Good Project Management Practices Drive More Than Project Success: Learning, Knowledge Sharing and Job Satisfaction in IT Project Teams

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Good Project Management Practices
Drive More Than Project Success:
Learning, Knowledge Sharing
and Job Satisfaction in
IT Project Teams

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Abstract

Project management practices are designed to help achieving a desired project outcome. However, their effect on project team members and their environment has rarely been investigated. Considering that a project team is essentially a small organization within an organization, good management practices, effective communication and collaborative relationships are critical for project success and overall organizational value. This study investigated the impact of following good project management practices on team members. Survey data from 327 team members across 15 industries suggests that these practices create a foundation of collaborative relationships and a project team environment of reciprocal accountability that fosters knowledge exchange, individual learning, performance and ultimately job satisfaction. Although not measured specifically in this study, previous research also suggests that enhanced job satisfaction reduces employee intention to leave and ultimately bolsters retention of skilled team members during IT projects.

Keywords: Project Management, Accountability, Knowledge Sharing, Learning, Job Satisfaction, Project Teams

Introduction

Project management practices are designed to ensure that the appropriate project metrics are developed and managed to achieve the desired project outcome. Their focal point is the project and many studies demonstrate their effect on project success (e.g. Fox, 2006; Jugdev and Muller, 2005; Yeo, 2002). However, the effect of project management practices outside the immediate objectives of a project and their unanticipated impact on project team environment have not been explored often. In this study, we investigate the effect of complying with the prescribed project management processes (Fong 2003) on learning, knowledge sharing and job satisfaction in IT project teams.

In a preliminary qualitative study of team members during information technology related projects, we found that knowledge sharing behavior varied based on project outcome and can be related to factors of accountability. In other words, that being held accountable for something or to someone can be a motivator of both knowledge sharing and individual learning. Thus,
in the context of project management, being held accountable for team activities can motivate individuals to cooperate with their teammates and to share knowledge while learning how to produce collectively timely project deliverables and ultimately achieve the goals and objectives of a project. This previously unexplored framework is the basis on which we have formed many of the hypotheses contained in this paper.

Knowledge sharing behavior among team members and individual learning is motivated by an attitude (or a cognitive state) that we labeled Social Accountability. We characterize Social Accountability as being accountable to other project team members and to the project environment which consists of perceived interdependencies and expectations. Understanding the role that social accountability plays in motivating knowledge sharing behavior and individual learning can help in advising project managers how to more effectively develop and engage communication and accountability mechanisms that promote collaboration, knowledge sharing and learning within their project teams. Accountability requires shared intention, responsibility, ownership, and commitment to action and has become a key driver for organizational learning, performance, design, and behavior. In organizations today, accountability is a very serious matter that gains high priority and much visibility. With increasing government regulation such as the Sarbanes-Oxley Act, board members and executives are even more concerned with the accounts of their organizational activities. Subsequently, project management practices too must adapt and provide suitable controls for the business process and activities in their jurisdiction. Figure 1 below outlines the hypothesized effect of compliance with project manager practices on team member social accountability and its mediation effects on knowledge sharing behavior and individual learning.

![Figure 1 Project Manager Practices - Team Accountability Model](image)

**Accountability**

To better understand social accountability we must have a good grasp of what it is to be accountable. Accountable, as defined by Webster is to be responsible, answerable, or liable to someone or to others, or for something or one’s acts. Harold Garfinkel who studied the concept states that “every setting organizes its activities to make its properties as an organized environment of practical activities detectable, countable, recordable, reportable, tell-a-story-about-able, analyzable and in short - accountable.” (Garfinkel 1967). Accountability makes the implicit concrete and the invisible visible. But, it does more than merely revealing actions; it solidifies them in a way that potentially makes them tangible evidence and reference points for reflection and future actions. Accountability forms a key element in organizational stability. According to Karl Weick, accountability is enacted and reenacted in organizations forming interlocking routines, mutually reinforcing interpretations, and patterns of communication (Weick 1995). These routines, interpretations, and communication patterns provide organizations with encoded means for sense making and the ability to sustain themselves over time.

