

Effects of Non-Cognitive Skills on Project Management Behaviors: An Agency View

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Productive project management outcomes depend on identifying key success factors. Early research identified two types of project management success factors (1) cognitive and (2) non-cognitive factors (Larson and Gobeli, 1989; Pinto and Slevin, 1987). Mastering non-cognitive skills that serve as prerequisites to achieve workplace success has been well established (Anthony and Garner, 2016; Mitchell et al., 2010). Grounded in agency theory, this research focuses on two non-cognitive factors, which are leadership and communication. We investigate the effects of these two human capital factors on developing effective project teams and enhancing project outcomes. Based on path model results, our findings suggest that leadership is related to individual, team, and project performance. However, communication is related to individual performance but not to team and project performance. Furthermore, the improved individual performance should benefit both team and project performance.

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I. INTRODUCTION

Productive project management outcomes depend on identifying key success factors. Early research identified two types of project management success factors (1) cognitive and (2) non-cognitive factors (Larson and Gobeli, 1989; Pinto and

Slevin, 1987). Project management is comprised of two dimensions, the science (cognitive) and the art (non-cognitive). Hard skills, known as the science of project management, signifies cognitive or technical expertise needed to fulfill project objectives. Project management is considered a science since project managers

need to construct scope, develop schedule, manage budgets, and control risks. Soft skills, referred to as the art of project management, are summarized as an awareness and acceptance of self and others and are categorized as non-cognitive competencies (PMBOK, 2013). As an art, project management is largely determined by the implementation of exceptional soft skills, such as leadership, communication, and performance behavior. Leadership, defined as the ability to guide others toward a common vision, is a direct result of effective communication and performance behaviour (Northouse, 2013; PMBOK, 2013). Communication is the transmission of information and meaning from one person to another (Weaver, 1949). Project communication is a project variable that involves organizing the timely, accurate, and concise distribution of project data and updates to stakeholders (Richardson, 2010). Performance behaviours are the set of observable workplace actions project professionals are expected to display (Gilbert, 1998; Griffin and Moorhead, 2010). Within the project management arena, performance behaviours extend beyond leadership and communication to encompass individual, team, and project achievements (Howell and Sheab, 2001). Project management soft skills delineates a project team's ability to work collaboratively and cooperatively with a wide range of stakeholders.

During the 20th century, behavioral scientists, educational institutions, and work environments placed more emphasis on cognitive ability, which was viewed as the most significant contributing factor for educational and workplace outcomes. As a result, perceptions and additional efforts were implemented to improve students' test scores, promote teaching methods that aligned with high-test scores, and reliance on employment assessments to determine

employability (Kyllonen, 2013). While technical skills are necessary for entry into any profession, soft skills are essential for retention and advancement. The well-known adage, people are hired for their hard skills and fired for their soft skills, permeates throughout business literature (Stoll, 2012; Theron et al., 2006; Cohen, 2001). Ultimately, non-cognitive skills are just as essential as the triad of scope requirements, schedule boundaries, and budget limitations, known as the iron triangle.

Demand for soft (non-cognitive) skills is increasingly explicit in the workplace (Duraio et al., 2017; Willard et al., 2010). Mastering soft skills that serve as prerequisites to achieve workplace success has been well established (Anthony and Garner, 2016; U.S. Department of Labor, 2012; Mitchell et al., 2010). Human factors are valuable elements of team harmony that contribute to exceptional project accomplishments. Even with the best tools, techniques, policies, and procedures, without quality soft skills, project failure is inevitable. This skill gap has led to high project failure rates (Creasy and Anantatmula, 2013; Stevenson and Starkweather, 2010). As projects have become prevalent within organizations that wish to obtain a competitive advantage (Shenbar, 2012; Shenhar and Dvir, 2007), fulfillment of activities without the incorporation of soft skills is no longer a sufficient path to project completion. Project managers are expected to build personal competencies such as leadership, communication, and performance behavior skills that enhance economic and social value to the organization and the stakeholders involved (Crawford, et al., 2006).

