Assessing Trust Among IS Personnel:
A View of General Trust, Trust of Management and Inter-Organizational Trust

Tom L. Roberts  Paul D. Sweeney  Dean McFarlin  Paul H. Cheney
Univ. of Kansas  Univ. of Dayton  Univ. of Dayton  Univ. of C. Florida
troberts@ku.edu  sweeneyp@udayton.edu  mcfarlind@udayton.edu  pcheney@bus.ucf.edu

Abstract

Trust is a central component in most relationships and a vital component in business transactions. This study evaluates several trust levels for IS personnel. The general trust of people, trust of management and supervisors, and inter-organizational trust are evaluated. The study surveyed 168 information systems workers. The results indicate a low level of trust by information systems personnel in all aspects of trust. These results should be of notice for management in IS organizations because they must understand the perceptions of their employees as they conduct business both internally in their organization and in dealing with potential customers or clients.

Trust has always been a critical component of relationships between organizations. It has become even more important with these organizations conducting global business with rapid speed transactions. Trust may be also becoming more difficult to attain given significant events such as corporate corruption, mismanagement, or opportunistic behavior exhibited by executives.

With information technology departments, mutual trust is essential in dealing with vendors for the purchase of software, hardware, or even in dealing with consultants. Trust in a vendor and their reputation is vital in selecting partners. Ironically, a recent Information Week Survey [34] indicated more than half (53%) business-technology professionals find their most strategic software vendor somewhat trustworthy, while one in 10 respondents say they can't trust their most strategic software vendor.

Another area needing trust is outsourcing with external organizations. The combination of intense competition, the sluggish economy and the lure of pay-as-you-go IT services is prompting a growing number of organizations to outsource back-office systems and business processes [25]. In the banking industry, several high-profile financial services firms have signed outsourcing deals handing off control of data and systems to reduce costs and to allow a focus on core business operations. For example, J.P. Morgan Chase & Co. earlier this year, announced a seven-year, $5 billion agreement under which IBM will take over its data processing infrastructure. Research firms have predicted that outsourcing revenues in the financial services sector alone will climb to $30 billion by 2006 [26]. There are several factors (costs, globalization, demanding clients, etc.) converging to prompt these financial firms to outsource. Another trend that has emerged is offshore outsourcing and using firms from India, Pakistan or China to write code and develop applications [26]. Again, for outsourcing to be successful, the companies must develop a mutual trust relationship.

Although there have been many studies directed at trust and various aspects of trust such as interpersonal [10], intergroup trust [40], and inter-organizational trust [13], some researchers believe that trust largely has been underappreciated within the literature [37]. Without question, there is still a need to research trust between organizations and specifically between information systems departments and personnel and the external organizations they conduct business with. This study attempts to assess the level of organizational trust among information systems (IS) personnel with external organizations.

Literature Review

Trust has widely varying connotations [7, 21]. Bradach and Eccles [3, p.104] explain that trust is "a type of expectation that alleviates the fear that one's exchange partner will act opportunistically." Gambetta [7] followed this definition by explaining that trust is a particular

Proceedings of the 37th Hawaii International Conference on System Sciences - 2004

0-7695-2056-1/04 $17.00 (C) 2004 IEEE
level of the subjective probability that an agent assesses that another individual, group or organization will perform a particular action. This action will be performed before the agent can monitor it and in a context that affects his own action. The idea is that when an individual, group, or organization is deemed trustworthy, we implicitly mean that the probability that they will perform an action beneficial or at least not detrimental to us is high enough for us to consider engaging in some form of cooperation with him [7, p. 217]. This leads us to an interesting question, can there be trust between two organizations that are simply agglomerations of individuals. Intuitively, trust is an interpersonal phenomenon. Some researchers have argued that although expectations of trust do reside within individuals, it is possible to think of trust between organizations as trust in economic transactions [41].

