What Builds System Troubleshooter Trust the Best: Experiential or Non-Experiential Factors?

D. Harrison McKnight, Michigan State University, USA
Norman L. Chervany, University of Minnesota, USA

ABSTRACT

System troubleshooters keep important organizational systems operating. This study examines factors influencing system troubleshooter trust in their supervisors, contrasting experiential and non-experiential factors. Traditional research suggests that trust forms through interactional experience. Recent research indicates that initial interpersonal trust develops through non-experiential factors that are dispositional (individual differences-related) or institutional (structural/situational). We found that both institutional and dispositional factors affected troubleshooter trust in the supervisor even after parties gained experience with each other. Quality of experience with the supervisor affected interpersonal trust, while quantity of experience did not. Surprisingly, institutional trust predicted trusting beliefs as strongly as did quality of experience. The study shows that both experiential and non-experiential factors are important to troubleshooter trust when parties know each other well.

Keywords: IS operations activities; IS problems; IS staffing; IS training and development; systems manager activities; trust

INTRODUCTION

Trust is defined as the willingness to depend upon another with a feeling of relative security, even though negative consequences are possible and one cannot control the other (Mayer et al., 1995). Researchers have found trust to affect performance in many information systems (IS) tasks (Hart & Saunders, 1993; Jarvenpaa, Knoll & Leidner, 1998; Nelson & Cooprider, 1996). This chapter investigates the factors that lead to the development of trust in one IS environment—troubleshooting—that is increasingly important to the ongoing performance of mission-critical information systems. The organization of the chapter is as follows. The remainder of the Introduction overviews two general theories of trust building, defines the troubleshooting task, and introduces the research questions. The second section presents two versions of a trust-building model. In the next two sections, the methods and results are presented and discussed.
Two General Theories of Trust Building

While there is widespread agreement on the importance of trust in the workplace (Kramer, 1999; Zand, 1972), less agreement exists about the factors upon which trust is built. Two general theories of trust-building factors compete at the center of the trust-building debate today.

• **Experiential Trust Building:** The most dominant general theory posits that trust grows through positive interaction and experience with the trustee (Blau, 1964; Gefen et al., 2003; Jarvenpaa & Leidner, 1998; Kramer, 1999; Ring & Van de Ven, 1994). This makes sense, because people build a mental image of the other’s trustworthiness via interactions over time. The more one interacts with another, the more information one gains about their attributes and the more confidence one has about predicting their actions, which translates into trust. What are the managerial implications of this theory? The supervisor controls the interactional relationship with the employee. Supervisors can develop a positive relationship with the employee over time through interactive steps that reveal the supervisor’s trustworthiness.

• **Non-Experiential Trust Building:** The second general theory, which we call non-experiential trust building, posits that non-experiential factors like institutional context or personality traits are important in building trust, especially when parties are so new to each other that they have no experiential basis for trusting (McKnight et al., 1998; Meyerson, Weick & Kramer, 1996). Institutional context factors are perceived situational/structural features that provide confidence in the organizational and work context, thus encouraging trust among parties in that context. One institutional construct is structural assurance, defined as a belief that structures make the workplace safe or secure. Institutional factors are important, because they can be managed. For example, developing a work environment that employees feel is structurally secure and fair should increase employee trust in management.

Managers also need to be cognizant of the effects of dispositional (personality) issues on trust. One personality factor is disposition to trust, defined as how much one generally trusts others. Although personality issues cannot be managed per se, the manager who is aware of their effects can take action. For example, the manager of an employee with low disposition to trust can spend more time winning this skeptical employee’s trust. Since trust and influence are highly correlated concepts (Nelson & Cooprider, 1996; Zand, 1972), trust is key to managerial success, because employee trust will determine how amenable the employee is to supervisory influence and coaching. The above two general theories of trust building form the basis of the research models presented in the Trust and Trust Building section.

The IS Troubleshooting Task

Information systems troubleshooting is an important task. It involves reacting, often under extreme time pressure, to find and fix both software and hardware problems that have caused a system to crash. The research reported in this chapter studied troubleshooters in two Fortune 500 companies in the computer services industry. In one of the companies, troubleshooters maintained a large computer reservation system for a major airline. In the other
company, the troubleshooters maintained computer software that the company marketed to various customers. In both firms, successful, quick-response troubleshooting was a key customer service issue. If done well, it led to customer loyalty; if done poorly, it led to loss of customers.