The soft side of project management has been the subject of recent research studies (Brones and Carvalho, 2014; Herazo, et al, 2012). Researchers have developed a body of empirical research that examines the soft

side of project management (Carvalho and Rabechini, 2015; Zheng et al., 2015; Marion et al., 2014). Researchers (Levasseur, 2013; Yadin, 2012; Kharbanda and Pinto, 1995) and professional associations, such as the Project Management Institute (PMI), have identified the need for more in-depth examination of the relationship between non-cognitive skills and project success. Increasingly, organizations are also recognizing that college students need soft skills education to survive in a contemporary workplace (Kumar and Hsiao, 2016; Schanzenbach et al., 2016). In addition to technical skills, the evolving work environment demands that business students possess superior soft skills. To meet the demands of a progressive project environment, collegiate business programs are challenged to come up with non-confrontational, innovative ways to incorporate soft skills into classes so that university graduates are prepared to take on the challenges of the twenty-first century project management-oriented workplace.

Unfortunately, soft skills that influence leadership, communication, and behavioral performance needed to excel in today's professional project environment are difficult to teach and increasingly difficult to find in the workplace. Non-cognitive skills are among the most challenging skills to teach, learn, and master (Feffer, 2016). Due to the challenging nature of soft skills, many universities do not consciously incorporate intra- and interpersonal skills into the teaching curriculum. Technical skills dominate university course objectives since they are tangible, objective, easily calculated, and can be measured by a grading rubric. Soft skills are intangible, subjective, not easily assessed, and grade specification is not exact. Additionally, soft skills are typically situational and personal, which result in varying perceptions. A one-size fits

standardized, non-cognitive model does not exist.

II. LITERATURE REVIEW

This section reviews the literature on non-cognitive factors of project success, individual performance, team performance, project performance, and agency theory.

2.1 Non-Cognitive Factors (Soft Skills) of Project Success

Durao et al. (2017) searched two databases, ISI Web of Science and Scopus using a variety of project management soft skills keyword qualifiers to identify 29 ISI Web of Science and 71 Scopus research manuscripts. The preliminary list produced 78 articles that focused on project management soft skills. Articles that provided a precise list of soft skill characteristics were considered, resulting in 20 papers that stated the most frequent project management soft skill topics that appeared in research manuscripts. Communication followed by leadership, with team formation as the third most important characteristics, were the top three topics related to the soft side of project management.

Silva de Araujo and Pedron (2015) conducted an exploratory qualitative study based upon 16 interviews with information technology professionals from diverse industries. Ranked research questions in reference to the most relevant competencies in project management success revealed (1) team management, (2) project management, and (3) communication were the top three success factors. The study determined that while hard skills (project management) were important, a combination of hard and soft skills was optimal. Based upon 14 open-ended questions, the categories of team management, business domain knowledge, people skills, and

communication was referenced 349 times, while technical skills was referenced only five. It was quite apparent among the interviewees, intra- and interpersonal skills were more important to project success than technical skills. Team management was the most cited competence in the interviews. Interviewees indicated that competence building, team motivation, and development of a positive work environment were the most important responsibilities of the project manager. Communication skills were essential in team relationship building, corporate networking, and stakeholder management.

In a capstone, undergraduate project management course that emphasized technical design, research, documentation, project management, leadership, teamwork, and communication skills, Zhenget al. (2015) examined 24 responses from students' self-reflection papers. Using a predetermined coding scheme to rank the core skills, it was determined that communication (written and oral communication), presentation (oral communication), and teamwork (goal achievement), were the three most desirable soft skills. Results indicated that the practice of soft skills within a team project denoted a higher value than technical skills.

Using a Delphi study technique, Keil et al. (2013) interviewed 19 project managers in information technology industry. Among a list of 48 identified skills, interviewees selected 19 skills as the most critical ones and then ranked each skill based on their relative importance. The top five skills (in order of importance) are leadership, verbal communication, scope management, listening, and project planning. According to the study interviewees, leadership was the most important skill a project manager could contribute to the team since leadership established a clear path for team members

to follow. Leadership also influenced motivation to work toward a common objective. Verbal communication ranked as the second highest valued skills, served as a control mechanism, and contributed to conflict resolution. One interviewee implied that without effective communication other skills could be rendered useless. The acquirable skills could lead to project success and reduce project failure.