A recent explosion of interest in trust has generated a large and rapidly expanding body of literature and its importance to economic life [7, 27]. Trust seems to becoming a good that markets and organizations firms can't get enough of. Trust facilitates cooperation [23], lowers agency and transaction costs [15], promotes smooth and efficient market exchanges [33], and can improve an organization’s ability to adapt to change [18, 24].

Trust is a valuable contributor to many forms of exchange. In organization to organization relationships, researchers credit trust with lowering transaction costs in more uncertain environments [29]. The reduction in transaction costs has provided some firms with a source of competitive advantage [1]. Trust also facilitates long-term relationships between organizations [30] and a key to the success of strategic alliances [9]. Scholars have examined organizational trust in areas such as supplier relations [19], joint ventures [14], and strategic alliances [30, 39]. The benefits of inter-organizational trust in strategic alliances is wide ranging in character, including lowering transaction costs [9], inducing desirable behavior [22], reducing the extent of formal contracts [20], and facilitating dispute resolution [30].

Economic transactions can be considered a type of specialized interpersonal behavior [13]. However, this behavior should be in the terms of “principal” and “agent” that may be on the level of individual, group, or organization [38]. Among the assumptions of transaction costs economics is that the agent in any principal-agent relationship is not trustworthy, causing the risk for opportunism to be high. Opportunism as described by Williamson [38] is “self-interest seeking with guile.” Hill [11] furthers this assessment by not only including obvious cheating but calculated attempts to mislead, distort, disguise, and confuse.

Williamson [38] explains that business managers do often act on the basis of trust. However, he also points that the difficulty in identifying trustworthy agents is so great that organizations should structure their business transactions accordingly. This means to negotiate detailed contracts to protect against opportunism [13]. The end result is that the difference in the costs of contracts vs. the cost of controls determine an organization’s strategic options [38]. Hill [11] proposed that it is possible to reduce transaction costs through a reputation of non-opportunistic behavior. The idea is that reputation does have an economic value. Bromiley and Cummings [6] expand on this idea by arguing that trust does reduce transaction costs. They explain that optimal expenditures on transaction costs (such as control, monitoring, forecasting, etc.) are a function of opportunism.

Bromiley and Cummings [6] defined trust as “the expectation that another individual or group will (1) make a good faith effort to behave in accordance with commitments, both explicit or implicit; (2) be honest in whatever negotiations preceded those commitments; and (3) not take excessive advantage of others even when the opportunity exists.” This definition directly contrasts with Williamson’s transaction costs theory though it is possible that long term moral behavior may payoff. This definition of trust takes the view that organizational action is based on good-faith effort, honesty, and limited opportunism.

This study will initially evaluate the general assessment of trust of IS personnel and assess their trust of the management of their organization including their own supervisors. Finally, the study will address inter-organizational trust. The research hypotheses concerning inter-organizational trust were built directly from Bromiley and Cummings [6] definition of trust and the scales from their earlier work.
Research Hypotheses

This study has five research hypotheses addressing general level of trust, trust of organization management, and inter-organizational trust. The first hypothesis is concerning general trust of all others by the individual respondent. This will allow us to view the feelings of IS personnel concerning others in society and give us an idea of their trust beliefs. The second hypothesis evaluates trust of management and supervisors within the respondent’s organization. We will be able to assess the beliefs of IS personnel concerning their own organizations and managers. Our final three research hypotheses directly address the three components of the Bromiley and Cummings [6] definition of trust focusing on relationships with other organizations external to the IS respondent’s organization such as vendors, clients, consultants, or outsource vendors. The hypotheses are as follows:

H1: IS personnel have a positive feeling concerning the trustworthiness of people

Trustworthiness is the characteristics that one perceives in another or group that elicits a belief concerning another individual or group [2]. These characteristics take into account both personal risk and vulnerability [5, p. 399]. Brenkert [4, p. 300] regards trustworthiness as the evaluative appraisal that an individual is worthy of trust. Ironically, we are simply attempting to assess an IS personnel beliefs about others in general. We believe that IS personnel will have a positive belief concerning others.