Accountability goes beyond counting numbers to ensure positive actions and results, it is tightly linked to socialization and draws on communication and education (Zachary 2003). Building accountability in routine management methods helps to develop a sense of order and meaningfulness of action in the workplace. To be ‘Accountable’ means that one is willing to adhere to a particular code of conduct. It also implies that one is socialized to understand the meaning of that code of conduct and adopts it as an acceptable norm. Accountability is established to a large degree through social influence and establishes one's membership in a community. Accountability in this immediate sense means observable-and-reportable, “Liable to be called on to render an account” (Eriksen 2002). In our context, this liability to render an account may be initiated either by a team member or the project manager and helps to establish and sustain the social order in the team. The project manager can play a role in the formation of mutual accountability through various communication and control mechanisms. These mechanisms are discussed in the next sections of this paper.
Project Manager Communication and Accountability Practices

Accountability is discussed in the literature as a composite of five levels of organizational processes: accounting for legality, process accountability, performance accountability, program accountability, and policy accountability (Stewart, 1984). Overall, all imply different objects of accountability. Accounting for legality examines patterns, such as expenditures. Process accountability focuses on making the process or means visible, not the ends. Performance, program, and policy accountabilities concern the ends achieved and imply some means of measuring goals or expectations in precise terms. An effective project manager establishes accountability at all levels for favorable project and product deliverable outcomes. The project manager must make decisions and provide a sense of direction for the project team while serving as a stable hub for project communications (Michalski 2000). By effectively establishing and communicating a detailed project plan to the project team, members will understand their objectives and goals and what is needed to achieve them.

The organization, planning, communication and reporting methods developed and utilized by the project manager appear to have a noteworthy influence on collaboration and team member knowledge sharing. The more orderly, organized and well documented the project is the more likely project team members will cooperate, collaborate and share knowledge among them. The organization and reporting mechanisms that are utilized in a project environment relate to aspects of accountability and control where the project manager can make team members responsible for given project tasks and deliverables along with the associated timeline to accomplish them. Defining roles and responsibilities provides a mechanism to clearly assign accountability to those responsible for carrying out a task at all levels of the organization. When roles and responsibilities remain unclear, multiple untested assumptions often displace them. Clear definition of roles and responsibilities promotes autonomy, ownership, and self-accountability. When individuals are confident about what it is in their control and what is not, they can step forward to accept responsibility with full knowledge of what is expected from them. Roles and responsibilities exercised out of a sense of ownership inspire commitment. Defining roles and responsibilities identifies specific benchmarks of performance and creates boundaries around the project work to be done.

In the context of this study, the project manager practices concept is constructed as a second order latent variable and is hypothesized to consist of team member role clarity, project team schedule definition, and project systemic view, as follows:

- **Team Member Role Clarity** exists when the project manager clearly identifies a team member’s role on the project by thoroughly defining their tasks and related task dependencies.
  
  H1.1 *Team Member Role Clarity has a positive effect on project manager practices.*

- **Team Schedule Definition** exists when the project manager thoroughly defines and communicates project task and deliverable timelines / due dates to project team members.
  
  H1.2 *Team Schedule Definition has a positive effect on project manager practices.*

- **Project Systemic View** exists when the project manager has developed and conveyed a comprehensive project plan where project team members thoroughly understand the overall project goals, objectives and timelines along with how their tasks fit in to the big picture.
  
  H1.3 *Project Systemic View has a positive effect on project manager practices.*

Social Accountability in the Project Team Environment

Project manager accountability mechanisms like the Gantt chart also define and communicate task dependencies and the interdependencies of project team members’ task and schedule. These interdependencies foster social accountability though the perceived team members reciprocal needs. Accountability goes beyond control and reporting systems that are associated with the hierarchical manager-subordinate relationship (Roberts, 1991). For example, accountability may take a social form that emphasizes reciprocal relationships, mutual understanding, and interdependencies. Team member relationships can be between people, between organizational functions, and between organizational processes which can be significant and important in how accountabilities are valued. The project manager can create a sense of team member interdependency through group incentives, selection of team members with specialized and unique skills and joint task assignments. When
task assignments have shared team member responsibility and alignment of purpose, they have shown to promote cooperation, communication and knowledge sharing.

