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Action-centered team leadership influences more than performance

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Abstract

Purpose – Building on a social-technical approach to project management, the authors aim to examine the effect of action-centered leadership attributes on team member's learning, knowledge collaboration and job satisfaction during IT-related projects.

Design/methodology/approach – Structural equation modeling was utilized to assess the work environment of team members as well as the leadership practices of their respective project team leaders. Data were collected with a survey questionnaire from 327 team members in a variety of organizations in 15 industry sectors including financial services, software, manufacturing, retail, government and universities.

Findings – The identified action-centered project leadership practices (effective task management, team efficacy cultivation, and individual autonomy support) create a project team environment that fosters individual learning and knowledge collaboration along with individual performance and job satisfaction, and ultimately project success.

Research limitations/implications – The action-centered leadership practices construct, developed in this study, can be a good surrogate measure of what is required to be an effective leader in an IT project team environment. The main limitations of the research are those inherent in the survey method (self-reported; subjective data).

Practical implications – In a project team environment, it is essential that all team members collaborate effectively to increase the likelihood of project success. The implication for managers from these findings is that concentrating more on the identified action-centered leadership practices can positively influence the team environment.

Originality/value – Although previous studies have described attributes that influence team performance, a clearer understanding of what team leadership practices enable a project manager to be effective warrants further investigation. A second order construct merges these team leadership practice attributes and validates its use.

Keywords Action-centered leadership, Knowledge collaboration, Individual learning, Job satisfaction, Project teams

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Introduction

Project management practices are designed to ensure that the appropriate project metrics are developed and that projects are managed to achieve the desired project outcome. Many studies demonstrate their positive effect on project success (Jugdev and Muller, 2005). However, the effect of project management leadership practices outside the immediate objectives of a project and their unanticipated impact on the project team environment have not been explored fully (Turner and Muller, 2005). In this study, we investigate the effect of complying with the prescribed project management processes (Fong, 2003) on knowledge collaboration, individual learning, performance, and job satisfaction in IT project team environments.

The objective of any project manager should be to create an environment that provides personal incentives and motivation for individuals to cooperate and collaborate with their team members and for the team to collectively learn to better understand and enable to produce timely project deliverables and ultimately, the achievement of project goals and objectives. Leveraging the appropriate management tools, techniques, and methodologies alone may not yield complete results. A successful project requires more than sound organizing and controlling management skills, it requires leadership. John Kotter (2001) along with many others propose that leadership is different than management. Traditionally, management is defined as planning, organizing, controlling, staffing, evaluating, and monitoring (Shriberg *et al.*, 2005). These aspects are seen as more technical in nature and focus on the engineering of a project. Although management and leadership tend to overlap, leadership centers on vision, change and getting results (Kouzes and Posner, 2002). In this respect, project leadership deals more with the social aspects of the project and focuses more on the people involved. All agree that both management and leadership practices are needed for effective IT project management, but we make this distinction – between the technical and social sides - for the purposes of this research.

Successful project management depends on both the leadership competence and the management competence of the project manager (Muller and Turner, 2010). The effective overlapping and efficient integration of these competences is essential to nurture a project team environment that can support the team as a whole, the individual team members, and effectively be conducive to attaining the project tasks. The contrived separation between management (i.e. technical) and leadership (i.e. social) considerations is problematic, may even be dysfunctional (Mintzberg, 2004). Therefore embracing an integrated approach to project management consisting of the social or human aspects of leadership as well as the technical or engineering aspects of project management is essential.

Action-centered leadership

John Adair (1973) developed the notion that working groups or teams develop a personality that like an individual, is unique and conditional to the situation. However, the parallel continues that groups share, as do individuals, certain common "needs". Adair posited three areas of need in such working groups or teams. Two of these are properties related to the group as a whole; the need to accomplish the common task and the need to be maintained as a cohesive social unity (or team). The third area is constituted by the amalgam of each of the individual needs of team members. Maslow's Hierarchy suggests some of the main needs that we have as individual human beings

(belonging, esteem, self-actualization) can be met in full or part by participating in working teams. Leaders personify or exemplify the qualities expected or required in their working groups. Adair held that the effectiveness of a leader is determined by his or her ability to help the team and the individuals to meet these three areas of need. Adair illustrated these needs by way of a three circle Venn diagram which represents three overlapping project needs that must be facilitated, or satisfied by a project leader. Adair referred to managing these overlapping needs as action-centered leadership.

The integration of these three action-centered leadership dimensions covers both the social and the technical aspects of project management practices that are employed in IT projects. The three elements of the circle model (i.e. task, team, and individual) form a framework for joining management and leadership in the context of IT project management (Cadle and Yeates, 2004). The model is also aligned with the socio-technical approach to IT project management (Marchewka, 2006) which promotes IT project success by focusing on both the technical and human sides of project management. In the following paragraphs we discuss each of the social and technical aspects of project management leadership and the integration of task, team, and individual. Again, from a rhetorical standpoint, the social practices address the needs of the project team and of the individual teammates, and subsequently the technical practices refer to the project engineering aspects. Next, we discuss the social and technical practices of project management in further details.

Project manager social practices

In the context of this study, we focused on two dimensions of project manager leadership practices; the social or human and the technical or engineering side of project management. In order for the project manager's leadership practices to be successful, he or she must effectively demonstrate such attributes as: the ability to communicate, the ability to deal with people, the ability to create and sustain relationships, and the ability to organize (Marchewka, 2006). Interestingly, three of these four attributes deal with the human side of project management. Clearly, people are the most important resource on an IT project. Human resource management practices focus on creating and developing the project team members as well as understanding and responding appropriately to the behavior side of project management. Two circles of Adair's action-centered leadership model address the social practices of a project manager which relate to the individual and to the team.