To be successful, the troubleshooters and their supervisors needed to cooperate through an on-the-job coaching process. Troubleshooters said they liked coaching and related supervisor confidence in them, but disliked being micromanaged. Because of this interdependence, the relationship issues among the troubleshooters and their supervisors constituted a key to managing the performance of these critical systems. Because trust is essential in interdependent relationships (Kramer, 1999), it is clear that troubleshooter-supervisor trust is key in this setting.

**The Research Questions**

Two questions intrigued us, combining experiential and non-experiential trust theory. **Research Question #1:** How well (if at all) do non-experiential constructs predict troubleshooter trust in the supervisor after these parties gain experience with each other? Non-experiential trust-building theory, which proposes that dispositional/institutional factors build trust before parties become familiar, implicitly suggests that these factors erode in strength post-familiarity. **Research Question #2:** When a troubleshooter has experience with the supervisor, does that experience replace the effects of dispositional and institutional factors on troubleshooter trust in the supervisor? That is, do experiential factors erode the effect of non-experiential factors on trust?

By examining research question #1, this study tests whether or not the non-experiential trust-building factors are still relevant beyond the initial relationship timeframe. If so, this synthesizes the two extant theories of trust building. By examining research question #2, the research begins to identify the tradeoffs among experiential and non-experiential trust building factors.

**TRUST AND TRUST BUILDING**

**Basic Trust Concepts**

This section defines the individual constructs that are at work and presents two versions of a detailed model incorporating these constructs. Definitions of three main types of trust, each from a different academic discipline, are found in the literature. First, psychologist Rotter (1971) defined trust as a generalized tendency to assume that others would fulfill expectations. This is the disposition to trust already defined (Gefen, 2000) (see Figure 1, 1st column). Second, sociologists Lewis and Weigert (1985a, 1985b) proposed that trust is not a personal trait but a function of social or institutional structures that makes one feel confident of success in that context. One subset of institutional trust—structural assurance—was previously defined (see Figure 1, 2nd column). Third, organizational researchers and social psychologists have defined trust as an interpersonal construct (Rousseau et al., 1998; Scanzoni, 1979). This chapter employs two such constructs: trusting beliefs (belief that the trustee has beneficial attributes, such as integrity, competence, benevolence [Rempel, Holmes & Zanna, 1985] and trusting intention (willingness to depend on the trustee in a risky situation [Currall & Judge, 1995]) (see Figure 1, 3rd and 4th columns). We use the terms **interpersonal trust** and **trust** to refer to trusting beliefs and trusting intention.
A Trust-Building Model

This chapter builds on a model of unfamiliar relations (McKnight et al., 1998) to focus on how trust builds in familiar relations. Familiar relationships are defined as those in which parties have sound information about each other (Bigley & Pearce, 1998) through interaction.

- A Trust-Building Model for a Non-Familiar Setting: McKnight et al. (1998) suggested that when parties first meet, disposition to trust and institution-based trust affect interpersonal trust, because one is forced to rely on individual tendencies and contextual beliefs when one has no information about the trusted party (see Figure 1). Their model excluded experience with the trusted party, because, in the initial timeframe, the parties have little or no experience with each other. In the only full test of this model of which we are aware, McKnight et al. (2002a) found that disposition to trust was a factor of trusting beliefs and trusting intention, but institution-based trust was not. Subsets or variants of the model also have been tested in Gefen (2000), Gefen et al. (2003), Pavlou (2002), and McKnight et al. (2002b), each of which found either dispositional or institutional trust to be factors of one or more interpersonal trust variables in e-commerce domains. This chapter reports the first test of the model in employee-supervisor relationships within IS organizations. We also extend the original model (see Figure 2) by adding experiential factors.

Research Hypotheses

Research Question #1 (Effects of Original Model Constructs under Familiarity)

Hypotheses 1 through 4 (Figure 1) propose that the initial relationship trust constructs continue to affect trust after technical troubleshooters become familiar with their supervisors. The link between trusting beliefs and trusting intention should prevail over time, because having favorable beliefs about the other tends to make one willing to depend upon them, the essence of trusting intention. Believing, for example, that a supervisor is competent and benevolent suggests a troubleshooter can rely upon the supervisor in a crucial situation. Several empirical studies have found evidence of one or more links from trusting beliefs to trusting intentions (Mayer & Davis, 1999; McKnight et al., 2002a, 2000b; Pavlou, 2003; Ridings et al., 2002).