H2: IS personnel have positive feelings of trust in their supervisors and the management of their organization.

Trust and other "macro motives" such as loyalty and commitment provide the basis for relational contracts and social exchange. Macro motives are sets of attributions that characterize people's feelings and beliefs about their exchange partners. An example would be an employee assessment that "My supervisor is trustworthy. One source of trust in the employee-supervisor relationship is procedural fairness.. The use of procedurally fair supervisory practices impacts employees' commitment to a system and trust in its authorities by demonstrating an authority's respect for the rights and dignity of individual employees. We believe that this for the most part is occurring with regard to IS personnel and expect their beliefs to show a positive view of their supervisors and organizations.

H3: IS personnel believe that other organizations keep their commitments.

This first dimension implies that the organization being trusted actually behaves to fulfill commitments [6]. The amount of business coordination and partnership by organizations with software/hardware vendors, outsourcing companies, and customers is extensive. Organizations continue to do business and build partnerships with software/hardware giants such as Microsoft, IBM, Dell and many others. Additionally, organizations have ventured heavily into outsourcing IS components of their businesses with domestic and international organizations. These facts attest to the fact that there is a belief that these external organizations are keeping their commitments. Without such a belief, very organizations would risk their future with external organizations for software, hardware or even the outsourcing of business functions. Our belief is that most IS personnel will have a high level of trust in other organizations keeping their commitments.

H4: IS personnel believe that other organizations are honest in their negotiations.

This dimension implies that the external organization’s statements and behavior prior to making commitments is consistent with the known desires and facts [6]. The idea is that an organization negotiates with known desires and facts to achieve a specific goal for the organization. We believe that this is generally true among most organizations. Even though many corporate scandals have occurred with upper management misleading even their own employees, it is still not the norm. Therefore, we expect that this dimension of trust will be high for information systems personnel.

H5: IS personnel do not believe that other organizations attempt to take excessive advantage when the opportunity exists.

This dimension implies that the external organization does not take full short-run advantage of unforeseen opportunities to gain at
the expense of the other. This means that the organization can be counted on the put forward a bargain that is not unreasonable [6]. We believe that this is the norm is most inter-organizational relationships and expect that most IS personnel will believe that the organization they are dealing with will not “take them to the cleaners” if given the opportunity.

Research Methods:

Measurement
The survey instrument used in this study included Schuessler’s [32] measure of trustworthiness of people, Tyler and Bies [35] trust for management and supervisors, and the Bromiley and Cummings [6] Organizational Trust Index (Short Form). The OTI Short form has twelve items that are presented in Table 1. The instrument has been used in multiple research studies and validated [6]. Previous research reflects three constructs that are represented by the instrument including keeping commitments, negotiating honestly, and taking advantage when the opportunity exists. We reworded the items to make sure that external organizations were the focus of the respondents. The survey contains a seven point Likert scale that was anchored on Strongly Agree (7) and Strongly Disagree (1). Additionally, the survey instrument contained a series of demographic questions. The results of the demographics are presented in Table 3. The survey instrument was pretested among business faculty for wording and pilot tested among 8 respondents working in the information systems department of a Midwest Law firm.

Table 1

Bromiley and Cummings (1996) Organizational Trust Index (Short Form)

1) I think that people in other organizations tell the truth in negotiations.
2) I think other organizations meet their negotiation obligations to our department.
3) In my opinion, other organizations are reliable.
4) I think that people in other organizations succeed by stepping on other people.
5) I feel that other organizations try to get the upper hand.
6) I think that other organizations take advantage of our problems.
7) I feel that other organizations negotiate with us honestly.
8) I feel that other organizations will keep their word.
9) I feel that other organizations try to get out of their commitments.
10) I think other organizations do not mislead us.
11) I feel that other organizations negotiate joint expectations fairly.
12) I feel that other organizations take advantage of people who are vulnerable.