2.2 Agency Theory

Agency theory (Jensen and Meckling, 1976) contends that individuals' self-interest will dominate when their own interests are not aligned with those of shareholders. In reference to agency theory, an organization's top management delegates work to teams and team members perform tasks and complete the projects on behalf of top management. When top management and project teams have divergent interests, team members will perform at the expense of top management's interests. Under these conditions, leadership intending to optimize the management control mechanism must be in place in order to motivate the agents at various levels including individual, team, and project in a concerted way. On the other hand, information asymmetry has been one of the premises of agency theory. An organization's top management delegates projects and responsibilities to teams. Consequently, top management makes decision depending on the information and knowledge of delegated team members of the projects. In this regard, effective communication plays a critical role in reducing the information asymmetry between top management and team members. As a result, the reduction of information asymmetry could better align their goals and interests, which leads to the success of projects

III. HYPOTHESES DEVELOPMENT

3.1 Purpose of Study

Extant literature review indicates a lack of studies on the impact of non-cognitive project management skills on the success of project in terms of different levels including individual, team, and project performance. This study aims to fill the research gap and the rest of the paper is organized as follows. First, a research model will be proposed followed by hypotheses development. Second, research methods will be presented including sampling, measures, and data analyses. Third, results of the analyses will be summarized and implications and further research will also be addressed.

Non-cognitive project management research on human capital success factors communication and their relationship with individual, team, and project performance is designed to help organizations develop effective project teams and enhances project outcomes. In particular, this study focuses on the impact of leadership and communication on the success of project at various levels. The top reoccurring project management human resource success factors found in the literature were used to develop the path model examined in this study. The two independent variables that might have an influence on overall project performance are leadership and communication. Effective leadership in an organization requires establishing a clear vision for outcomes and envisioning the organization's future (Bennis, 1997; PMBOK, 2013). Quality communication enhances messages about responsibilities, expectations, and performance (DuBois, et.al, 2015). Performance behavior deemed identifiable actions result in consequences (Gilbert, 1998). Based on the relationship of principal and agent in agency theory, an organization

may adopt one of three control strategies: outcome control, behavioral control, and cultural control (Gong, 2003). In this study on the association of non-cognitive factors with project success, the focus is on the strategy of outcome control in the delegation relationship between top management and project team members. Accordingly, the conceptual model of this study includes three dependent variables as outcome control: individual, team, and project performance. The purpose of this study was to investigate the effect of leadership and communication on individual, team and project performance.

Effective leadership evolves from a clear mission, empathy, passion, and self-awareness. A leader that team members will honor builds trust, behaves authentically, acts with integrity, espouses unity, and responds positively to others. Leadership characteristics influence individual, team, and project performance. Agency theory offers the rationale for enhanced project performance when leadership is oriented to control outcomes at individual, team and project levels by aligning top management's interests with the goals of individual, team and project. Based upon these considerations, the following hypotheses are proposed:

H1a: Leadership positively influences individual performance.

H1b: Leadership positively influences team performance.

H1c: Leadership positively influences project performance.

Effective communication provides a clear and concise message, engages listening skills, tailors the message to the audience, uses appropriate communication channels, and maintains open-mindedness. Individual, team, and project performance depend upon accurate, timely, and authentic oral and

written information to achieve the highest level of performance. Due to the principal-agent relationship between top management and project team members, effective communication between them ensures information sharing and decision synchronization, which would greatly foster a win-win business scenario and lead to the success of the projects. Based on these considerations, the following set of hypotheses is proposed:

H2a: Communication positively influences individual performance.

H2b: Communication positively influences team performance.

H2c: Communication positively influences project performance.

Drawn upon agent theory, the study proposes a conceptual model (see Figure 1) on the impact of two non-cognitive factors, leadership and communication, on the

success of projects. Implementation of the project management processes begins at the individual level is dependent upon the team accomplishments and ultimately, concludes with project results. Achievement of scope objectives, meeting time requirements, and managing cost are the major technical keys to project success. These three technical skills combined with professional soft skills impact three project human performance variables (1) individual, (2) team, and (3) project. Analysis of the three variables influence upon each other lead to the following set of hypotheses.

H3a: Individual performance positively influences team performance.

H3b: Team performance positively influences project performance.

H3c: Individual performance positively influences project performance.