In the social context, the self-determination theory (Ryan and Deci, 2000) proposes that the interpersonal context (such as that found in the project team environment) influences the extent to which individuals are or can be autonomous. The concept of autonomy support (Deci and Ryan, 1985) means that an individual in a position of authority (e.g. a project manager) takes the other's (i.e. a team member's) perspective, acknowledges the other's feelings, and provides the other with pertinent information and opportunities for choice, while minimizing the use of pressures and demands – essentially an empathetic response to other team members. An autonomy-supportive project manager might, for example, provide team members with necessary information and insights while encouraging them to use this information in solving problems or to achieve an objective in their own self-directed way. Furthermore the project manager is autonomy supportive when he encourages team members to ask questions and then responds to those questions fully and carefully along with listening

to how team members would like to accomplish their tasks. Edward Deci (1996) affirmed "The evidence is clear that if people in one-up positions act to facilitate a sense of autonomy and competence in others whom they teach or supervise, those others will remain interested and energized."

Relating to the social context of a team, Bandura (1997) introduced the concept of collective efficacy which is a construct that defines a group's shared belief in its own collective ability to organize and execute a course of action. Similar to supporting an individual's autonomy, an action-centered project leader must cultivate and support the team's (collective) efficacy. Moreover, a group's shared perceptions influence the attitudes and behaviors of the group and as the group's efficacy increases, the group's perceptions, beliefs, and norms take precedence over an individual's perceptions (Kozlowski and Klein, 2000). Bandura further explained that a group's shared belief was reflected in the individuals' perceptions of the group's capabilities. Additionally, collective efficacy beliefs across all domains such as sports and business influence what people choose to do as a group, how much effort they put into their group endeavors, and their persistence when collective efforts fail to produce quick results or encounter obstacles to success (Edmonds *et al*., 2009). The empirical research of Jex and Bliese (1999) positively correlated collective efficacy with performance in military teams engaged in combat.

Furthermore, a group's collective efficacy perception can be derived from either an accumulation of individual members' judgments of personal capabilities to perform within the team or an aggregation of individual members' judgments of the team's capabilities as a whole to perform. In this way, individual perceptions of collective efficacy represent an evolving effect that originates from the team. Using an experimental design, Hodges and Carron (1992) confirmed there was a causal impact of perceived collective efficacy on team performance. In their study, teams whose collective efficacy was raised improved subsequent team performance, whereas teams whose perceptions of efficacy were lowered suffered performance decrements. Therefore it is posited that an action-centered project leader should cultivate and support a collective belief that the team is capable of accomplishing the tasks at hand in order to achieve a favorable project outcome.

The third circle of Adair's action-centered leadership model relates to the need to organize and achieve the tasks at hand. Here the technical practices of a project manager relating to the engineering and implementation of an overall project plan are essential for effective task management.

Project manager technical practices

Marchewka (2006) outlined the four project manager attributes needed to be effective (three of which are human or social oriented). The fourth essential attribute, the ability to organize, is also identified as the main project management project engineering practice; the activity that defines and manages the scope, schedule and budget of the project. 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. These four project dimensions create project team objectives and associated levels of the work breakdown structure to enable effective task management. The project manager

must therefore establish, initiate, administer, and communicate effective project team organizational processes and control mechanisms to ensure that all defined project tasks are completed and deliverables are achieved as expected.

The organization, planning, communication, and reporting methods developed and utilized by the project manager appear to have a noteworthy influence on team collectiveness and collaboration. This seems reasonable. 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 utilized relate to aspects of 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 accountability. According to Karl Weick, accountability is enacted and reenacted in organizations by forming interlocking routines, mutually reinforcing interpretations, and patterns of communication (Weick, 1995). When individuals are confident about what 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 the interdependencies of team members' tasks and the specific benchmarks for performance and creates boundaries around the project work to be done.

The most commonly used reporting and control mechanisms are work breakdown structures, the project plan, and the Gantt chart. A Gantt chart is a graphical illustration that communicates and compares a project's planned tasks and activities with actual progress of the associated individuals over time. Through the methodical use of work breakdown structures, Gantt charts, and projects plans, the project manager can thoroughly define and communicate the role and participation of each team member including, their project tasks, the corresponding completion dates, team member and task interdependencies in an overall systemic view of the project and its deliverable objectives.

Research study conceptual design

Good project manager leadership practices are critical for the nurturing of collaboration and commitment in project team environments. Therefore, in this study, we operationalize project manager leadership practices as a construct which includes both social and technical dimensions, as follows: project task management, team development, and autonomy support. The project manager action-centered leadership practices construct is hypothesized as a second order latent variable and is operationalized as consisting of project task management, team efficacy, and individual autonomy support. Subsequently, we developed the action-centered leadership construct based on the following propositions.

The project task management reflects the extent to which a project manager has developed and conveyed a comprehensive project plan where project team members thoroughly understand the overall project goals and objectives along with how their tasks are to be achieved and fit in to the project big picture. As a dimension of Adair's

model, it is conjectured that project task management contributes to the overall effectiveness of action-center leadership practices. This leads to the following hypothesis:

H1.1. Project task management has a positive effect on action-centered leadership practices.