Team member interdependencies are fostered by the need for cooperation and the establishment of reciprocal accountability. In reality no real team will exist if everyone focuses on his or her own accountability. Reciprocal accountability requires an inherent commitment that each member makes to themselves and to other team members. This accountability requires both commitment and trust because in many cultures emphasis is on individualism. Furthermore, it is difficult for most professionals to put their career and reputation in the hands of others given that most organizations prefer individual accountability to team accountability. For example, most job descriptions, compensation plans, and career paths emphasize individual accomplishments and therefore tend to make people uncomfortable trusting their careers to project outcomes dependent on the performance and cooperation of others. When reciprocal accountability and team member interdependency is established, the level of cooperation and knowledge sharing among project team members is likely to increase.

Stewart also discusses and distinguishes between the concepts of "bonds of accountability" and "links of account." Bonds of accountability are contractually defined accountability relationships. Links of account imply an informal 'recognition of responsiveness' (Stewart 1984). Stewart's two concepts relate to those of Karl Weick which state that accountability forms and reinforces patterns of communication. The importance of accountability as a process is important in the recognition that it creates for the need to be responsive. In this context, it is the need to be responsive to follow team members. The recognition of responsiveness implies that there must be a continuous pattern of communication necessary to carry out a bond or contract. This informal 'recognition of responsiveness' through continuous communication can create mutual accountability among project team members to cooperate and share knowledge.

The idea that "we hold ourselves accountable" is much more powerful than "the boss holds me accountable". A collection of individuals starts to function as a real team only when members hold themselves mutually accountable (Katzenbach and Smith, 1994). Furthermore, interview responses with project team members in our preliminary study have clearly indicated that team member mutual accountability is a component of team members’ expectation or social peer pressure. The interviews also reveal that the team member expectations of each other fostered through mutual accountability, and have an affect on cooperation and knowledge sharing among individuals in a project team environment. Being accountable, people’s actions and statements are inevitably subject to evaluation by others. Such evaluations take place against a background of normative expectations that members of a particular community hold in common (Garfinkel 1967). The Theory of Planned Behavior addresses the similar framework of subjective norms where an individual’s beliefs about how people they care about will view the behavior in question, influences their actions (Ajzen 1991).

In the context of this study, the concept of social accountability is also constructed as a second order latent variable and is hypothesized to consist of perceived team independencies, perceived team to individual dependencies, and perceived team expectations, as follows:

- **Team Independencies exists when team members perceive that there is a shared need for the knowledge and skills of their other team members in order to be able to accomplish assigned project tasks.**
  
  **H2.1 Perceived Team Independencies has a positive effect on Social Accountability.**

- **Team to Individual Dependencies exists when a team member perceives that the team needs me (my knowledge and skills) in order for other team members to be able to accomplish their project tasks.**
  
  **H2.2 Perceived Team to Individual Dependencies has a positive effect on Social Accountability.**

- **Team Expectations exists when a team member perceives that other team members expect them to collaborate and share their knowledge and skills with others, which equates to a form of social peer pressure.**
  
  **H2.3 Perceived Team Expectations has a positive effect on Social Accountability.**

Good project manager practices as discussed previously are important in achieving a socially accountable project team environment. It is further hypothesized that good project manager practices foster a team environment of social accountability.

- That is, how socially astute a project manager is along with how thorough and comprehensive they are in defining and communicating the project plan to team members will influence the level of social accountability in the project team environment.
  
  **H3 Good Project Manager Practices have a positive effect on Social Accountability.**
Figure 2 below outlines in more detail the hypothesized causal relations of good project manager practices on team member social accountability. It is also hypothesized that social accountability mediates the effects of project manager practices on knowledge sharing behavior and individual learning.