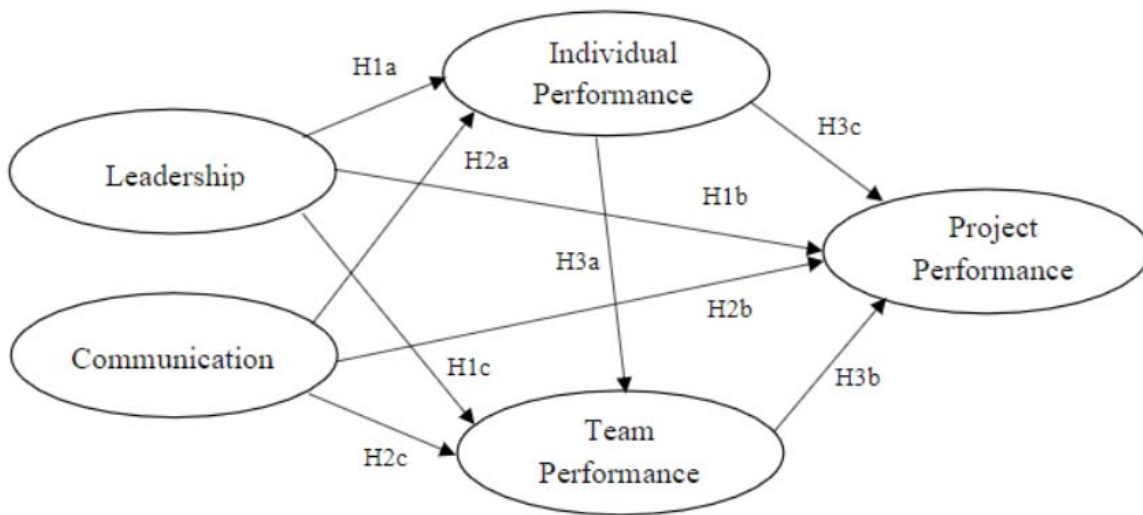


FIGURE 1. RESEARCH MODEL.

IV. RESEARCH METHODOLOGY

Participants

Undergraduate students enrolled in a project management course completed an online survey. Students were enrolled in three sections of a project management course, 87% were on-campus students and 13% were enrolled in an online section of the course. The students were primarily from the college of business (n = 122). The 94 students completed survey, which gave us a 77% response rate. All students had in-class project experience. University undergraduate students are pertinent research subjects since they are likely to enter the professional workplace with the expectation of displaying effective team soft skills (Ritter, et. al., 2018). Furthermore, student and workplace teams share several team dynamics, such as goal-setting, trust, and conflict resolution (Kemery and Stickney, 2014) which makes students excellent research participants.

The focus of the examination was on the effects of leadership and communication on the individual, team, and project performances. The homogeneousness of students' background mitigates the influence of difference in other aspects in reality, such as, age, years of experience, nationalities, etc..

Instrumentation

Instrument development to determine key non-cognitive success factors was carried out in three phases: (1) item generation, (2) online data collection study, and (3) data analysis. First, an extensive literature review was conducted to identify the domain of constructs and generate the initial measurement items. Next, a questionnaire was developed and delivered to students using Qualtrics(2015), an online survey online platform. Finally, a data set was collected and analyzed to validate the

instrument and test the hypothesized model. Items for each construct was developed based on an extensive literature review and a panel of subject-matter experts and academicians in the project management field. All items are measured on a six-point Likert-type scales, where 1="Strongly Disagree", 2="Disagree", 3= "Somewhat Disagree", 4="Somewhat Agree", 5="Agree" and 6="Strongly Agree. After the completion of rigorous evaluations, two sub-constructs for the non-cognitive factors (leadership and communication) and three human performance sub-constructs (individual, team, and project) for project management emerged. There were five items for the leadership construct and six items for the communication construct. Project management human performance factors consisted of five items for the individual performance construct, six items for team performance construct, and five items for project performance construct.

Instrument Refinement in Measurement Models – Construct Validity and Reliability

To establish content validity, items for the various constructs were reviewed by a panel of subject-matter experts and three academicians. Based on the feedback from the experts and academicians, items were added, modified, or deleted. A confirmatory factor analysis (CFA) using structural equation modeling method in Analysis of Moment Structures (AMOS) was conducted to refine the measurement models (Hair, et al., 2010).

