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## **Towards a Theory of Trusted Performance in Software Development Projects**

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### **ABSTRACT**

*Within the software development discipline, teams are created and disintegrated at an extremely rapid pace. IT organizations are therefore looking at ways to create an environment of greater performance in a shorter period of time. This paper integrates organizational trust (Mayer, Davis, & Schoorman, 1995) into the research on organizational citizenship behavior (OCB) to help more clearly understand the relationships that are performance impacting. This integration called the “theory of trusted performance” should be able to be leveraged to deliver greater performance within an organization. This paper ends with a brief discussion of practical ways organizational leaders can leverage this model for software development and suggests ways to test this model.*

**Keywords:** Trust, organizational trust, organizational citizenship behavior, theory of trusted performance, trusted performance, software development improvement

### **INTRODUCTION**

Software development within an information technology organization requires a great deal of teamwork as software is moved from requirements into development, through test and finally deployed. Software development is a creative process that requires teamwork given the complexity of the task. Organizations that develop software utilize a defined process methodology called a software development lifecycle (SDLC) to coordinate their work, leveraging defined roles like product owners, developers, and testers to ensure role clarity and teamwork. They often utilize a project-based organizational structure to support the transitory nature of the work effort with project teams forming for work assignments and then transitioning or disintegrating upon delivery of the work product. Supporting the rapid nature of the process of team formation and cohesion, trust plays a key role increasing the overall productivity of the software development project team. Specifically, it is theorized organizational trust (Mayer, Davis, & Schoorman, 1995) nurtures the development of “helping behaviors,” a defined category of organizational citizenship behavior (Smith, Organ, & Near, 1983), which is a key antecedent to task interdependence. Enhancing task interdependence has been shown to deliver higher levels of team performance (Wageman, 1995). In an environment where organizational trust is high, “helping behaviors” flourish enabling teams to achieve high levels of performance, and on the corollary, when organizational trust is low teamwork lags impacting organizational performance.

Therefore, software development teams that can promote rapid trust development will experience higher levels of performance earlier in their projects and potentially greater performance throughout the life of the project.

In this paper we examine a theoretical basis that integrates the model of organizational trust (OT) with the model of organizational citizenship behavior (OCB) within the context of software development. Specifically, we look at the OCB category of “helping behaviors” which leads to “team interdependence” and enables “trusted performance” or greater team performance.

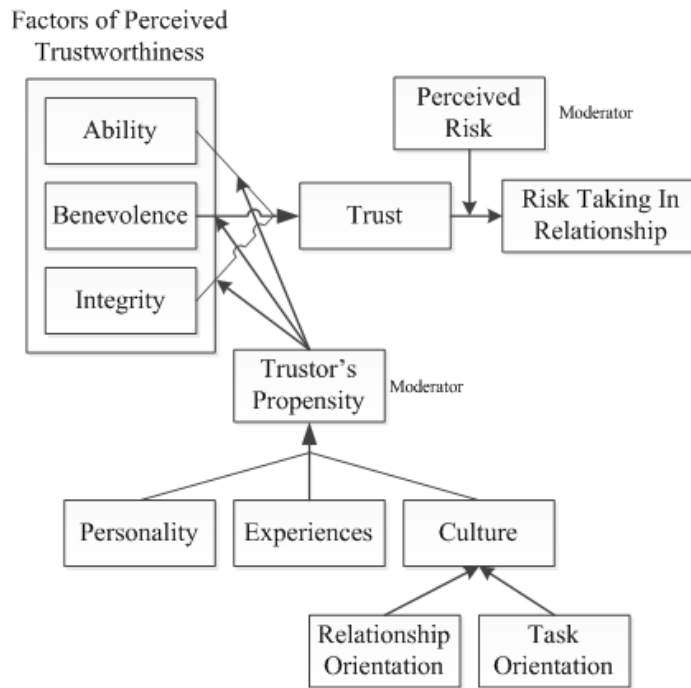
## **DESCRIPTION OF ORGANIZATIONAL TRUST**

The topic of trust has been researched for many years, providing an opportunity for those in the field of research to draw on empirical results for definitional clarification. For the purpose of this paper, the definition of trust used is the “willingness of a party to be vulnerable to the actions of another party based in the expectations that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party.” (Mayer et al, 1995).

Based on expectations the trustor will receive what is expected rather than what is being feared (Deutsch, 1973), trust is a property of the relationship between two or more individuals in a social situation that requires cooperation and interdependence (Johnson-George & Swap, 1982). Whether or not an individual is capable of trusting another, called trust propensity, depends largely on three elements: first the individual’s disposition toward the concept of trust, second the situation as it presents itself between the trustor and trustee, and third the history of the relationship between trustor and trustee (Lewicki, 2006).