The project team efficacy reflects the extent to which a project manager selects, develops, and supports a team of individuals who collectively share belief in their conjoint capabilities to organize and execute courses of action required to produce given levels of attainment. Bandura (1997) denotes to this group phenomenon as collective efficacy which is an extension of the social-cognitive theory of self-efficacy (Bandura, 1986). As a dimension of Adair's model, it is conjectured that cultivating team efficacy contributes to the overall effectiveness of action-centered leadership practices. This leads to the following hypothesis:

H1.2. Project team efficacy has a positive effect on action-centered leadership practices.

The individual autonomy support reflects the extent to which a project manager is supportive of each team member providing necessary information and choices along with encouraging team members to ask questions and pursue self-directed tasks. As a dimension of Adair's model, it is conjectured that an autonomy supportive project manager contributes to the overall effectiveness of action-centered leadership practices. This leads to the following hypothesis:

H1.3. Individual autonomy support has a positive effect on action-centered leadership practices.

Figure 1 outlines in the hypothesized action-centered leadership second-order construct model containing the project task management, team efficacy and individual autonomy support components of good project manager action-centered leadership practices.

Project action-centered leadership practices effect

Project action-centered leadership is concerned with more than just project outcomes. Benefits from action-centered project leadership include personal growth of individual

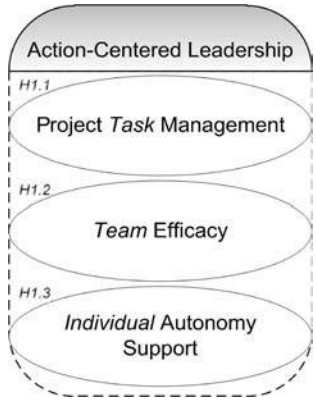


Figure 1.
Action-centered leadership components model

project team members. In addition, action-centered project leadership practices enhance individual team member perceived performance and also increase their individual learning and knowledge collaboration. These factors contribute to a project team environment where members enjoy their experiences adding to the perceived impact and organizational value of the project.

Team member learning

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. Individual learning and the team learning environment can be positively influenced by certain team leadership characteristics that address aspects of the task, team and individual (Sarin and McDermott, 2003). And factors that promote both positive and negative learning stimuli can enhance the learning process in teams (Sessa *et al.*, 2011). In the context of IT projects teams, it is hypothesized that good action-centered project leadership practices cultivate a learning project team atmosphere by providing personal growth opportunities and by enabling a team member to learn new things which enhances their comprehension and knowledge of a domain of interest. This leads to the following hypothesis:

H2. Good action-centered project leadership practices has a positive effect on team member individual learning.

Team member knowledge collaboration

Knowledge collaboration can be understood as the behavior by which an individual voluntarily shares their knowledge thereby providing 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 collaboration is closely related to information sharing behavior which is related to the notion of "willingness to share" (Jarvenpaa and Staples, 2000). In the same way, knowledge collaboration represents the voluntary act of providing others with a certain access to one's own knowledge and expertise. In the context of IT projects teams, it is hypothesized that good action-centered project leadership practices will promote a project team atmosphere that enhances knowledge sharing and collaboration among team members. This leads to the following hypothesis:

H3. Good action-centered project leadership practices have a positive effect on the degree of team member knowledge collaboration.

Various theoretical conceptualizations of knowledge sharing have been discussed extensively in the literature (i.e. Boland and Tenkasi, 1995; Cook and Brown, 1999; Szulanski, 1996) and few have attempted to examine the intention to share knowledge in the context of overall organizational information technology governance (Bock *et al.* 2005). In all, a further understanding of knowledge is a key research topic that can yield high returns in organizational settings (Huber, 2001). The importance of knowledge collaboration in the project team context may be even more significant given knowledge exchange is essential for favorable information technology project outcomes. Therefore exploring the effects of knowledge sharing behavior on individuals within IT project teams is a worthwhile research study. It is hypothesized that the level of knowledge collaboration within a project team environment will

influence individual learning, individual team performance and ultimately team member job satisfaction. This leads to the following hypotheses:

H4. The degree of team member knowledge collaboration will have a positive effect on team member perceived individual learning.

H5. The degree to which a team member shares their knowledge with others will affect their overall disposition and job satisfaction.

Knowledge collaboration and continuous individual and organizational learning is necessary to build intellectual capital and keep an organization competitive in a dynamic global economy (Marquardt, 2002; Subramaniam and Youndt, 2005). Chan *et al.* (2003) found that team learning was significantly related to organizational learning. Sarin and McDermott (2003) demonstrated that team learning and the application of knowledge influences team performance. John Redding (2000) described a fundamentally new and different form of teamwork based on collaborative learning cycles which yields high performance or "radical teams". And a learning and high performing team will influence its team members overall disposition and job satisfaction. In the context of IT projects teams it is hypothesized that when a team member shares their knowledge and learns new things enhancing their comprehension and knowledge of a domain of interest, the individual will perform better and enjoy their job more. This leads to the following hypotheses:

H6. The level of team member perceived individual learning will have a positive effect on his or her job satisfaction.

H7. The level of team member perceived individual learning will have a positive effect on their perceived individual performance.

H8. The level of team member knowledge collaboration will have a positive effect on their perceived individual performance.

H9. The level of team member perceived individual performance will have an effect on their overall disposition and job satisfaction.

We have posited that project manager action-centered leadership practices create a foundation of collaborative relationships and a project team environment that enhances individual learning, individual performance, and ultimately job satisfaction. Building a model based on team collaboration and learning is predictive of team performance and ultimately project success (Jackson, 2001). It is also hypothesized that the degree of job satisfaction of each team member and the level of their individual performance will contribute to the overall project outcome. This leads to the following hypotheses:

H10. The degree of team member job satisfaction has a positive effect on his or her perception of the project outcome.