Ninety-four responses were used for further data analysis. As per the guidelines of Bagozzi (1980), the important properties for a measure to be reliable and valid include content validity, internal consistency of operationalization (unidimensional and reliability), and construct validity (discriminant and convergent). Content validity was

determined through a comprehensive review of the literature, pilot tests, assessment by a panel of subject-matter, and academicians to ensure that measurement items covered the domain of the variable (Nunnally, 1978; Churchill, 1979). Convergent validity criteria require that there be one single latent variable underlying a set of measurement items (Anderson and Gerbing, 1988). The degree of convergent validity is tested through CFA (using SEM) to assess the measurement model properties indicated by the Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI). The GFI indicates the relative amount of variance and covariance jointly explained by the model. The AGFI differs from the GFI in adjusting for the number of degrees of freedom (Byrne, 1989). Both range from 0 to 1. Values of 0.90 or more are considered a good fit (Hair et al., 2010). The normed fit index (NFI) and comparative fit index (CFI) indicate a relative comparison of the proposed model to the null model. NFI and CFI's values above 0.90 are acceptable (Hu and Bentler, 1999). The next set of fit statistics focus on the root mean square error

of approximation (RMSEA). The RMSEA takes into account the error of approximation and is expressed per degree of freedom, thus making the index sensitive to the number of estimated parameters in the model; values less than 0.05

14indicate good fit, values up to 0.08 represent reasonable errors of approximation (Browne and Cudeck, 1993), values up to 0.10 indicate mediocre fit, and those greater than 0.10 indicate poor fit (MacCallum et. al., 1996). The original measurement items were tested according to these indices and items contributing to an unacceptable model fit were deleted. Items in italic were deleted due to low factor loadings or error term correlations. Cronbach's alpha was also used to assess the reliability of each construct. Values of 0.70 and higher are considered acceptable (Hair et al., 2010). Tables 1 and 2 list the items shown in the final measurement models' result. The results show that all constructs are valid and reliable according to the minimum requirements.

TABLE 1. FIT INDICES & RELIABILITIES FOR PM BEHAVIORAL PERFORMANCE.

LEADERSHIP	Final Model Fit
Create a clear vision	GFI = 0.99
Initiate an atmosphere of mutual trust	AGFI = 0.93
Take responsibility for decisions without shifting blame	CFI = 1.00
<i>Embrace authentic diversity</i>	NFI = 0.98
Celebrate organizational and team success	RMSEA =0.06
	$\alpha = 0.85$
COMMUNICATION	Final Model Fit
Communicate decisions promptly and effectively	GFI = 0.98
Listens for completeness	AGFI = 0.95
Encourage people to communicate their differing opinions	CFI = 1.00
Maintain open communication that resolves conflict	NFI = 0.98
Employ superior written techniques	RMSEA = 0.00
<i>Exhibit excellent oral presentation skills</i>	$\alpha = 0.89$

TABLE 2. FIT INDICES & RELIABILITIES FOR PM PERFORMANCE CONSTRUCT

INDIVIDUAL PERFORMANCE	Final Model Fit
Achieve the scope objectives	GFI = 1.00
Meet time requirements	AGFI = 1.00
Manage cost effectively	CFI = 1.00
Sense of accomplishment	NFI = 1.00
Quality of work	RMSEA = 0.00 $\alpha = 0.85$
TEAM PERFORMANCE	Final Model Fit
Achieve the scope objectives	
Meet time requirements	GFI = 0.98
Manage cost effectively	AGFI = 0.93
Team dynamics	CFI = 1.00
Alignment of project activities (for example, the outcomes from one activity should be tightly matched with the project's objectives)	NFI = 0.97 RMSEA = 0.03 $\alpha = 0.82$
Balance of obligation	
PROJECT PERFORMANCE	Final Model Fit
Achieve the scope objectives	GFI = 0.98
Meet time requirements	AGFI = 0.89
Manage cost effectively	CFI = 0.98
Quality of deliverables	NFI = 0.97
Customer satisfaction	RMSEA = 0.11 $\alpha = 0.79$

V. RESULTS

To test the hypothesis among the construct variables, a path model using the maximum-likelihood estimation method was conducted. Table 3 presents results from the assessment of the structural equation model. Four hypothesized relationships are statistically significant at the $p < 0.01$ level. Hypothesis 1a which proposed that leadership produces a significant path to individual performance ($\beta = 0.46$, $t = 3.88$) was supported. Hypothesis 2a is supported ($\beta = 0.38$, $t = 1.03$), indicating that communication influenced individual performance. Hypothesis 3a is supported ($\beta = 0.63$, $t = 4.44$), providing evidence that individual performance

predicts team performance. Hypothesis 3c is supported ($\beta = 0.66$, $t = 2.89$), which suggested that increased individual performance improves the project performance.