Trust as described above forms a foundation for the more broadly defined integrated model of OT as shown in figure 1, which first outlines three antecedents to trust, called the factors of perceived trustworthiness, including: a) ability or the set of skills, competencies and characteristics that enable one to have influence within a domain, b) benevolence, the extent to which a trustee is believed to desire to do good for the trustor without a profit motive, and c) integrity which is the perception of trustee follow-through (Mayer et al, 1995). Unaided, trust builds over time through a series of turning points (Olekalns & Smith, 2005) which cause the trustor to conduct a cognitive analysis of the trustworthiness of the trustee and decide based on their assessment whether to rationalize the risk of social vulnerability (Schoorman, Mayer, & Davis, 2007).

In the software development organization where project teams form, work, and disintegrate, the perceived risk of project completion is high given the complexities of the technology and project constraints. Greater levels of trust will increase the likelihood team members will be willing to take risks within the social context. Given the complexity of the task of development and hand-off of responsibility, trust is a key ingredient to improve performance within the SDLC.



**Figure 1. Integrated Model of Organizational Trust.**

### DESCRIPTION OF THE ORGANIZATIONAL CITIZENSHIP BEHAVIOR MODEL

Organizational Citizenship Behavior (OCB) is defined as individual behaviors that are discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promote the effective functioning of the organization (Smith et al, 1983).

The research on OCB concentrates on four categories of antecedents to OCB development, including: a) individual characteristics, b) leadership characteristics, c) organizational characteristics, and d) task characteristics (Podsakoff, Mackenzie, Paine & Bachrach, 2000). These characteristics primarily outline employee attitudes, dispositions, and overall leader supportiveness – all outcomes from a healthy relationship across the dimensions of individual, leader, and organizational characteristics. These antecedents feed into the OCB model which is described in seven separate categories including: helping behaviors, organizational loyalty, organizational compliance, sportsmanship, individual initiative, civic virtue, and self-development (Podsakoff et al, 2000). While some researchers use different terms, the fundamental subject areas within OCB are represented within these descriptions.

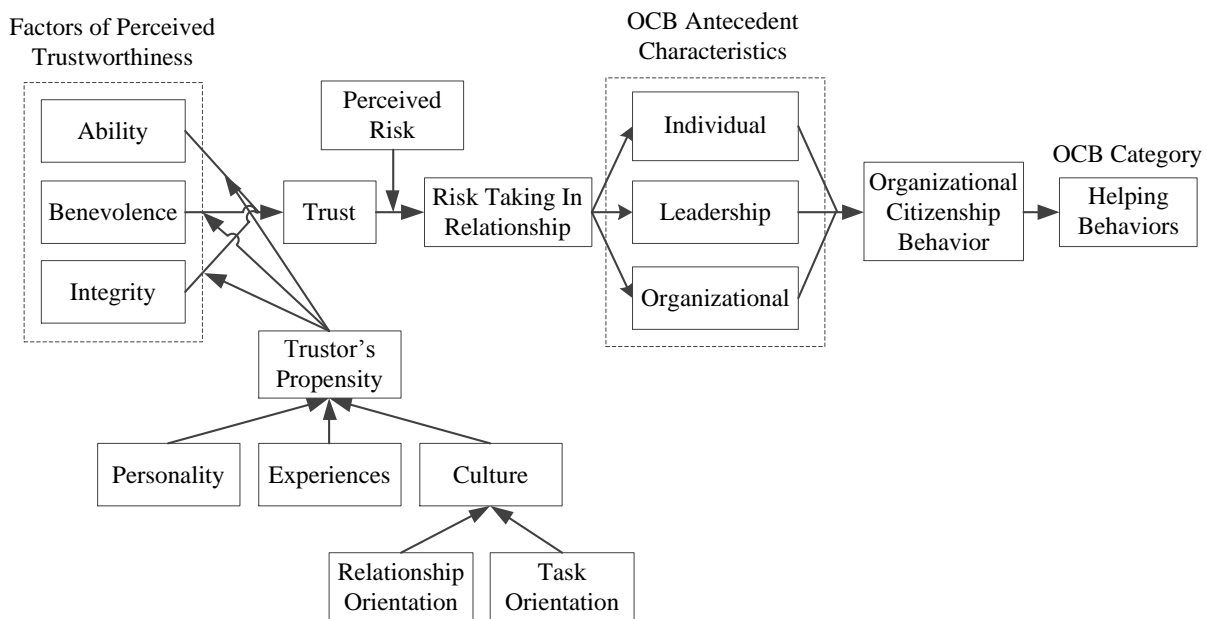
When examining the role of OCB in team performance within software development tasks, the category of “helping behaviors” is a primary category for analysis as it maintains specific properties that help support organizational performance. The definition of helping behaviors is “characteristics of volunteering to help others with a goal of avoiding or preventing an instance of a work related problem or issue” (Podsakoff et al, 2000). Included in this definition are

attributes like peacemaking, altruism, cheerleading, interpersonal helping, interpersonal facilitation, helping others, and the notion of courtesy. Many of these characteristics help support team cohesion during the SDLC; a necessary condition to support task interdependence with higher performance (Wageman, 1995).

Therefore, the OCB of helping behavior is directly related to caring for another, exerting extra energy to ensure one is successful, and this type of behavior is related to greater performance within an organization. For example, during the handoff of code from developers to testers, there is ample opportunity for helping behaviors to surface. Given the task complexity of software development, testing, and deployment - helping behaviors will aid task interdependence and create an environment of teamwork which leads to higher levels of performance.