Hypothesis 1: Trusting beliefs will positively influence trusting intention beyond the initial relationship timeframe.

One’s beliefs about the structures supporting success in an endeavor (structural assurance) will continue to influence one’s beliefs about the people who operate within those institutional structures. For example, a troubleshooter who feels the setting is safe and fair should form trust in the supervisor in the setting. Even though interpersonal events may intervene that cause one to reduce reliance on institutional beliefs and to infer interpersonal trust directly from experience, it is likely that structural perceptions will continue to affect trusting beliefs and trusting intention. This is because they provide a success-favoring background in which to trust. Structural assurance provides safeguards or safety nets (Shapiro, 1987) for the troubleshooter that reduce the risk of the negative effects from supervisor deficiencies. Empirical researchers found that institution-based (or system) trust influenced trust in e-commerce vendors or in the community of sellers (Pavlou & Gefen, 2004; Pennington et al., 2003).
Hypothesis 2: Institution-based trust—structural assurance will positively influence trusting beliefs and trusting intention beyond the initial relationship timeframe.

Disposition to trust will relate positively to institution-based trust after the initial timeframe. Those with low disposition to trust will continue to evaluate institutional structures more negatively (McKnight et al., 2002a) and will be more watchful or attentive to problems, greeting them with an I-thought-so attitude, because they expect the worst. In contrast, those with a high disposition to trust will continue to view institutional structures with optimism.

Hypothesis 3: Disposition to trust will positively influence institution-based trust—structural assurance beyond the initial relationship timeframe.

Since disposition to trust colors one’s perceptions of others generally, it will continue to predict trusting beliefs and trusting intention. Here’s why. First, people with low disposition to trust are more critical of others (Holmes, 1991), so their trust-related judgments tend to be harsher. Second, one who does not trust others generally is more attentive to the other’s behavior, per Holmes. This makes it more likely that they will find behavior they perceive negatively, which will produce lower trusting beliefs and trusting intention. Over time, one’s trust in others generally will be reflected in the level of trust for most individuals within one’s acquaintance. Several studies have found evidence of this link (Gefen, 2000; Jarvenpaa et al., 1998; Ridings et al., 2002).

Hypothesis 4: Disposition to trust will positively influence trusting beliefs and trusting intention beyond the initial relationship timeframe.

Scope of the McKnight, Cummings and Chervany (1998) model
Research Question #2 (Decrease in Construct Predictive Strength vis-à-vis Experience)

Hypotheses 5 and 6 add two experience constructs to the model and then propose the relative strength of model constructs. Experience will affect trusting beliefs and trusting intention, per the experience-based trust literature (Bhattacherjee, 2002; Ratnasingham & Phan, 2003). Gefen (2000) found that familiarity (similar to experience) predicted trust. Experience with the trustee will build both trusting beliefs and intention (Blau, 1964; Ring & Van de Ven, 1994).

We believe quantity and quality of experience will have differential effects. Quantity of experience means the amount of interaction one has had with the trustee over time. Quality of experience means the degree of perceived positive nature of those interactions. The raw quantity of experience is not a good predictor of trust, because those interactions may either be positive or negative. For example, a troubleshooter may have some interactions with the supervisor that build trust, some that decrease trust, and some that have no effect. Thus, on balance, the quantity of experience is not likely to influence trust. However, the quality of experience will. Positive troubleshooter interactions with the supervisor should increase troubleshooter trust. The more positive the quality of the interactions, the higher the trust should be.

Hypothesis 5a: Quality of experience with the trustee will positively influence trusting beliefs and trusting intention.

Hypothesis 5b: Quantity of experience with the trustee will not positively influence trusting beliefs and trusting intention.

Disposition to trust should be replaced as a predictor of trusting beliefs and trusting intentions by quality of experience after the parties become familiar. This is because people rely on experience-based information more readily than disposition, which is based on assumptions (McKnight et al., 1998). The quality of one’s experience with the trustee provides important first-hand trustworthiness information that should be preferred over a general disposition to trust others. Trust researchers support this idea (Mayer et al., 1995; Rotter, 1971).