Two hypotheses were statistically significant at the $p < 0.05$ level. Leadership produced a significant path to team performance; therefore, Hypothesis 1b was supported ($\beta = 0.26$, $t = 2.40$). In addition, leadership provided a significant path to project performance ($\beta = 0.31$, $t = 2.17$), signifying support for Hypothesis 1c.

Three hypotheses were unsupported. Hypothesis 2b predicting that communication would relate to team performance ($\beta = 0.15$, $t = 0.25$) could not be verified. A link between communication and

project Manage cost effectively CFI = 1.00 NFI = 0.97 RMSEA = 0.03 $\alpha = 0.82$ Team dynamics Alignment of project activities (for example, the outcomes from one activity should be tightly matched with the project's objectives) Balance of obligation PROJECT PERFORMANCE Final Model Fit Achieve the scope objectives GFI = 0.98 AGFI = 0.89 CFI = 0.98 NFI = 0.97 RMSEA = 0.11 $\alpha =$

0.79 Meet time requirements Manage cost effectively Quality of deliverables Customer satisfaction performance proposed by hypothesis 2c was not confirmed ($\beta = 0.03$, $t = 0.24$). The link between team performance and project performance is not supported ($\beta = -0.27$, $t = -1.18$)

TABLE 3. HYPOTHESIS TESTING RESULTS.

	Behavioral Performance		Coefficient	t-value
H1a	Leadership	Individual Performance	0.46**	3.88
H1b	Leadership	Team Performance	0.26*	2.40
H1c	Leadership	Project Performance	0.31*	2.17
H2a	Communication	Individual Performance	0.38**	1.03
H2b	Communication	Team Performance	0.15	0.25
H2c	Communication	Project Performance	-0.001	-0.57
H3a	Individual Performance	Team Performance	0.63**	4.44
H3b	Team Performance	Project Performance	-0.27	-1.18
H3c	Individual Performance	Project Performance	0.66**	2.89

** $p < 0.01$; * $p < 0.05$

VI. DISCUSSION

This study revealed that leadership had a positive and significant relationship to individual, team, and project performance. In accordance with Durao et al. (2017), Zhenget al. (2015), and Keil et al. (2013), leadership is a key success factor that directly affects the processes of a project. While communication is an essential component of project management (Silva de Araujo and Pedron, 2015; Keil et al., 2013), this study found communication was only related to individual performance.

The significance of the relationship between individual communication and team and project performance is indicative of a self-belief in personal communication efficacy. However, the finding that

communication did not prevail as a relating variable to team and project performance among undergraduate student teams indicates that student teams do not share information or communicate as a collective unit. College students represent the new generation of professionals in near future. Our results demonstrate an individualist nature of self-interest, self-preservation, and self-reward dominates the educational and professional environment. As a result, undergraduate students underestimate the importance of collaborative communication. Team dynamics demonstrated in an educational environment will transfer into the professional workplace. Therefore, a deeper understanding of project management

education, communication, and student team dimensions is warranted.

According to the findings, good teamwork may not guarantee better project performance. Therefore, overemphasizing on teamwork is not helpful in project management as much as most may expect. Individual performance influences both team and project performance. More focus should be given to individual training while a new project starts.

VII. CONCLUSIONS

Throughout the late 20th century, behavioral scientists, academic institutions, and workplaces adopted a national philosophy that cognitive (technical) skills would elevate academic and workforce productivity (Kyllonen, 2013). However, recent research suggests that non-cognitive (soft) skills, such as leadership, communication, and behavior performance play a key role, and possibly a greater role in determining project management success. As research that examines the soft side of project management continues to develop, it is becoming more apparent that successful project management individual, team, and project performance cannot be attained with technical skills exclusively and predominately. The need for excellent soft skills are necessary requisites for substantial project achievements.