- A socially accountable project team environment of interdependent needs and expectations promote cooperation and reciprocity which have a positive effect on team member knowledge sharing behavior.

  H4  Social Accountability has a positive effect on team member knowledge sharing behavior.

- A socially accountable project team environment of interdependent needs and expectations expose a team member to a variety of stimuli which have a positive effect on team member individual learning.

  H5  Social Accountability has a positive effect on team member individual learning.

Knowledge Sharing

Knowledge sharing can be understood as the behavior by which an individual voluntarily provides other social actors (both within and outside of the project team) with access to his or her unique knowledge and experiences (Hansen and Avital 2005). This conceptualization of knowledge sharing is closely related to information sharing as outlined by Jarvenpaa & Staples (2000): ‘Information sharing embeds the notion of ‘willingness to share’. In the same way, knowledge sharing represents the voluntary act of providing others with a certain access to one’s own knowledge and expertise. Various theoretical conceptualizations of knowledge sharing have been discussed extensively in the literature (e.g., Boland & Tenkasi, 1995; Cook & Brown, 1999; Szulanski, 1996) and few have attempted to examine intention to share knowledge (Bock et al 2005) in the context of overall organizational information technology governance. In all, further understanding knowledge sharing is foremost among the research topics that can yield high returns in organizational settings (Huber 2001).

The importance of knowledge sharing in the project team context may be even more significant given knowledge exchange is essential for favorable information technology project outcomes as well as individual and organizational learning. Therefore exploring the effects of knowledge sharing behavior on individuals within IT project teams is a worthwhile addition to this research study. It is hypothesized that the level of knowledge sharing behavior will influence individual learning, individual team performance and ultimately team member job satisfaction.

- The degree to which a team member shares their knowledge with others affects their perception of the project as a learning environment and of what they have learned (personal knowledge) in the process.

  H6  The extent of team member knowledge sharing behavior has a positive effect on his or her individual learning.

- The degree to which a team member shares their knowledge with others affects their perception of how well they performed and lived up to their expectations on the project team.

  H7  The extent of team member knowledge sharing behavior has a positive effect on his or her perceived individual performance.
Continuous individual and organizational learning is a necessary objective to build intellectual capital if an organization expects to stay competitive in a dynamic global economy. In the context of IT projects teams it is hypothesized that when a team member learns new things or enhances their comprehension and knowledge of a domain of interest, the individual will perform better and enjoy their job more.

- The degree to which a team member perceives that they have learned something and their personal knowledge has grown will affect their perception of how well they performed and lived up to their on expectations on the project team.

\[ H8 \quad \text{The extent of team member individual learning has a positive effect on his or her perceived individual performance.} \]

- The degree to which a team member perceives that they have learned something and their personal knowledge has grown will have an effect on their overall disposition and job satisfaction.

\[ H9 \quad \text{The extent of team member individual learning has a positive effect on his or her job satisfaction.} \]

- The degree to which a team member perceives how well they performed and lived up to their on expectations on the project team will have an effect on their overall disposition and job satisfaction.

\[ H10 \quad \text{The extent of team member perceived individual performance has a positive effect on his or her job satisfaction.} \]

The following figure 3 outlines in detail the complete hypothesized conceptual model of the causal relations for good project manager practices on team member social accountability. It also depicts the hypothesized mediation effects of social accountability on project manager practices for knowledge sharing behavior and individual learning. Additionally the affects of how knowledge sharing behavior and individual learning will influence individual team member performance and ultimately employee disposition and job satisfaction are illustrated.