Internal Trust Items (Tyler & Bies, 1990)
1) I place a lot of trust in management here at this company.
2) My supervisor is someone I can count on.
3) Generally, people in this company say what they mean and mean what they say.
4) I can say that my supervisor is someone who has a lot of credibility in this firm.

General Trust Assessment (Schuessler, 1982)
1) It's hard to figure out who you can really trust these days.
2) There are a few people in this world you can trust, when you get right down to it.
3) Most people can be trusted.
4) Strangers can generally be trusted.
5) Most people are fair in their dealings with others.
6) Most people don't really care what happens to the next fellow.
7) Too many people in our society are just out for themselves.
8) Many people are friendly only because they want something from you.

Methods of Analysis – Data Collection

Invitations to participate were made to twenty companies having significant IT staffs in the Southeast and in the Midwest. The initial contacts were made with management representatives of these firms who would then initiate the data collection. The contact person expressly detailed the number of possible respondents to the researchers. This total number was 280 possible respondents. We received a total of 168 usable responses.

Table 2

Sample Demographics

Gender : Male = 120  Female = 48
Age: 20-29 = 52  30-39 = 38  40-49 = 60
>50 = 15  NA = 3
Education: HS = 19  Associates Degree = 14
Bachelors Degree = 99
Grad or Professional Degree = 36

Type of Job I:
Managers = 53
Not Managers = 112
NA = 3

Type of Job II:
IS Manager = 53
Technical Support = 10
Database = 15
Programmer = 39
Systems Analysts = 32
Networking = 6
IT Consultant = 13

Years as IT
<= 5 = 71
<= 10 = 22
<= 20 = 33
> 20 = 24
NA = 18

NA = Not available or responding

The response rate was 61%. Once agreement was made to get respondents for the researchers by the contact person, an e-mail about the project was sent to the contact person. The contact person forwarded this e-mail and asked for cooperation from the potential respondents. This e-mail contained a hyperlink to a university research website that contained a cover letter. The cover letter explained the project and provided a hyperlink to the actual survey website. The survey website provided radio buttons for the respondent to indicated responses to each question. Once completing the survey, the respondent would submit the responses by clicking a button on the website. Finally, a thank you page was developed to show appreciation for participating in the survey. The option of leaving an e-mail for summary results to the survey was provided. We used IP address tracking and redundancy checking of the data to insure that a person responded to the survey only once.

In current survey research, the use of information technology is not uncommon. However, researchers have been investigating the potential biasing effects of using computer assisted questionnaires [36, 8, 12]. These studies have reported equivocal results between paper-and-pencil self-completion (SC) data collection methods and CAQ methods. Although some studies have reported significant differences between mean response scores comparing the two data collection methods [36, 17], other studies have concluded that significant differences between CAQ and SC in mean scores do not exist [16, 31].

Research studies comparing CAQ and SC have indicated a couple of possible sources for bias. The first differences might be the formatting characteristics of the survey or possibly the immediacy of the technology [28]. Our design is appropriate because it allows almost the exact format as paper surveys. Respondents could browse all questions in the survey and change answers before submitting the results. As for immediacy, this study is looking for opinions of the respondent concerning their trust of external organizations. One additional point is that the results of our pilot study revealed a preference for using online capability over the SC methods especially for information systems professionals. It was requested by the individuals participating in the pilot for purposes of speed and simplicity.