H11. The level of team member perceived individual performance has a positive effect on his or her perception of the project outcome.

Figure 2 outlines in detail the complete hypothesized model of the causal relations for good action-centered project leadership practices on individual learning and

knowledge collaboration. It also depicts the hypothesized mediation effects of individual learning and knowledge collaboration on action-centered project leadership practices for individual learning, individual performance and job satisfaction. Finally, the mediation effects of job satisfaction on individual learning for perceived project outcome are illustrated.

Data collection

For an effective test of the hypotheses developed in the model, the study collected data from a variety of environments in 15 industry sectors with the majority coming from financial services, software, manufacturing, retail, government and universities. A suitable sample (30-45 responses) from each of the majority industry sectors was obtained and tested to detect any variance among these sectors. Varying 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 a preliminary qualitative study. Wherever possible, existing scales were used and adapted for use in the context of an IT project environment. The survey items for constructs perceived project outcome and task management were developed from preliminary qualitative study interview responses and items tested (Braun and Avital, 2007, 2010). Constructs were measured using either a seven-point Likert scale or five-point gradient scale as defined by the reference literature. See the Appendix (Table AI) for further details about the measures and their properties.

The survey instrument was tested to ensure construct validity and appropriateness for the focal phenomenon. On 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, 378 identified themselves as a team member who had participated in a recent IT related project (one in which they specifically named and described and became their reference project for the survey). The other respondents were mainly project managers, sponsors, auditors or other administrative positions. This categorization was important so we could select team members to get the "team member" observations of the practices of the project manager on their specific project. The survey response rate was approximately 27 percent. Of the 327 team member responses utilized 54 percent were male and 46 percent female. The respondent age distribution was 4 percent under 25, 21 percent 26-35, 35 percent 36-45, 29 percent 46-55, and the remaining 11 percent 56 or older.

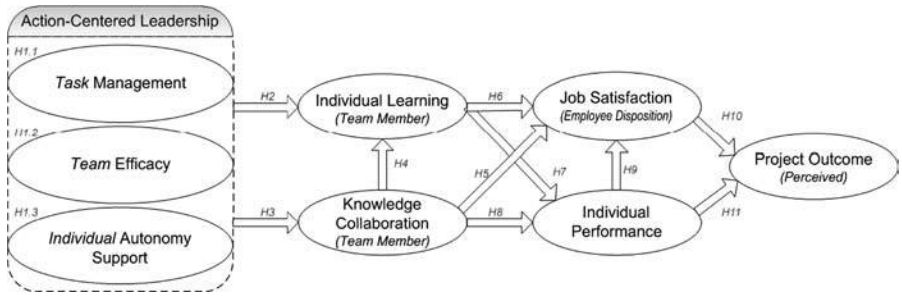


Figure 2.
Action-centered project leadership conceptual model

Data analysis

Data collected was analyzed using descriptive statistic methods and exploratory factor analysis (EFA) using SPSS 19 and measurement invariance testing, confirmatory factor analysis (CFA), and structural equation modeling using AMOS 19 to determine the validity and reliability of the model and its associated constructs. The 378 team member respondent records were scrutinized for missing data items and limited variation pattern responses and then trimmed to 327. A SPSS EFA procedure was executed in which nine factors emerged from this dataset which aligned with survey development expectations. Based on these results, a first order CFA measurement model was developed in AMOS to further test the nine factor outcome. The model fit statistics were good and the item loadings of all factors passed convergent and discriminate validity tests. The concern of common method variance was assessed satisfactorily utilizing the Harman Single-Factor test in SPSS (Podsakoff and Organ, 1986). High factor correlation was examined in AMOS using the correlation constraint Chi Square difference test. A measurement invariance test was performed utilizing a 500 sample AMOS bootstrapping procedure to determine any excessive standard error difference between the bootstrap distribution and the CFA first order measurement model loading for each survey item. The correlations among the variables are provided in Table I.

From three of the nine factors, one second order factor was constructed for action-centered project leadership practices. It should be noted that the item loadings on action-centered leadership were practically even, signifying the relative importance of the measured components in all three factors as Adair (2011) discusses. All factors, including the second order factor, exceeded the recommended Cronbach alpha reliability threshold of 0.70. Table II lists the action-centered project leadership practices second order construct factor loadings. Other factor item loading and statistical information is provided in the Appendix (Table AI).

A structural equation model was built in AMOS to test the hypothesized action-centered project leadership practices conceptual model. Paths for mediation testing were also added to determine if the applicable direct effects were significant (i.e. action-centered project leadership practices to the dependent variables. This second order structural model produced fit statistics that are very good (CFI 0.947, AGFI 0.834, RMSEA 0.059, and SRMR 0.048), clearly indicating that the structural construct relations of the conceptual model well represent the underling 327 team member observations of their project managers' leadership practices and the project team environment.

Findings

All but three of the hypothesized action-centered project leadership practices conceptual model construct casual relations were statistically significant. It is noted that all action-centered leadership variables to dependent variable direct paths were highly significant (more than 0.001 level) indicating an internally consistent model. Table III lists these hypothesized path relations and regression statistics.