Hypothesis 6a: The effects of disposition to trust on trusting beliefs and trusting intention will become nonsignificant in the presence of quality and quantity of experience.

Institution-based trust is based on assumptions about people’s motivation to act, as shaped by situational cues. Experience with the trustee can provide detailed and solid information (Lewicki et al., 1998) about the trustee (detailed schemas) (Berscheid, 1994). Over time, the effects of institution-based trust should be replaced by experiential knowledge about the trustee. This means that the troubleshooter will come to feel confident enough about interactions with the supervisor that structural assurance no longer affects troubleshooter trust.

Hypothesis 6b: The effects of institution-based trust—structural assurance on trusting beliefs and trusting intention—will become nonsignificant in the presence of quality and quantity of experience.

METHODOLOGY AND RESULTS

Scale Item Development

We first interviewed 17 troubleshooters and their managers to identify issues
important to their success. Then, we did the questionnaire study reported here. In order to develop and test survey items, a pilot study was conducted with undergraduate introductory IS students at a large Midwestern U.S. university, who answered paper questionnaires during class. The trusting beliefs measures were adapted from various scales discussed in Wrightsman (1991). Trusting intention measures were adapted from Dobing (1993). Disposition to trust measures were taken from Rosenberg (1957). The institution-based trust measures were developed new. The pilot results, analyzed through factor analysis, showed that the items needed significant rework, especially the disposition to trust items, which formed three factors from five items. The institution-based trust items formed three scales. The trusting beliefs and trusting intention items formed two distinct scales, one for trusting beliefs and one for trusting intentions. The researchers used pretest methods similar to those used by Davis (1989) to refine the scales.

**Final Measures Used**

The Appendix shows the final measures used. Because of item problems in the pilot, all dispositional items were created new and represent the benevolence of others. The structural assurance factor from McKnight et al. (1998) represented institution-based trust and used items adapted from the pilot study. We developed the quantity of experience measure to take into account both the length and intensity of experience. One item measured each component. The quality of experience measures tap into the effects of interactions with the supervisor on troubleshooter self-

---

Copyright © 2005, Idea Group Inc. Copying or distributing in print or electronic forms without written permission of Idea Group Inc. is prohibited.
Esteem, which is one important positive impact of interaction. This concept was derived from interviews. We found that when a troubleshooter did a good job of solving a system problem, it had a positive impact on self-esteem. For example, when asked how he felt when he solved a difficult system problem, one troubleshooter flexed his muscles and said, “Like Superman! You feel like there’s nothing this computer can present me that I can’t solve.”

**Study Respondents**
Study respondents were technical software or hardware troubleshooters in two Fortune 500 companies in the computer services industry; 101 out of 115 troubleshooters (88%) agreed to participate in the study, providing an adequate sample. Each respondent answered every question during a telephone interview (Dillman, 1978) conducted during work hours. On average, workers were 41 years old and had worked with their supervisor for three and a half years. Thirty percent were female. From pre-questionnaire discussions at the company, we learned that supervisors played an active role in the teams, often giving advice, training tidbits, feedback, and encouragement to team members. The most critical task of these IS professionals was system problem troubleshooting (i.e., getting the system running again when it crashed), which was done in team fashion, involving workers at all levels, including supervisors. Supervisors were considered...
team members, organizational learning repositories, and team morale tone-setters. When systems are “up,” troubleshooters look for potential system problems by contacting help desk personnel. They research and provide technical fixes to software about which users log complaints. Some hardware problem troubleshooters were also part of the sample.

The respondents answered questions about the relationship with their supervisor. To increase the likelihood that the respondents fell in the very-familiar relationship category, we removed those 14 cases in which the respondent had less than six months of interaction with the supervisor (new relationship duration mean = 4.0 years). Partial Least Squares (PLS) was used to analyze the data because of the relatively small final sample size (n=87) (Chin, 1998). Means and standard deviations of the variables are found in Table 1.