Data Analysis

The initial procedure was to reverse code instrument items 4, 5, 6, 9, and 12 to reflect their negative nature. An initial exploratory factor analysis was conducted to further check the strength of the three constructs of the Bromiley and Cummings [6] Organizational Trust Index – Short Form. A varimax rotation was selected using a eigenvalues greater than 1 criteria to determine factors. The result was a three factor solution explaining 74.6% of the variance. We calculated Cronbach Alphas to check reliability of the construct measures. All three factors produced Alphas greater than .70. These results are provided in Table 2. We conducted additional reliability procedures on both the Schuessler [32] scale of the trustworthiness of people and the Tyler and Bies [35] scale of organizational trust. Finally, we conducted one sample t-tests using alpha = .01 for each of the three factor means to test our hypotheses. We used multiple of 5 (minimal amount of agreement to the scale) depending on the number of items of the scale as the test value for the tests depending on how many variables were in the factor mean. All five factors were found to be significantly below the test value. These results are presented in Tables 3, 4, and 5.

Discussion

Feeling of General Trustworthiness of People

The results produced an unexpected result with regard to the overall belief in the trustworthiness of people by IS personnel. Respondents belief in the trustworthiness of
people indicated a lack of general trust (Factor Mean = 30.89; Test Value = 40). These results were below the indifference response for the scale. These results caused a rejection of H1.

Table 3
General Trust Scale (Schuessler, 1982)

<table>
<thead>
<tr>
<th>Alpha</th>
<th>Factor Mean</th>
<th>P(t)&lt;.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>.7089</td>
<td>30.89</td>
<td></td>
</tr>
</tbody>
</table>

It's hard to figure out who you can really trust these days.
There are a few people in this world you can trust, when you get right down to it.
Most people can be trusted.
Strangers can generally be trusted.
Most people are fair in their dealings with others.
Most people don't really care what happens to the next fellow.
Too many people in our society are just out for themselves.
Many people are friendly only because they want something from you.

Possible Causes -- We believe that these results may be a culmination of a combination of events that have occurred over the past couple of years including September 11, 2001, the corporate scandals, and a soft economy (especially in information systems with the dot.com fallout). People are becoming more cautious in their actions and less likely to openly trust others.

Internal Trust of Management

After finding a lack of feeling of general trust of people, it was not a surprise to find a lack of internal trust of management by IS personnel (Factor Mean = 15.17; Test Value = 20). These results were slightly below the indifference response for the survey scale. We rejected the hypothesis H2.

Table 4
Internal Trust of Management (Tyler and Bies, 1990)

<table>
<thead>
<tr>
<th>Alpha</th>
<th>Factor Mean</th>
<th>P(t)&lt;.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>.9017</td>
<td>15.17</td>
<td></td>
</tr>
</tbody>
</table>

I place a lot of trust in management here at this company.
My supervisor is someone I can count on.
Generally, people in this company say what they mean and mean what they say.
I can say that my supervisor is someone who has a lot of credibility in this firm.

Possible Causes -- We believe that these results may have occurred because of the economic environment for IS personnel. Management has had to take tough measure to cut budgets and downsize in many cases. These moves have led to many layoffs and to the greater use of outsourcing to accomplish IS tasks within the businesses. These scenarios have led to less job security, lower salaries, increased duties, and much higher levels of stress for IS personnel.

Inter-Organizational Trust

The results provide some real surprises by indicating a significant lack of trust for external organizations among information systems personnel with regard to all three constructs. First, the respondents showed a belief that external organizations do not negotiate honestly (Factor Mean 15.51; Test Value = 20). These results are slightly below the indifference response for the survey scale.

Table 5
Factor Analysis Clusters, Reliabilities, and t tests Results Organizational Trust Constructs

Negotiates Honestly

<table>
<thead>
<tr>
<th>Alpha</th>
<th>Factor Mean</th>
<th>P(t)&lt;.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>.8048</td>
<td>15.51</td>
<td></td>
</tr>
</tbody>
</table>

I think that people in other organizations tell the truth in negotiations.
I feel that other organizations negotiate with us honestly.
I think other organizations do not mislead us.
I feel that other organizations negotiate joint expectations fairly.