The three dimensions; task management, team efficacy, and individual autonomy support within the second order research construct (action-centered project leadership practices) were statistically found to be a practical representative of Adair's action-centered leadership three circle model. Affirmed by the survey responses,

Table I.
Action-centered project leadership model factor correlations

Factor correlations	Task management	Team efficacy	Individual autonomy support	Individual learning	Knowledge collaboration	Job satisfaction	Individual performance	Project outcome
Task management	1.000							
Team efficacy	0.676	1.000						
Individual autonomy support	0.769	0.610	1.000					
Individual learning	0.441	0.540	0.492	1.000				
Knowledge collaboration	0.216	0.187	0.149	0.244	1.000			
Job satisfaction	0.505	0.608	0.613	0.714	0.192	1.000		
Individual performance	0.367	0.392	0.324	0.280	0.474	0.414	1.000	
Project outcome	0.547	0.606	0.481	0.437	0.108	0.543	0.481	1.000

effective task management occurs when the project team leader clearly defines project goals and objectives, clearly communicates the project schedule and task completion dates, uses a project tracking system or Gantt chart, conducts regular project status meetings and holds team members individually accountable for task completion deadlines. Team efficacy exists when the project team leader selects, develops and supports a team of individuals who collectively share a common vision, mutual respect and belief in their collective capabilities to organize, perform and achieve project objectives. An autonomy supportive project team leader is one, who encourages team members individually to ask questions, answers those questions fully and carefully, listens to and tries to understand how the team members would like to accomplish tasks before suggesting new ways of doing them.

Action-centered project leadership practices also has a positive influence on all dependent variables in the model (individual learning, knowledge collaboration, individual performance, job satisfaction, and perceived project outcome). The strongest positive influence of action-centered project leadership practices was on team member's individual learning which indicates that an action-centered project leader can have a significant influence on the project team learning environment thereby providing individual team members increased personal knowledge and growth opportunities. Action-centered project leadership also has a positive influence on team member knowledge collaboration implying that an action-centered project leader also promotes knowledge collaboration among team members. The mediation effects of individual learning and knowledge collaboration were also confirmed. In total, this preliminary analysis infers that an action-centered project leader can create a knowledge sharing and learning oriented team environment which directly and indirectly influences knowledge exchange and learning were team members offer advice, share their expertise and provide insights to their teammates.

Action-centered project leadership practices influence team member job satisfaction and is partially mediated by individual learning. This indicates that these project leader practices influence team member job satisfaction and are enhanced by a learning team environment which positively influences individual learning. The hypothesized link between knowledge collaboration and job satisfaction was not supported and therefore in this context is wholly mediated by team member individual learning. One conjecture is that if a significant portion of the subject's knowledge sharing experience is one way, in which they give more than they receive; this may affect their disposition and job satisfaction. Further study that explores knowledge exchange in a project team environment is warranted.

Action-centered project leadership practices enhance individual team member performance. It was hypothesized that individual team member learning would also have a positive effect on their individual performance. However, this hypothesis was not supported. One conjecture is simply that a significant portion of the subject's

Table II. Action-centered project leadership practices construct second order factor loadings

Action-centered project leadership practices construct	Item loading
Task management	0.855
Team efficacy	0.809
Individual autonomy support	0.820

Table III.
Hypothesized path relations and regression statistics

	Independent variable		Dependent variable	Standard estimate	Std err	*t*-val	Sig.
Action-centered project leadership practices model – hypothesized relations regression weights							
H1.1	Action-centered leadership	→	Task management	0.855	0.061	13.932	*
H1.2	Action-centered leadership	→	Team efficacy	0.809	0.062	13.196	*
H1.3	Action-centered leadership	→	Individual autonomy support	0.820	0.060	13.476	*
H2	Action-centered leadership	→	Individual learning	0.564	0.086	9.836	*
H3	Action-centered leadership	→	Knowledge collaboration	0.212	0.053	3.413	*
H4	Knowledge collaboration	→	Individual learning	0.124	0.090	2.405	0.016
H5	Knowledge collaboration	→	Job satisfaction	−0.079	0.087	−1.667	0.096
H6	Individual learning	→	Job satisfaction	0.475	0.059	8.451	*
H7	Individual learning	→	Individual performance	−0.038	0.026	−0.569	0.569
H8	Knowledge collaboration	→	Individual performance	0.404	0.040	6.791	*
H9	Individual performance	→	Job satisfaction	0.161	0.144	3.031	0.002
H10	Job satisfaction	→	Project outcome	0.169	0.056	2.244	0.025
H11	Individual performance	→	Project outcome	0.040	0.107	0.747	0.455
Project manager direct effect on dependent variables (for mediation -testing)							
	Action-centered leadership	→	Job satisfaction	0.359	0.099	5.668	*
	Action-centered leadership	→	Individual performance	0.371	0.043	4.975	*
	Action-centered leadership	→	Project outcome	0.520	0.098	6.184	*

Note: * Indicates more significant than 0.001

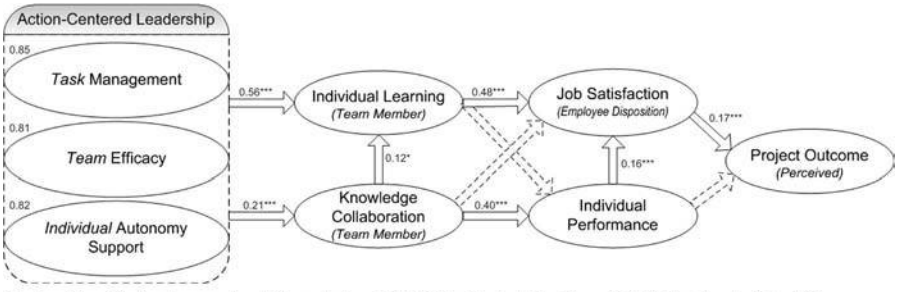
project experiences may be learning environments where individuals are developing their skills and insights instead of applying their skills and experiences as anticipated by the research. Further study that categorizes team members by experience may prove useful in this area.