**Measurement Model Results**

PLS standards were used to test the reliability and validity of the measurement model (Chin, 1998; Fornell & Larcker, 1982). Inspecting the outer model loadings, all but one were 0.89 or above, supplying initial evidence of construct unidimensionality (Chin, 1998). The loading under 0.89 was for the fourth trusting belief-competence item, which was 0.67. This item was retained, because the overall average variance extracted (AVE) of the construct was acceptable (Chin, 1998). Next, we assessed convergent validity using internal composite reliability (ICR) and AVE measures. Table 1 shows that the ICR figures for all constructs were adequate (>0.80), and the AVE measures all exceed the standard of 0.50, indicating convergent validity (Chin, 1998). To assess discriminant validity, the PLS standard is that each latent variable correlation should be lower than the square roots of the AVEs of the two variables correlated (Fornell & Larcker, 1981). Discriminant validity is shown, since all correlations are lower than the square root of their associated AVEs (see figures along Table 1 diagonal). Thus, the measurement model has acceptable psychometrics, based on PLS standards (Chin, 1998).

In addition to the variables shown in the model, we inserted these control variables to predict trusting intention: age, gender, and education.

**Structural Model Results**

**Research Question #1 (Effects of Trust Building Constructs under Familiarity)**

Hypothesis 1 was supported (Figure 3) in that both trusting beliefs predicted...

---

**Table 1. Correlation of latent variables and other statistics**

<table>
<thead>
<tr>
<th>Latent Variable Correlation Matrix</th>
<th>Mean</th>
<th>S. D.</th>
<th>AVE</th>
<th>ICR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Disposition to Trust</td>
<td>5.4</td>
<td>1.3</td>
<td>.85</td>
<td>.95</td>
</tr>
<tr>
<td>2 Structural Assurance</td>
<td>4.5</td>
<td>1.7</td>
<td>.84</td>
<td>.95</td>
</tr>
<tr>
<td>3 Trusting Belief-Benevolence</td>
<td>6.0</td>
<td>1.4</td>
<td>.91</td>
<td>.96</td>
</tr>
<tr>
<td>4 Trusting Belief-Competence</td>
<td>6.2</td>
<td>1.1</td>
<td>.75</td>
<td>.87</td>
</tr>
<tr>
<td>5 Trusting Intention</td>
<td>5.5</td>
<td>1.8</td>
<td>.96</td>
<td>.98</td>
</tr>
<tr>
<td>6 Quantity of Experience</td>
<td>13.6</td>
<td>13.2</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>7 Quality of Experience</td>
<td>5.7</td>
<td>1.6</td>
<td>.97</td>
<td>.99</td>
</tr>
</tbody>
</table>

The diagonal is the square root of the average variance extracted (AVE).

Notes: 1. S. D. = Standard Deviation; 2. ICR = Internal Composite Reliability
trusting intention (0.28** and 0.62***). In partial support of Hypothesis 2, structural assurance predicted both trusting beliefs (0.41*** and 0.57***). Structural assurance did not predict trusting intention (0.02), although they were correlated at 0.52 (Table 1). As support for Hypothesis 3, disposition to trust predicted structural assurance (0.22*). Disposition to trust did not predict either trusting belief but did significantly predict trusting intention (0.17*), partially supporting Hypothesis 4.

In response to Research Question #1, the results indicate that most factors in the McKnight et al. (1998) model were still effective predictors, even after parties became familiar. That is, trusting beliefs were strong predictors of trusting intention, structural assurance was a strong factor of trusting beliefs, and disposition to trust was still a significant predictor of structural assurance and trusting intention. Six of the nine links were supported, including all direct links.

**Research Question #2 (Does Experience Replace Non-Experiential Factors?)**

Figure 4 shows that Hypothesis 5a was supported, in that quality of experience was predictive of both trusting beliefs and trusting intention. Hypothesis 5b was supported, in that quantity of experience did not predict trusting intention or trusting beliefs. Hypothesis 6a was either inconclu-

---

**Figure 4. Structural model results—Extended Trust Building Model (ETBM)**

---

**Effects of Control Variables:**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Age</th>
<th>Gender (1=M 2=F)</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trusting Intention</td>
<td>-.11*</td>
<td>-.10*</td>
<td>.01</td>
</tr>
</tbody>
</table>

---

Copyright © 2005, Idea Group Inc. Copying or distributing in print or electronic forms without written permission of Idea Group Inc. is prohibited.
sive or not supported. The effect of disposition to trust on trusting beliefs was still not significant, which is inconclusive. Contrary to H6a, however, the effect of disposition to trust on trusting intention did not become nonsignificant in the presence of the experience variables. Hypothesis 6b was also either inconclusive or not supported. Structural assurance still did not predict trusting intention, which is inconclusive. Although quality of experience significantly affected both trusting beliefs, structural assurance was still a significant factor of both beliefs, contradicting Hypothesis 6b. Note that the coefficients for the links from structural assurance decreased, however.