Keeps Commitments

<table>
<thead>
<tr>
<th>Alpha</th>
<th>Factor Mean</th>
<th>P(t)&lt;.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>.8659</td>
<td>16.50</td>
<td></td>
</tr>
</tbody>
</table>

I think other organizations meet their negotiation obligations to our department.
In my opinion, other organizations are reliable.
I feel that other organizations will keep their word.
I feel that other organizations try to get out of their commitments.

Avoids Taking Excessive Advantage

<table>
<thead>
<tr>
<th>Alpha</th>
<th>Factor Mean</th>
<th>P(t)&lt;.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>.7845</td>
<td>15.18</td>
<td></td>
</tr>
</tbody>
</table>

I think that people in other organizations succeed by stepping on other people.
I feel that other organizations try to get the upper hand.
I think that other organizations take advantage of our problems.
I feel that other organizations take advantage of people who are vulnerable.

Possible Causes -- These results could possibly be the reason that many software, hardware, or outsourcing agreements are written contracts detailing specific obligations and commitments.
A major player in this result may have been the business practices and ethics of Microsoft that led to an anti-trust lawsuit. Such situations can lead to a wary IS profession. With regard to outsourcing, there could possibly be a concern with the unknown especially if global providers are involved in the contract. Another aspect is the negotiations that might undercut bids from other domestic firms on particular jobs. It is widely known that programming sources in Asian countries are much lower than domestic firms.

The respondents indicated a belief that external organizations do not keep their commitments (Factor Mean = 16.50; Test Value = 20). These results are slightly above the indifference response for the survey scale. **Possible Causes** -- Although we cannot pinpoint the exact reason for this belief in lack of keeping commitments, there are several reasons that are possible answers to this result. Among these possibilities is that external organizations have not met deadlines and cost estimates on ongoing projects with the organization. A second possibility is that service and support contracts may not have been fulfilled to the expectations of the personnel. Additionally, there could be resentment on the use of outsourcing simply because of the potential loss of jobs threat or from the quality of work performed.

Finally, respondents indicated a belief that organizations would not take advantage of vulnerable firms if given the opportunity (Factor mean = 15.18; Test Value = 20). These results are slightly below the indifference response for the survey scale. **Possible Causes** -- Again, business practices may be to blame for this result. It is possible that the corporate scandals concerning Tyco, Enron, Worldcom, and many others may have eroded faith in “fairplay”. Of course, Microsoft’s practices again may have hurt the belief in fair and honest business.

**Management Implications**

These results are really important for IS managers to understand especially in a tough economic environment. IS Managers must realize the general lack of trust that exists among IS personnel and attempt to create solutions to improve the trust level. They must also realize that this lack of trust expands to within their organization and its management. The internal lack of trust can erode productivity and keep IS personnel suspect of management’s business practices. This task is very difficult because it must be balanced with the economic needs of the organization that might include downsizing and outsourcing.

The lack of trust for external organizations should be a focus for almost all business firms including information systems. Without trust, business will erode and as Bromiley and Cummings [6] found, transaction costs will inherently go up. The end result is a lowering of profits for each organization taking part in the transaction. Managers should make every effort to increase the level of trust with all organizations that the company conducts business with including suppliers, customers, consulting firms, vendors, and outsourcing companies. Again, this task is daunting because managers must balance controls through written contracts and the additional costs that they cause.

**Limitations**

We believe that one should be careful when assessing the results of this study. This sample although it is taken from many IS firms is limited. We also acknowledge that we are unable to pinpoint the cause of many of these results and can only present possible causes. The U.S. sample also keeps us from being able to extrapolate globally with the results.

**Future Research**

We believe that this study gives an initial assessment of the levels of trust among IS personnel and the organizations they conduct business with. A more expansive survey should be conducted that can focus on different IS positions and with a wider variety of companies. We should also conduct research on the relationships between international firms that are conducting IS outsourcing. Another aspect of trust that should be conducted is the level of trust and how it changes over time. Future research should include some longitudinal studies that can identify the changes of trust over time.

**References**