The results show that action-centered project leadership practices contribute to a team member's job satisfaction and their perception of the project outcome. This perception of project outcome is also mediated and enhanced by a team member's job satisfaction. Based on our measurement of job satisfaction, this implies that a team member is more likely to enjoy coming to work while engaged in an action-center lead project and think more favorably of the overall project and the organization as a whole. The hypothesized link between individual performance and perceived project outcome was not supported and therefore in this context is wholly mediated by team member job satisfaction. In total, these results show that action-centered project team leader practices during IT projects promote individual learning and knowledge collaboration in the project team environment along with enhance team member individual performance, job satisfaction, and ultimately project success.

Figure 3 depicts graphically these quantitative findings and the significance of construct relationships. Numbers on the shown paths in Figure 3 are the best-fit estimated standardized coefficient accounting for misspecification bias. Coefficients are significant at $p \leq 0.001$ indicated by ***, $p \leq 0.01$ indicated by **, and $p \leq 0.05$ indicated by *.

Discussion and implications

A social-technical approach to project management was explored through the three-dimensional lens of John Adair's action-centered leadership three circle model. Both the social and technical aspects of project management and the integration of the model's associated three dimensions representing the task, team, and individual were discussed. Project team leader social practices represented the human needs of the team and of the individual while the technical practices focused on the project engineering aspects of task management. Satisfying the human needs of the team are accomplished through the cultivation of team collective efficacy where the members share a common vision, mutual respect and belief in their collective capabilities to organize, perform, and achieve project objectives. Satisfying the needs of the individual team member is accomplished by the actions and gestures of an "autonomy



Note: Coefficients are significant at $p \leq 0.05$ indicated by *; $p \leq 0.01$ indicated by **; and $p \leq 0.001$ indicated by ***

Figure 3.
Action-centered project leadership quantitative model

supportive" team leader such as encouraging team members to ask questions and then responding to those questions fully and carefully along with listening to how team members would like to accomplish their tasks. Satisfying project task needs is accomplished through effective task management via engineering and communicating a detailed project plan to the project team so that members will understand their objectives and goals and what is needed to achieve them, and then holding them accountable to do so.

The results of this research study support the depiction of the three circle (task, team, individual) conceptualization of Action-Centered Project Leadership. The data collected show the model holds together well and the construct can be used to help build more explanatory models. While the three-circle diagram is a simplification of the variability of human interaction, it becomes a useful tool for thinking about what constitutes an effective leader in the specific role of project management. Situational and contingent elements in an IT project team environment call for different responses by the leader. The effective project leader carries out the practices and exhibits the behaviors depicted by the three circles to achieve the desired project objectives. These results show that the day-to-day practices of an effective project leader should follow a social-technical approach to project management. The action-centered leadership practices construct, developed in this study, can be a good surrogate measure of what is required to be an effective leader in an IT project team environment.

This quantitative research study also explored factors that influence individual learning and knowledge collaboration among team members during information technology related projects. Based on the findings in this study it is reasonable to state that action-centered leadership practices foster a collaborative project team environment that yields more than just favorable project outcomes. This environment also increases the likelihood of information and idea exchange among team members which provides stimuli for collaboration and individual learning. Furthermore, the increased level of project team knowledge collaboration positively influences both individual learning and performance. We were not able to measure project team employee retention in this study; however the positive effects of job satisfaction and employee disposition suggests that a higher retention level is probable for skilled team members during IT projects (Boswell *et al.*, 2005); the loss of valuable employees during projects has plagued long-term projects.

A key point is that action-centered leadership practices – task management, team efficacy and individual autonomy support – define the social and the technical practices, that when followed, have a more encompassing influence than project success alone. In the end, information technology project management leadership practices that are "action-centered" and follow a social-technical approach will have a noteworthy positive influence on the project team environment.

Future research

Future research can help understand further the impact of action-centered leadership. The first area of interest lies in the results concerning the individual learning and individual performance constructs. Here a simple relationship of learning and performance did not hold. Understanding this lack of relationship can be of interest. For example, does the fact that someone has to learn something "on the job" as team members reduce their perception of their importance and value to the team and

therefore their perception of individual performance? These findings would have wide ranging implications on how project leader should acclimate individuals into teams.

The findings are from an amalgam of projects, representing varying team sizes, project types, experience bases, ages, genders, etc. The results across these categories can prove beneficial to understanding the project leader's role. For example, larger teams provide exponentially more channels for communication and potentially less role ambiguity. Would the results of this model be consistent across project types? If not, the differences can lead to a contingency set of practices for project leaders.

The model deals with the perceptions of one side of the leadership duality – team members. Similar data can be collected from project managers. Using the same model, a comparison can be made between project managers and team members. What differences in any can be observed? Are there survey items that differ in importance between team members and project leaders? If so, what are they and what management implications could be drawn?

The final area of potential future research would be to collect more targeted objective data. Various data items such as on-time analysis, budgets, team member turnover, etc., would allow the analysis of more objective data. In turn, this would allow the model's predictions to be better validated for more practical applications.

Conclusion

Action-centered leadership is an integrated social-technical approach that can have a positive influence on team members and the project team environment. This team environment increases the likelihood of exchange among team members, which in turn provides stimuli for knowledge collaboration 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 collaboration and learning in the project team environment. The action-centered leadership construct dimensions of project task management, team efficacy, and autonomy support define the social and the technical practices that when integrated and followed, have a more encompassing influence on a project team and environment than performance alone.

References

Adair, J. (1973), *Action-centered Leadership*, McGraw-Hill, New York, NY.