Research Question #2 asks whether non-experiential factors become nonsignificant as factors of interpersonal trust in the presence of quality and quantity of experience. This study fails to show that they do. In the presence of quality and quantity of experience, disposition to trust continued to be a significant factor of trusting intention. Structural assurance continued to be a significant factor of both trusting beliefs, revealing an unexpected longevity of effect.

DISCUSSION

Overall, the results provide mixed support for both the trust building model (TBM) and the extended trust building model (ETBM). When parties had become familiar, TBM was effective, but mainly in terms of the direct links. The most general type of trust (disposition to trust) influenced the context-oriented institutional trust, which influenced perceptual trust (trusting beliefs), which influenced trusting intention. ETBM was not supported in terms of the full erosion of institutional and dispositional factors. The results show that both experiential and non-experiential factors were important among troubleshooters familiar with the supervisor. As predicted, the quantity of experience did not affect troubleshooter trust, but quality did.

Implications for Research

Research Question #1 Implications

The results indicate that the original TBM factors continue to be effective predictors of troubleshooter trust in the supervisor after parties have experience. This suggests the model is useful for more than the initial relationship. Because non-experiential factors (especially institution-based trust) affect interpersonal trust among troubleshooters familiar with supervisors, this research casts doubt upon the primacy of experience for ongoing trust building. The context in which trust operates (institution-based trust) and the trustor’s personal tendencies (disposition to trust) influence interpersonal trust even during the familiar stage of the relationship. Researchers should test the extent to which disposition to trust and institution-based trust help build ongoing interpersonal trust in different settings and relationships.

- Temporal Model Boundary Condition: The continued strength of both institutional and dispositional trust constructs casts doubt upon the temporal boundary condition set by McKnight et al. (1998) for their model. However, additional work is needed to affirm this finding. We speculate that institution-based trust and disposition to trust are consistent predictors no matter the relationship stage. Our finding agrees with and complements the e-commerce/virtual work finding that disposition to trust affects trusting beliefs (Gefen, 2000;
Kimery & McCord, 2002; McKnight et al., 2002a; Ridings et al., 2002; Stewart, 2003). However, Lee and Turban (2001) found disposition to trust to moderate in only one of three cases.

**Research Question #2 Implications**

- **Structural Assurance Salience:** The study provides evidence that quality of experience predicts trusting intention better than does structural assurance. Surprisingly, however, structural assurance predicted trusting beliefs as well as did quality of experience. Overall, this suggests that although quality of experience matters in trust building, so does structural assurance. The implication for researchers is that models of trust building that omit institutional trust (Kimery & McCord, 2001; Mayer, et al., 1995) are missing a key trust factor. Institution-based trust is key not only because it is highly predictive, but also because it forms a mediating link between disposition to trust and interpersonal trust. The absence of the institution-based trust link may explain why dispositional trust variable did not figure in the Mayer and Davis (1999) model, even though it was well justified conceptually in Mayer et al. (1995).

- **Disposition to Trust Salience:** The results for disposition to trust are interesting. Disposition to trust did not predict trusting beliefs, but it did predict trusting intention, the opposite of what McKnight et al. (2002a) found in the initial e-commerce setting. It is possible that the troubleshooter, through experience quality, may come to think highly of the supervisor in terms of trusting beliefs, whether or not they have high or low disposition to trust. On the other hand, the risk inherent in trusting intention in the supervisor may be such that a high disposition to trust helps prepare a troubleshooter to take that extra leap of faith beyond trusting beliefs to trusting intention. Even after experience, one cannot rule out disposition to trust as a viable trust factor.

- **Quality and Quantity of Experience Salience:** Quality of experience was the only variable that affected both types of interpersonal trust. Self-esteem has been used as a way to describe how one’s job motivates (Lawler & Hall, 1970). Other measures should be examined. Here’s an interview example of a supervisor dealing with outages related to a mistake.