Data Collection and Preparation

The study population sampled incorporated a variety of environments in 15 industry sectors including financial services, software, manufacturing, retail, government and universities. A sufficient sample of each industry sector was obtained to detect any variance among sectors. All types of team members were surveyed including IT and business professionals that have participated in a recent IT related project. The survey instrument was developed based on a combination of literature review and the results of the qualitative study data collected. The instrument was thoroughly tested to ensure construct validity and appropriateness for the focal phenomenon. Upon completion of instrument development and refinement, the survey was administered online. A qualified e-mail invitation was sent to approximately 3000 referrals who indicated that they either work in the IT field or rely on information technology in their daily work activities. Over 800 individuals completed the survey in which 378 identified themselves as a team member who had participated in a recent IT related project (in which they specifically named and described). The other respondents were mainly project managers, sponsors, auditors or other administrative positions. It was important to only select team members as the survey items of interest specifically asked question relating to their observations of the practices of the project manager on their specific project.
The data collected via this online survey was analyzed using SPSS and AMOS to determine the validity and reliability of the model and its associated constructs. The 378 team member respondent records, which represented an estimated response rate of 27%, were scrutinized for missing data items and limited variation pattern responses and then trimmed to 327. The 10 hypothesized variables emerged through exploratory factor analysis (EFA), as per our expectations. Two groups of three factors each formed two second-order factors that reflected respectively Project Manager Practices and Social Accountability. The item loadings of all factors demonstrated convergent and discriminate validity along with a measurement invariance test evaluating a randomly split dataset. The estimated Cronbach Alpha reliability of all the variables was reasonably high ranging at the .75 -.95 level. See Table 1 for the number of items per construct and corresponding reliability estimate statistic.

### Table 1 - Descriptive statistics and reliability estimates.

<table>
<thead>
<tr>
<th>Construct (Composite)</th>
<th>Items</th>
<th>Mean</th>
<th>S.D.</th>
<th>Reliability</th>
</tr>
</thead>
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<tr>
<td>Project Manager Practices</td>
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<td>3.76</td>
<td>1.15</td>
<td>.86</td>
</tr>
<tr>
<td>Member Role Clarity</td>
<td>3</td>
<td>3.73</td>
<td>1.03</td>
<td>.94</td>
</tr>
<tr>
<td>Schedule Definition</td>
<td>2</td>
<td>3.69</td>
<td>1.11</td>
<td>.84</td>
</tr>
<tr>
<td>Project Systemic Definition</td>
<td>3</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Accountability</td>
<td>3</td>
<td>5.66</td>
<td>1.16</td>
<td>.83</td>
</tr>
<tr>
<td>Team Reciprocal Needs</td>
<td>2</td>
<td>5.56</td>
<td>1.13</td>
<td>.75</td>
</tr>
<tr>
<td>Team Needs Me</td>
<td>2</td>
<td>5.94</td>
<td>.90</td>
<td>.82</td>
</tr>
<tr>
<td>Team Expectations</td>
<td>1</td>
<td>5.67</td>
<td>.96</td>
<td>.85</td>
</tr>
<tr>
<td>Knowledge Sharing Behavior</td>
<td>2</td>
<td>4.13</td>
<td>.78</td>
<td>.95</td>
</tr>
<tr>
<td>Individual Performance</td>
<td>2</td>
<td>4.26</td>
<td>1.51</td>
<td>.94</td>
</tr>
<tr>
<td>Individual Learning</td>
<td>4</td>
<td>4.95</td>
<td>1.52</td>
<td>.93</td>
</tr>
</tbody>
</table>

N=327 * Indicates 5 point scale (all others are 7 point Likert)

### Analysis and Findings

A structural equation model was specified in AMOS to test the hypothesized model and assess its overall fit. In the final model, all standardized loadings were significant at the p<.001 level and paths for mediation testing were also added to determine if the applicable direct effects were significant (i.e. Paths from Project Manager Practices to the dependent variables.) The overall model fit statistics were CFI .961, GFI .952, RMSEA .075, and SRMR .046, which are all within the acceptable range.

All but two of the hypothesized IT Project Manager Practices - Social Accountability conceptual model construct casual relations were statically significant. And it is insightful to note that these paths were highly significant (.001 level or better). The following Table 2 lists factor correlations and Table 3 lists the hypothesized path relations and regression statistics.