Adair, J. (2011), *Lexicon of Leadership, Action-centered Leadership*, Kogan Page, London.

Bandura, A. (1986), *Social Foundations of Thought and Action*, Prentice Hall, Englewood Cliffs, NJ.

Bandura, A. (1997), *Self-efficacy: The Exercise of Control*, Freeman, New York, NY.

Bock, G.W., Zmud, R.W., Kim, Y.G. and Lee, J.N. (2005), "Behavioral intention formation in knowledge sharing: examining the roles of extrinsic motivators, social-psychological forces, and organizational climate", *MIS Quarterly*, Vol. 29 1, March.

Boland, R.J. and Tenkasi, R.V. (1995), "Perspective making and perspective taking in communities of knowing", *Organization Science*, Vol. 6 No. 4, pp. 350-72.

Boswell, W., Boudreau, J. and Tichy, J. (2005), "The relationship between employee job change and job satisfaction: the honeymoon-hangover effect", *Journal of Applied Psychology*, Vol. 90 No. 5, pp. 882-92.

Braun, F. and Avital, M. (2007), "Good project management practices drive more than project success", *Proceedings of the Thirteenth Americas Conference on Information Systems, Keystone, Colorado, August 9-12, 2007*.

Braun, F. and Avital, M. (2010), "From project management to project leadership", *Proceedings of the Sixteenth Americas Conference on Information Systems, Lima, Peru, August 12-15, 2010*.

Cadle, J. and Yeates, D. (2004), *Project Management for Information Systems*, Prentice Hall, Harlow.

Chan, C.C.A., Lim, L. and Keasberry, S.K. (2003), "Examining the linkages between team learning behaviors and team performance", *The Learning Organization*, Vol. 10 No. 4, pp. 228-36.

Cook, S.D. and Brown, J.S. (1999), "Bridging epistemologies: the generative dance between organizational knowledge and organizational knowing", *Organization Science*, Vol. 10 No. 4, pp. 381-400.

Deci, E. (1996), *Why We Do What We Do*, Penguin Books, New York, NY.

Deci, E.L. and Ryan, R.M. (1985), *Intrinsic Motivation and Self-determination in Human Behavior*, Plenum, New York, NY.

Edmonds, W.A., Tenenbaum, G., Kamata, A. and Johnson, M. (2009), "The role of collective efficacy in adventure racing teams", *Small Group Research*, Vol. 40 No. 2, pp. 163-80.

Fong, P. (2003), "Knowledge creation in multidisciplinary project teams: an empirical study of the processes and their dynamic interrelationships", *International Journal of Project Management*, Vol. 21, pp. 479-86.

Hansen, S. and Avital, M. (2005), "Share and share alike: the social and technological influences on knowledge sharing behavior", *Sprouts: Working Papers on Information Environments, Systems and Organizations*, Vol. 5 No. 1, pp. 1-19.

Hodges, L. and Carron, A.V. (1992), "Collective efficacy and team performance", *International Journal of Sport Psychology*, Vol. 23, pp. 48-59.

Huber, G.P. (2001), "Transfer of knowledge in knowledge management systems: unexplored issues and suggested studies", *European Journal of Information Systems*, Vol. 10 No. 2, pp. 72-9.

Jackson, C. (2001), "Predicting team performance from a learning process model", *Journal of Managerial Psychology*, Vol. 17 No. 1, pp. 6-13.

Jarvenpaa, S. and Staples, D. (2000), "The use of collaborative electronic media for information sharing: an exploratory study of determinants", *Journal of Strategic Information Systems*, Vol. 9, pp. 129-34.

Jex, S.M. and Bliese, P.D. (1999), "Efficacy beliefs as a moderator of the impact of work related stressors: a multilevel study", *Journal of Applied Psychology*, Vol. 84, pp. 349-61.

Jugdev, K. and Muller, R. (2005), "A retrospective look at our evolving understanding of project success", *Project Management Journal*, Vol. 36 No. 4, pp. 19-31.

Kotter, J.P. (2001), "What leaders really do", *Harvard Business Review*, December.

Kouzes, J.M. and Posner, B.Z. (2002), *The Leadership Challenge*, 3rd ed., Jossey-Bass, San Francisco, CA.

Kozlowski, S.W.J. and Klein, K.J. (2000), "A multilevel approach to theory and research in organizations: contextual, temporal, and emergent processes", in Klein, K.J. and Kozlowski, S.W.J. (Eds), *Multilevel Theory, Research, and Methods In Organizations*, Jossey-Bass, San Francisco, CA, pp. 3-90.

Marchewka, J.T. (2006), *Information Technology Project Management, Providing Measurable Organizational Value*, John Wiley & Sons, New York, NY.

Marquardt, M. (2002), *Building the Learning Organization*, 2nd ed., Davies-Black Publishing, Palo Alto, CA.

Michalski, L. (2000), "Effective communication equals successful project management", *Pharmaceutical Technology*, Vol. 24 5, May.

Mintzberg, H. (2004), "Enough leadership", *Harvard Business Review*, November.

Muller, R. and Turner, R. (2010), "Leadership competency profiles of successful project managers", *International Journal of Project Management*, Vol. 28, pp. 437-48.

Podsakoff, P. and Organ, D. (1986), "Self-reports in organizational research: problems and prospects", *Journal of Management*, Vol. 12, pp. 531-44.

Redding, J.C. (2000), *The Radical Team Handbook*, Jossey-Bass, San Francisco, CA.