> Most of the time when I talk to operators they’re very contrite about it, you know, “Gee, I really feel bad, I don’t know what happened, I don’t know why I did that.” And I think that to a large degree there’s a lot of sincerity in that. And I think they’re prideful of the systems that they run...[I] think that goes a long way in trying to prevent more of that.

The fact that quantity of experience did not predict trust, while quality of experience did helps sort out contradictory findings about familiarity. While Gefen (2000) and Bhattacharjee (2002) found that familiarity influenced trust, Pavlou (2002) and Gefen et al. (2003) did not. Our results suggest a need to split familiarity or experience into quality and quantity components in order to determine what builds trust and what does not.

Our findings suggest that the ETBM (Figure 2) be modified in two ways. First, a solid line should be drawn from structural assurance to trusting beliefs. Second, a solid line link is needed from disposition to trust to trusting intention. These links should be further tested.
Rationality of the Trust-Building Process: Traditional researchers posit that trust is built through an interaction history (Blau, 1964) that secures direct, first-hand information. This rational view assumes that trust is built on first-hand information and gradually increases in validity. While this rational approach to trust building is intuitively appealing, it does not account for the dispositional and institutional factors that continue to influence trust. These factors are not rational in terms of being based on personal interaction. While this study shows that trust is affected by a rational variable, quality of the relationship, the study also shows that trust continues to be affected over time by impersonal (institutional) and assumptional (dispositional) information, indicating that trust building is not as rational or experiential a process as some have argued.

Implications for Practice
The systems organization should pay attention to work environment institutional structures by improving perceptions of structural assurance. Per our interviews, this can be done by providing better job security and by helping employees understand why the company is headed in a successful direction. IS managers also can ensure safety nets and proper procedures (e.g., grievance procedures) to protect employees. Employees with low dispositional trust will tend to think more negatively about the work environment, doubting structural assurances, than will those with high dispositional trust. Dedicating time for personal communication on equivocal issues with employees who have low dispositional trust may help.

Given that quality of experience with the supervisor helps to build trust, managers and supervisors should provide feedback and interact with employees in a way that positively impacts employee self-esteem. IS managers should cultivate a positive relationship with key employees (e.g., troubleshooters) in order to have a positive effect on employee self-esteem. By developing a relationship that builds up the employee’s self-esteem, managers will assure that the employee will develop appropriate trusting beliefs and intentions about them. Managers should express confidence or trust in the employee as part of that expression. One manager said, “I make it a conscious effort to let my people know I trust them. Because I remember when I sat in those seats out there, and what it was that my management did that made me feel that they didn’t trust me.”

Study Limitations
One limitation is external validity. These results may be unique to the troubleshooter-supervisor relationships in these two firms and may not generalize. A second limitation is the data collection method. The study primarily used one method, the questionnaire, which could introduce self-report bias. This limitation is mitigated, however, by the fact that with trust, perception is much more important than objective fact. Further, self-report bias would be indicated by systematic inflation of constructs correlations (James et al., 1979), which was not found. Third, the study was not longitudinal; hence, causality is not proven.

CONCLUSION
This chapter makes several contributions, although these are tentative, given that the results may not be generalizable. First, the findings demonstrate the important influence of quality of experience with...
the supervisor on troubleshooter trust in the supervisor. Second, the findings show that institutional trust-structural assurance is key in predicting troubleshooter trusting beliefs. Structural assurance remained an important predictor in the presence of experience variables. This finding is very significant, because it demonstrates how contextually embedded (Granovetter, 1985) trusting relationships are. Neither researchers nor practitioners can afford to ignore the effects of structural assurance on building interpersonal trust. Third, the findings demonstrate that disposition to trust matters to trusting intention development even after the initial relationship phase is over.

The fact that both institutional and dispositional trust continued to be significant factors implies that although quality of experience mattered, it mattered less than expected. Rather than relegating non-experiential (institutional and dispositional) factors to the initial trust relationship, as McKnight et al. (1998) implies, this study extends their usefulness to the time period after the trustor becomes familiar with the trustee.

