes</td>
<td>9</td>
<td>75%</td>
</tr>
<tr>
<td>Managing expectations</td>
<td>8</td>
<td>67%</td>
</tr>
<tr>
<td>Personal relationships</td>
<td>7</td>
<td>58%</td>
</tr>
<tr>
<td>Performance</td>
<td>6</td>
<td>50%</td>
</tr>
</tbody>
</table>

Table 3 shows that all vendors considered communication and cultural understanding as critical factors in maintaining trust relationships with clients. Vendors believe that effective and frequent communication between clients and vendors at all levels of the organizational hierarchy are pivotal for managing trust-based business relationships.

The respondents suggested that frequent communication not only help avoid misunderstandings but also improves cultural understanding, which is considered an equally important factor in maintaining trust. The interviewees believe that a vendor’s capability is another factor that helps maintain a trust relationship. Ninety two percent of the vendors (11 out of 12) mentioned that their technical, managerial, and staffing capabilities play a cardinal role in maintaining a client’s trust in an ongoing business relationship. Table 3 shows that 83% (10 out of 12) respondents identified contract conformance and quality of deliverables as two other important factors in maintaining trust in an outsourcing relationship. They describe contract conformance as making their staff observe all clauses of Non-Disclosure Agreement (NDA) that they or their company might have signed with a client, protecting a client’s Intellectual Property (IP), and commitment to delivering what was originally agreed upon.

Quality of delivered product is another factor that was considered important for maintaining trust relationship by the interviewees. Vietnamese practitioners realize that relatively cheap labour cost may be an attractive factor for outsourcers; however, they would not compromise on quality. This explains why most of them have established quality assurance departments in their companies. Vendors mentioned that they need to convince a client of their capability of deliver quality product and services for forming long term partnerships with them. Two other factors considered by vendors important for maintaining a client’s trust are on-time delivery and a vendor’s commitment to process improvement. The interviewees indicated that on-time delivery can demonstrate to their clients that they can work according to deadlines set by both parties, which usually improves trust in the client’s capability to develop quality software at reasonable cost, on time. Vendors believe that continuous process improvement can help them maintain trust in established outsourcing relationships. Nine of the interviewees suggested that they can also gain and maintain a large clientèle’s trust by having highly mature development processes.

Table 3 shows that 67% (8 out of 12) respondents considered managing expectations an important factor in maintaining a client’s trust for ongoing relationships. Vendors believe that they should not promise what they cannot deliver, and they should proactively determine a client’s requirements and expectations of an outsourcing relationship, vendor capabilities and state upfront what is correct. The vendors who mentioned this factor considered that nothing is more damaging in an outsourcing relationship than raising expectations which cannot be met.

Personal relationship with clients and performance outcomes were two other factors that were mentioned by more than half of the interviewees as vital in maintaining a client’s trust. Vendors believe that forming personal relationships with a client improve their business relationships, especially with Japanese clients. They believe that consistently good performance helps a vendor convince a client to form long term partnership.

4. CONCLUSION

A growing consensus in the business literature is that trust between transacting parties is a vital factor in business relationships [2, 5, 7, 9]. However, trust in software outsourcing relationships is relatively new area of research in software engineering. There is an increasing realization that understanding the dynamics of building and maintaining trust between clients and vendors, who usually lack prior relationships and are from different cultural backgrounds, is important in successful management of off-shore software outsourcing relationships. This article advances the knowledge in trust management of software outsourcing relationships by exploring the factors that are considered critical in establishing and maintaining trust relationships. The results of this study reveal that apart from several other factors considered important, cultural understanding is recognized as the most critical factor in establishing and maintaining trust relationships. The results from this study further
reveal that a vendor needs to be perceived trustworthy as well as technically competent by clients in order to secure long term relationships [25]. Furthermore, flexible behaviour in terms of adjusting to changing needs of client certainly help gain and maintain trust.

We plan to conduct further empirical research by interviewing representatives of some of the off-shore clients of the companies participating in our study. The findings from that study will enable us to gain an understanding of how clients view trust in software outsourcing relationships.

5. ACKNOWLEDGMENTS

We are grateful to Truong Nguyen of Vietnam Competitive Initiative (VNCI) for helping us contact the companies we interviewed and for encouraging them to participate in the project. We are also thankful to the management of the following companies for making their staff available for this project: AZ, CT-IN, FPT, Goodland, NCS, Quantics, SDC, and VietSoftware.

6. REFERENCES