### Table 2 - Factor Correlations

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Proj Manager Practices</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - Member Role Clarity</td>
<td>0.791</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>3 - Schedule Definition</td>
<td>0.804</td>
<td>0.636</td>
<td>1</td>
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<td></td>
<td></td>
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<tr>
<td>4 - Proj Systemic Definition</td>
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<td>0.619</td>
<td>0.989</td>
<td>1</td>
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<td>5 - Social Accountability</td>
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<td>0.241</td>
<td>0.239</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>6 - Team Reciprocal Needs</td>
<td>0.263</td>
<td>0.224</td>
<td>0.277</td>
<td>0.245</td>
<td>0.666</td>
<td>1</td>
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<tr>
<td>7 - Team Needs Me</td>
<td>0.321</td>
<td>0.264</td>
<td>0.268</td>
<td>0.279</td>
<td>0.786</td>
<td>0.546</td>
<td>1</td>
<td></td>
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<tr>
<td>8 - Team Expectations</td>
<td>0.265</td>
<td>0.241</td>
<td>0.245</td>
<td>0.285</td>
<td>0.719</td>
<td>0.478</td>
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<td>1</td>
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<td>9 - Knowledge Sharing Behavior</td>
<td>0.277</td>
<td>0.219</td>
<td>0.222</td>
<td>0.240</td>
<td>0.652</td>
<td>0.424</td>
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<td>0.468</td>
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<td>10 - Individual Performance</td>
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<td>0.334</td>
<td>0.352</td>
<td>0.412</td>
<td>0.274</td>
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<td>0.296</td>
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<td>11 - Individual Learning</td>
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<td>0.374</td>
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<td>12 - Job Satisfaction</td>
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<td>0.467</td>
<td>0.505</td>
<td>0.418</td>
<td>0.278</td>
<td>0.316</td>
<td>0.300</td>
<td>0.413</td>
<td>0.387</td>
<td>0.681</td>
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</tbody>
</table>
Table 3

IT Project Manager Practices - Social Accountability Model
Hypothesized Relations Regression Weights

<table>
<thead>
<tr>
<th>H:</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Standard Estimate</th>
<th>Std Err</th>
<th>t-val</th>
<th>Sig.</th>
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<td>Project Manager Practices</td>
<td>Task/Role Clarity</td>
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<td>0.054</td>
<td>18.224</td>
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<td>H1.2</td>
<td>Project Manager Practices</td>
<td>Project Systemic Definition</td>
<td>0.869</td>
<td>0.051</td>
<td>18.527</td>
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<td>H1.3</td>
<td>Project Manager Practices</td>
<td>Schedule Definition</td>
<td>0.804</td>
<td>0.053</td>
<td>15.582</td>
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<td>H2.1</td>
<td>Social Accountability</td>
<td>Team Needs Me</td>
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<td>0.108</td>
<td>10.575</td>
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<td>Social Accountability</td>
<td>Team Reciprocal Needs</td>
<td>0.567</td>
<td>0.086</td>
<td>10.263</td>
<td>***</td>
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<td>H2.3</td>
<td>Social Accountability</td>
<td>Team Expectations</td>
<td>0.717</td>
<td>0.110</td>
<td>10.263</td>
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<tr>
<td>H3</td>
<td>Project Manager Practices</td>
<td>Social Accountability</td>
<td>0.424</td>
<td>0.046</td>
<td>9.100</td>
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<td>H4</td>
<td>Social Accountability</td>
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<td>Social Accountability</td>
<td>Individual Learning</td>
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<td>H7</td>
<td>Knowledge Sharing Behavior</td>
<td>Individual Learning</td>
<td>0.049</td>
<td>0.075</td>
<td>0.692</td>
<td>0.489</td>
</tr>
<tr>
<td>H8</td>
<td>Individual Learning</td>
<td>Job Satisfaction</td>
<td>0.493</td>
<td>0.040</td>
<td>11.720</td>
<td>***</td>
</tr>
<tr>
<td>H9</td>
<td>Individual Learning</td>
<td>Individual Performance</td>
<td>-0.037</td>
<td>0.051</td>
<td>-0.721</td>
<td>0.471</td>
</tr>
<tr>
<td>H10</td>
<td>Individual Performance</td>
<td>Job Satisfaction</td>
<td>0.136</td>
<td>0.041</td>
<td>3.258</td>
<td>0.001</td>
</tr>
</tbody>
</table>