Riggs, M., Warka, J., Babasa, B., Betancourt, R. and Hooker, S. (1994), "Development and validation of self-efficacy and outcome expectancy scales for job-related applications", *Educational and Psychological Measurement*, Vol. 54, pp. 793-802.

Ryan, R. and Deci, E. (2000), "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being", *American Psychologist*, Vol. 55, pp. 68-78.

Sarin, S. and McDermott, C. (2003), "The Effect of team leader characteristics on learning, knowledge application, and performance of cross-functional new product development teams", *Decision Sciences*, Vol. 34 No. 4, pp. 707-39.

Sessa, V.I., London, M., Gullu, B., Patel, J. and Pingor, C. (2011), "Adaptive, generative, and transformative learning in project teams", *Team Performance Management*, Vol. 17 Nos 3/4, pp. 146-67.

Shriberg, A., Shriberg, D. and Kumari, R. (2005), *Practicing Leadership: Principles and Applications*, 3rd ed., John Wiley, Hoboken, NJ.

Subramaniam, M. and Youndt, M. (2005), "The influence of intellectual capital on types of innovative capabilities", *Academy of Management Journal*, Vol. 48, pp. 242-66.

Szulanski, G. (1996), "Exploring internal stickiness: implementation to the transfer of best practice within the firm", *Strategic Management Journal*, Vol. 17, pp. 27-44.

Tett, R.P. and Meyer, J.P. (1993), "Job satisfaction, organizational commitment, turnover intention, and turnover: path analyses based on meta-analytic findings", *Personnel Psychology*, Vol. 46 No. 2, pp. 259-93.

Turner, R. and Muller, R. (2005), "The project manger's leadership style as a success factor on projects: a literature review", *Project Management Journal*, Vol. 36 No. 1, pp. 49-61.

Weick, K. (1995), *Sensemaking in Organizations*, Sage Publishers, Thousand Oaks, CA.

Further reading

Adair, J. (2006), *Leadership and Motivation*, Kogan Page, London.

Baumeister, R.F. and Leary, M.R. (1995), "The need to belong: desire for interpersonal attachments as a fundamental human motivation", *Psychological Bulletin*, Vol. 117, pp. 497-529.

Herzberg, F., Mausner, B. and Snyderman, B. (1959), *The Motivation to Work*, John Wiley, New York, NY.

Zaccaro, S.J., Blair, V., Peterson, C. and Zazanis, M. (1995), "Collective efficacy", in Maddux, J. (Ed.), *Self-efficacy, Adaptation, and Adjustment*, Plenum, New York, NY, pp. 305-28.

Appendix

	α	Factor loading	Mean	SD
Task management (Braun and Avital, 2007)	0.83			
On this project, my project manager/leader:			[5]	
Clearly defined our project goals and objectes		0.818	3,716	1.227
Conducted regular project status meetings		0.695	3.731	1.303
Held us individually accountable for our task completion deadlines		0.704	3.819	1.198
Used a project tracking system of Gantt chart		0.758	3.651	1.258
Clearly communicated the schedule and task completion dates		0.758	3.651	1.258
Team efficacy (adapted from Riggs et al.*, 1994)*	0.90		[7]	
Our project team collectively was skilled and capable		0.805	5.728	1.235
During the project, the team members felt confident about the project's success		0.869	5.308	1.420
We all shared the same vision of where the project was going		0.825	5.156	1.528
I had a high level of respect for the other team members		0.832	5.559	1.323
Individual autonomy support (Ryan and Deci (2000) Work Climate questionnaire	0.92			
On this project, my project manager/leader:			[5]	
Encouraged me to ask questions		0.801	3.825	1.237
Answered my questions fully and carefully		0.882	3.694	1.210
Listened to how I would like to do things		0.913	3.642	1.255
Tried to understand how I saw things before suggesting new ways of doing things		0.863	3.554	1.242
Individual learning (Ryan and Deci, 2000) Learning Climate questionnaire	0.91		[7]	
I learned many useful things by participating on this project		0.872	5.547	1.424
This project proved to be a great learning atmosphere		0.956	5.259	1.569
This project offered me many personal growth opportunities		0.831	5.508	1.659
Knowledge collaboration (adapted from Boch et al.*, 2005)*	0.96		[7]	
I share my expertise with other team members because I like to		0.872	5.954	1.069
I like to offer my insights and information to other team members		0.935	5.984	0.934
I achieve a certain level of satisfaction by sharing my knowledge		0.887	5.966	0.967
I enjoy answering questions and providing advice to other team members		0.841	5.994	1.024
Job satisfaction (adapted from Tett and Meyer, 1993)	0.90		[7]	
I enjoyed coming to work when I was on this project		0.888	5.024	1.548
It is projects like this one that makes working for this organization worthwhile		0.924	4.837	1.686

Table AI.
Action-centered team leader model construct items and loadings

(*continued*)

	α	Factor loading	Mean	SD
Individual performance (Ryan and Deci, 2000)				
Perceived Competence scale	0.88			
On this project:			[5]	
I think I did well, compared to other team members		0.674	3.899	0.895
I as satisfied with my performance		0.950	4.119	0.807
I lived up to my owne expectations		0.939	4.131	0.798
I felt confident in my ability to perform my tasks		0.700	4.153	0.852
Perceived project outcome (Braun and Avital, 2010)	0.89		[7]	
In my opinion this project was a great success		0.970	5.223	1.559
My other team members believed this project was a success		0.911	5.327	1.448
Executives consider this project to be one of the best		0.777	4.755	1.496

Notes: [5] indicated five-point gradient scale; [7] indicates seven-point Likert scale

Table AI.

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