Finally, if these tentative findings prove generalizable, the chapter suggests extensions to existing trust models. To the Mayer et al. (1995) model, it suggests that institution-based trust be used as a mediator of the effects of propensity to trust on trustworthiness factors. To the McKnight et al. (1998) model, it suggests that its timeframe boundary be extended past the initial stage and that quality of experience be included. Testing the useful temporal boundaries of theories is an important scientific endeavor, because it clarifies a theory’s practical range (Bacharach, 1989).

Overall, these extensions to the trust-building model should prove fruitful as a way to better understand trust development within information systems support settings.

ACKNOWLEDGMENTS
For helpful insights and suggestions on an earlier version of this chapter, we would like to thank Roger Calantone, Severin Grabski, Nancy Gustafson, Brian Pentland, V. Sambamurthy, and Cheri Speier. We would also like to thank the two organizations that enabled us to gather data for this study and the reviewers and editors of IRMJ for their helpful suggestions.

REFERENCES


Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user accep-


Dobing, B. (1993). *Building trust in user-analyst relationships* [doctoral dissertation], Minneapolis, MN: Information and Decision Sciences Department, University of Minnesota.


Dobing, B. (1993). *Building trust in user-analyst relationships* [doctoral dissertation], Minneapolis, MN: Information and Decision Sciences Department, University of Minnesota.


Lewis, J.D., & Weigert, A.J. (1985b). So-


**APPENDIX: STUDY MEASURES**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Measures</th>
</tr>
</thead>
</table>
| Dispositional Trust (Disposition to trust)* | 1. In general, people really do care about the well being of others.  
2. The typical person is sincerely concerned about the problems of others.  
3. Most of the time, people care enough to try to be helpful, rather than just looking out for themselves. |
| Institutional Trust (Structural Assurance)* | 1. Our workplace has processes that assure that we will be treated fairly and equitably.  
2. I work in an environment in which good procedures make things fair and impartial.  
3. Fairness to employees is built into how issues are handled in our work environment.  
4. In this workplace, sound practices exist that help ensure fair and unbiased treatment of employees. |
| Interpersonal Trust (Trusting Belief-Benevolence)* | 1. When it comes to my well being, my lead/supervisor really cares.  
2. If I required help, my lead/supervisor would care enough to help me.  
3. I believe that my lead/supervisor cares enough to act in my personal best interest.  
4. When you get right down to it, my lead/supervisor cares about what happens to me. |
| Interpersonal Trust (Trusting Belief-Competence)* | 1. My lead/supervisor is skillful and effective in his/her work.  
2. My lead/supervisor performs his/her job very well.  
3. Overall, I have a capable and proficient lead/supervisor.  
4. Overall, my lead/supervisor is competent technically. |
| Interpersonal Trust (Trusting Intention)* | 1. When an issue that is critical to my career arises, I feel I can depend on my lead/supervisor.  
2. I can always rely on my lead/supervisor in a career-related issue.  
3. My lead/supervisor is a person on whom I feel I can rely when the issue is important to my career.  
4. I feel I can depend on my lead/supervisor on a career-sensitive issue. |
| Quantity of Experience | Multiplicative variable: (Years worked with supervisor) X (Frequency of interaction with supervisor) |
| Quality of Experience | 1. My work-related interactions with my lead/supervisor usually have a positive effect on my self-esteem.  
2. Interacting with my lead/supervisor on the job generally reinforces my feelings of self-esteem. |

*Several rounds of pre-testing were conducted before these items were finalized. The pretests used student raters.*
Harrison McKnight teaches and researches at the College of Business at Michigan State University. He earned his PhD in management information systems from the University of Minnesota. His research interests include trust building within e-commerce and organizational settings and the retention and motivation of information systems professionals. His work has appeared in such journals as Information Systems Research, Journal of Strategic Information Systems, International Journal of Electronic Commerce, Electronic Markets, and the Academy of Management Review.

Norman L. Chervany, Carlson Professor of Information and Decision Sciences at the Carlson School of Management, University of Minnesota, received his doctorate in decisions sciences from Indiana University. His research interests focus on the human issues involved in the use of technology. His specific research revolves around the relationships among information technology/systems and organizational strategy, the role of trust in an organization’s information management enterprise, work design issues in systems development, and the implementation of systems projects. Professor Chervany is widely published in such outlets as MIS Quarterly, Management Science, and Decision Sciences. He is a fellow of the Decision Sciences Institute.