*** Indicates more significant than 0.001

<table>
<thead>
<tr>
<th>Project Manager Direct Effect on Dependent Variables (For Social Accountability - Partial Mediation Testing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager Practices</td>
</tr>
<tr>
<td>Project Manager Practices</td>
</tr>
<tr>
<td>Project Manager Practices</td>
</tr>
</tbody>
</table>

The mediation effects of Social Accountability were also confirmed. The effect of Project Manager Practices on knowledge sharing behavior is fully mediated by Social Accountability but only partially mediates individual learning. This indicates that Social Accountability in the project team environment maybe essential for promoting knowledge exchange among team members. Job Satisfaction is directly affected by project manager practices and is enhanced by both team member’s learning and meeting their own project performance expectations.

Figure 4 below depicts graphically these quantitative findings and the significance of construct relationships.

![Figure 4: Project Manager Practices & Social Accountability Quantitative Model](image_url)

**Note:** All standardized coefficients are significant at the p<.001 level.
Discussion and Implications

This study explored factors that influence individual learning and motivate knowledge sharing behavior among team members during information technology related projects. We have provided evidence that being held accountable for something or to someone can be a knowledge sharing motivator. The literature suggests two perspectives or kinds of motivators: external and internal (Ryan and Deci 2000). External or extrinsic motivation refers to a stimulation to act that stems from social accountability to someone or something in one’s environment. Internal or intrinsic motivation refers to a stimulation to act that stems from being accountable to one’s own desires, emotions or personal values. Being accountable to self affects intrinsic motivation and accountability to others affects extrinsic motivation. Both self and social motivational forms influence knowledge sharing behavior. Further study is necessary to understand the origination, integration, and interaction of these motivational forms in project team environments.

Insight about project team performance is likely to be where learning, knowledge, and collaboration intersect. The project environment should be designed carefully in order to realize its potential as an enabler that brings those three components together to drive positive outcomes. Contrary to the commonly found silo-based project management, organization should promote learning and access to knowledge not only within but also across all project teams. Organizational learning is increasingly becoming a priority among organizations that are interested in increasing competitive advantage, innovativeness, effectiveness and agility. The focus is gradually shifting from individual learning to organizational learning. Just as learning is essential for the growth of individuals, it is equally important for organizations. A “learning organization” is a firm that purposefully constructs structures and strategies so as to enhance and maximize organizational learning (Dodgson 1993). The role of the project manager as facilitator is an important link for collective knowledge sharing in teams and could make a significant contribution to maximizing the core competence of learning in the organization (Bryans and Smith 2000).

Knowledge sharing within project teams is widely recognized as a critical success factor. In addition to its contribution to project success, knowledge sharing plays a critical role in promoting innovation, developing organizational agility and generating overall organizational value. A culture that advocates knowledge sharing behavior is especially important today when teams are comprised of interdisciplinary members (Marchewka 2003). Furthermore the increased level of project team knowledge exchange will enhance team member performance which along with individual learning will positively influence job satisfaction. We were not able to explicitly measure project team employee retention in this study; however the positive effect of good project management practices on job satisfaction and employee disposition suggests that a higher retention level is probable in well-managed IT projects, and conversely loss of valuable employees due to mismanaged projects.

Conclusion

Based on the noteworthy findings in this study, we submit that good project management and communication practices foster a socially accountable project team environment that yields more than just favorable project outcomes. This environment increases the likelihood of exchange among team members, which in turn provides stimuli for the knowledge sharing and individual learning. The evidence also suggests that collective knowledge exchange and learning within information technology related projects lead to a variety of positive outcomes and can facilitate an improvement in team member performance and job satisfaction. Future research is required to gain a greater understanding of both the facilitator role and the development necessary for project managers to be effective as promoters of knowledge sharing and learning in the project team environment.

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