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Measuring Trust In User -Analyst Relationships

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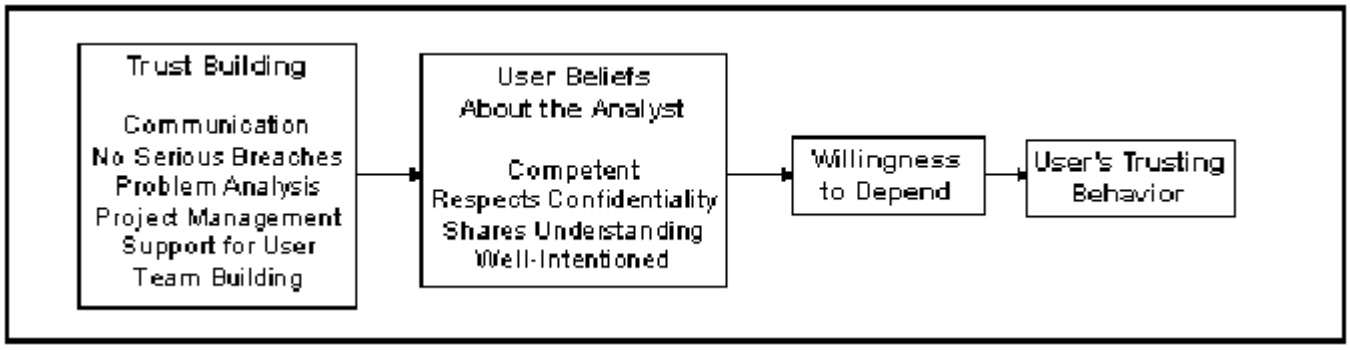
There is a widespread belief among MIS researchers that the relationship between users and analysts during project development affects project outcomes. Cushing (1990) claims, "The success of any MIS will tend to be inversely related to the degree of friction that exists between MIS users and MIS developers during the processes of development and use of the MIS."

If the quality of user-developer interactions is inversely related to friction, then we need to create effective lubricants. Based on research in communication, we believe that trust could play a key role. Our argument is not that users simply need to increase their trust in analysts, but rather than analysts need to devote more attention to building trusting relationships.



The purpose of this paper is to propose a model of trust in user-analyst relationships, outline a survey instrument built on this model, and provide some results of validation tests.

WHAT IS TRUST?

The Organizational Control Model (Ouchi, 1980) and the Model of Transaction Structure (Ring and Van de Ven, 1989) both show how trust can be critical to creating effective and efficient transactions under some circumstances. Ouchi's model applies primarily to principle-agent relationships while the Ring and Van de Ven model applies to innovative transactions across organizations, but their conclusions are quite similar.

Generalizing these models to include user-analyst relationships is appealing and fairly straightforward. However, testing the model is more difficult. While popular management literature contains many references to trust, the term is often left undefined. Research on trust is more rigorous, but there is no standard definition or commonly used measure. Furthermore, the definitions and measures which do exist have typically been created to study trust in supervisor-subordinate or close personal relationships. While the user-analyst relationships we studied were internal (i.e., we did not examine user relationships with external consultants), the user was never the direct supervisor of the analyst.

In contrast, trust from an Agency Theory perspective assumes an arm's-length relationship. Because the user and analyst do share the same employer and senior management, this model is not correct either. The user-analyst relationship falls somewhere in between. However, this does not mean the relationship is unique. Many working relationships exist between colleagues within an organization, but trust has rarely been studied in these relationships.

We define trust as a belief about another which results in a *Willingness to Depend* on that person, even in risky situations, despite a lack of guarantees or the power to force the desired performance.

Not all relationships need be based on trust. When outcomes can be easily and accurately measured, employees can be compensated based on performance (e.g., commission sales). Some employees are told how to do their jobs, particularly in customer service. But most managers are unable to assess an analyst's performance, except in extreme cases. Even outcomes are difficult to judge. The system may be satisfactory, but were better options available? Could someone else have built the same system in less time and at less cost? Managers are often forced to trust experts, but their level of trust can greatly affect who they choose to work with and how effective that relationship is.

Based on the trust literature and interviews with users and analysts, we propose a four-stage model of trust as shown in Figure 1. *Willingness to Depend* depends on some *User Beliefs about the Analyst*. First, the user trusts analysts who are seen as W*ell-Intentioned*. This is fundamental to trust in all situations. Second, the user and analyst must feel they have a *Shared Understanding* of the situation and goals. This requires a shared language and an understanding of values. Third, the user must believe the analyst is C*ompetent*. This includes not only technical skills, but also the project management skills and work ethic needed to take a project to successful completion. Finally, many analysts require access to sensitive information to properly understand the situation. This refers not so much to data itself, but rather an open discussion of problems the user might be having. *Respect for Confidentiality* is important in these situations.