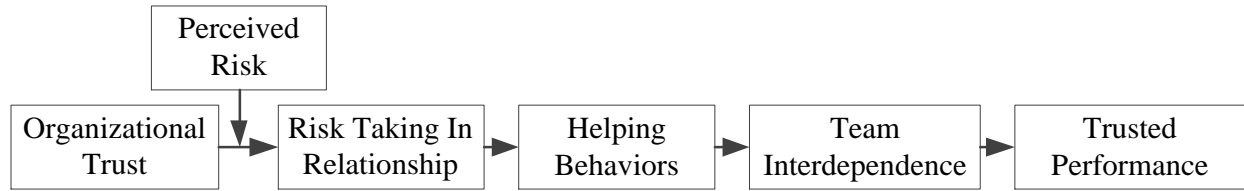
### THEORY OF TRUSTED PERFORMANCE

The above understanding of OT can be integrated with the model of OCB (see Figure 2).



Based on this integrated model, the authors come up with the model for the Theory of Trusted Performance (see Figure 3).

**Figure 2. Integrative Model of Organizational Trust and Organizational Citizenship Behavior.**



**Figure 3. Theory of Trusted Performance.**

When there is dyadic or organizational trust that moderates the situational risk of software development, the nature of the relationship is such that caring ensues and people are more willing to invest of themselves into the relationship through helpful behaviors. Examples of helping behaviors may include developers providing hand-off support to quality assurance test members. Quality assurance personnel may provide assistance in writing acceptance criteria to product owners, and support personnel may be integrated earlier into the process. Helpful behaviors increase task interdependence which has been shown to increase overall productivity for the team.

The level of trust impacting helpful behaviors can manifest itself at the individual, leader, or organizational level as the social context in which trust develops happens at different levels within an organization. Trust can be viewed as a measure of the relationship between an individual and another individual, a leader, or an organization.

## DISCUSSION

Within the theory of trusted performance, OT and OCB fit together between risk taking in relationship and the OCB antecedent characteristics. It's important as it creates an integrated model from input through outcome, providing clarity on which antecedents are important to provide the desired outcome of helping behaviors. The following discussion provides practical guidance on how organizational leaders can leverage this understanding within their SDLC to deliver higher performance.

As explained earlier in this paper, ability is the first antecedent to trust and forms the foundation for the acceptance of situational risk within the work environment. For example, within the development and testing disciplines, encouraging thoughtful discussion on projects in an informal setting can help to build an understanding of the ability of the team members. A rich architectural discussion that challenges assumptions helps to provide clarity of the capability and experience of individual participants. In these sorts of discussions, input is typically provided based on experience, providing inherent transparency of ability. By encouraging self-development, the organizational leader sends a message to the team that ability is important, and when an individual attends a conference or communicates what they are learning from coursework—a clear message is sent on the level of ability. It is important to note there is a level of understanding of ability that is transferred as informal power within an organization.

Integrity is the second antecedent to trust and is an attribute that is more tied to the individual, meaning it is up to the individual to communicate their level of integrity. The most impactful way to determine an individual's integrity is through observation of action, determining if the individual is truly doing what they say. Effectively managing a product backlog or bug queue, meeting committed deadlines, and discussing system design through code reviews are all good ways for an individual to communicate through action their integrity.

The third antecedent to trust development in relationship is the area of benevolence, which, as described previously in this paper, is the clear understanding the trustee has the interests of the trustor at the forefront of their action. Benevolence is a value judgment that is built over time through experience and understanding based on the actions of both participants in the trust relationship. This understanding can be built or accelerated by creating space for individuals in the organization to get together in both formal and informal ways and practice their interpersonal relationship building skills. Discussions about an individual's values, goals, and aspirations in the software development setting will help to declare motivations which can be facilitated through team building exercises, tools like instant messaging, video and audio chat, and through events like team meals. The key to accelerating benevolence understanding is to provide opportunity for interaction for longer durations at the outset of a project.

The stronger and quicker each of these three trustworthiness attributes is built, the greater the likelihood trusted performance will grow early in the SDLC and the greater the likelihood of successful outcomes given the complexity of the tasks. Helping behaviors are the outcome that supports the necessary level of teamwork for team achievement.

## **SUMMARY**

This conceptualization of trusted performance needs to be further tested to clarify the correlations between relationship building activities and team performance increases and establish a way forward in trust development, organizational citizenship behavior, and performance increase theory.

Software development holds a number of unique characteristics from other organization disciplines including task complexity, constrained resource and time schedules, and varied levels of resource education and ability. Given these serious challenges, it is important that organizational leaders desirous of improved outcomes from team software development projects focus on creating an environment where organizational trust and organizational citizenship behavior flourish. It is through this investment into an organization that "helping behaviors" surface which in turn contributes in a positive way to task interdependence, and finally delivering "trusted performance" and greater team performance. More research and testing is needed to fully understand this relationship; this paper presents one place to begin.

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