Construct # of Items Alpha
Trust Building
Communication 7 0.89
No Serious Breaches 3 0.73
Problem Analysis 3 0.59
Project Management 5 0.85
Support for User 7 0.89
Team Building 4 0.87
User Beliefs about Analyst
Competent 5 0.86
Respects Confidentiality 2 0.74
Shares Understanding 3 0.80
Willingness to Depend 6 0.97
User's Trusting Behavior 3 0.76

TABLE 1 - CONSTRUCT MEASURES

The trust literature provides an extensive list of potential *Trust Builders*, including the organizational culture. Our research focused more on the user-analyst relationship itself and things which the analyst can attempt to control. We created a list of trust builders from the literature, adapting ideas to the user-analyst relationship as necessary, modified that list after interviews with users and analysts, and then used factor analysis on the survey results to generate the six basic trust builders shown in Figure 1.

Trust and *Communication* are often shown as interdependent constructs in the literature and our research supports that. Without *Communication*, the analyst cannot build a sense of *Shared Understanding* or be

seen as *Well-Intentioned*. Good communicators are accessible, focus on the issues, openly acknowledge problems, provide plausible alternatives and ensure the user understands what they mean.

Good *Project Management* is another trust builder, perhaps not only because of its obvious importance to project success but also because users are better able to assess these skills than the analyst's technical knowledge. Good project managers plan well, meet target dates, keep good records, follow-up on promises and hold meetings with clear objectives. Closely related is *Team Building*. Good team builders promote a positive atmosphere within the team and express real enthusiasm for the project.

Trusted analysts provide *Support for the User*, which might also be termed "respect." They take user ideas seriously, look for ways to incorporate user ideas into the system, keep the user informed about the IS Department and project issues, and consistent and honest in their positions. Giving misleading information or, perhaps worse, different information to different users, is a serious trust breaker. Trust is also built through good *Project Analysis*. Users should trust those who make useful suggestions and point out problems in proposed designs.

Finally, the research identified a few serious trust breakers which, for consistency, are labelled *No Serious Breaches*. Some analysts fail to respect confidentiality, refuse to do part of their job, or bypass agreed channels (either going to other users or simply ignoring users) to get the answers they want. The interviews also showed frequent dissatisfaction with IS personnel who play computer games during office hours, but the survey found this behavior to be rare. Perhaps it is rare, but users remember it well.

Returning to the model in Figure 1, the final construct is *User's Trusting Behavior*. Trusting users should behave differently. They should be more open in communicating problems and ideas, spend less time checking the details of the analyst's work, accept the analyst's recommendations, and be more willing to continue the project. They should spend less time testing, although all users agreed that testing is critical no matter who is developing the system.

MEASURING TRUST

Following the literature review, the research began with interviews of 17 users and 17 analysts in 15 organizations. Based on the interviews and the trust literature, a 100-item questionnaire was constructed. The trust items all used a seven-point Likert scale (from Strongly Disagree to Strongly Agree) and explicitly included the options Not Application and Don't Know. The questionnaire was distributed to 162 managers in 15 organizations who had key responsibilities in ongoing system development projects. There were 104 usable responses.

Of the 100 items, 42 addressed *Trust Building* in the user-analyst relationship. After deleting items with high non-response rates (e.g., many managers did not know if the project was within budget because they did not see expenditure data), 29 items remained. They produced the six factors shown under *Trust Building* in Figure 1. Table 1shows the final number of items in each measure and its Cronbach alpha.

The weak alpha value for *No Serious Breaches* is to be expected; the items appear to have little in common. The low reliability of the *Problem Analysis* measure might be due in part to the item wording, which specifically refer to the analyst finding problems in the user's proposals. Greater diplomacy skills may be needed when criticizing user intentions.

User Beliefs about the Analyst were addressed by 18 items. Although *Intentions* are clearly fundamental to trust, the factor analysis did not yield a useful measure. One reason might be the lack of variation on intention measures. All respondents were in ongoing relationships, so high levels of distrust were very rare. After deleting items which did not contribute to stable factors, measures were found for *Shared Understanding*, *Competence*, and *Respect for Confidentiality*. The last measure has the lowest alpha value, probably because only two items were used and it is not an issue on some projects.

The *Willingness to Depend* measure uses six of the original seven items. While the alpha value is high, these items have great similarity to each other. The *User's Trusting Behavior* measure uses four of the five proposed items.

MEASUREMENT VALIDATION

In addition to the Cronbach alpha and factor analysis discussed above, each measure was tested for factorial validity. It would be desirable to put all items in single factor analysis and demonstrate the discriminant validity of each construct. However, given the large number of items relative to the sample size, this is not a feasible option. Instead, a series of factor analyses were conducted, combining all items for each pair of constructs. With 11 items, this gave 55 possible pairings. Of the 55 pairs, factor analysis yielded either the original measures or the original measures with at most one item changed in 52 cases. The *User's Trusting Behavior* measure was part of two of the exceptions.

SUMMARY

This research provides a framework for incorporating trust in future studies of user-analyst relationships and some valid measures. Trust should provide an alternate perspective to the power models which have been applied to user-analyst relationships.

Copies of the instruments and further details on theories of trust can be obtained from the authors.

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