1) Theoretical Implications

While both leadership and communication are proposed and examined as key factors for project success in the literature, our study reveals that communication influence individual performance only. Therefore, any expectation on the improvement of project performance from the improved communication is unrealistic, though better communication will improve

individual performance and in turn project performance.

2) Practical Implications

This study provides guidelines for the project managers to improve project performance, which is the ultimate purpose of any business unit. Our findings can help managers to invest resources into the appropriate activities and expected realistic outcomes accordingly. For example, good team performance is not guaranteed to lead to better project performance. Therefore, project managers should not overemphasized on the team performance with scarifying individual performance which actually influence both team and project performance directly

3) Further Research

Future research will analyze undergraduate student teams and working project professionals with special attention garnered upon the analysis of the communication component. Additional research will contribute to new educational methodologies and project management training programs for the project environment that emphasizes the recognized need for 21st century soft skills.

4) Limitations

The inclusion of undergraduate students is an evident limitation of the current study. Most undergraduate students have not participated in a professional project work environment; therefore, their real-world experiences are inadequate. This study was initially designed as an initial analysis with the ultimate objective of examination of non-cognitive skills among professional project managers. However, the lack of undergraduate student communication efforts in relationship to team and project communication found in this study necessitates additional investigation.

REFERENCES

- Anderson, J.C. and Gerbing, D.W., "The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory analysis", *Psychometrika*, 49, 1984, 155-173.
- Anthony, S. and Garner, B., "Teaching soft skills to business students: An analysis of multiple pedagogical methods", *Business and Professional Communication Quarterly*, 79 (3), 2016, 360-370.
- Bagozzi, R.P., *A Causal Model in Marketing*, Wiley & Sons, New York, 1980.
- Bennis, W., *Learning to Lead*. Addison-Wesley, MA, 1997.
- Brones, F., and Carvalho, M.M., "From 50 to 1: Integrating literature toward a systemic ecodeign model", *Journal of Cleaner Production*, 96 (1), 44-57, 2014.
- Browne, M.W. and Cudeck, R., Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models*, Sage, Newbury Park, CA, 1993, 445-455.
- Byrne, B.M., *A Primer of LISREL: Basic applications and programming for confirmatory factor analytic models*, Springer, New York, 1989.
- Carvalho, M.M. and Rabechini Jr., R. "Impact of risk management on project performance: The importance of soft skills", *International Journal of Production Research*, 53(2), 32-340. 2015.
- Churchill, G.A. "A paradigm for developing better measures of marketing constructs", *Journal of Marketing Research*, 16, 64-73, 1979.
- Cohen, D.S. *The talent edge: A behavioral approach to hiring, developing, and keeping top performers*, Wiley & Sons, Canada, 2001.
- Crawford, L., Pollack, J., and England, D., "Uncovering the trends in project management: Journal emphases over the last 10 years", *International Journal of Project Management*, 24(2), 175-184, 2006.
- Creasy, T. and Anantatmula, V.S., "From every direction – How personality dimensions of project managers can conceptually affect project success", *Project Management Journal*, 44(6), 36-51, 2013.
- Department of Labor's Office of Disability Employment Policy. Soft skills to pay the bill – mastering soft skills for workplace success, 2012. Available online: <https://www.dol.gov/odep/topics/youth/skills/softskills.pdf>.
- DuBois, M., Hanlon, J., Koch, J., Nyatuga, B., and Kerr, N., "Leadership Styles of Effective Project Managers: Techniques and Traits to Lead High Performance Teams", *Journal of Economic Development, Management, IT, Finance, and Marketing*, 7(1), 30-46, 2015.
- Durão, L.F.C.S., Grotti, M.V.F., Maceta, P.R.M., and Zancul, E.S., Berssaneti, F. T., Carvalho, M. M., "A review of the soft Side in project management: Concept, trends and challenges", *GEPROS. Gestão da Produção, Operações e Sistemas, Bauru, Ano* (12)2, 157-176, 2017.
- Feffer, M., "HR's hard challenge: When employees lack soft skills", *Society for Human Resource Management*. 2016. Available online: <https://www.shrm.org/hr-today/news/hr-magazine/0416/pages/hrs-hard-challenge-when-employees-lack-soft-skills.aspx>
- Gilbert, T. A Leisurely Look at Worthy Performance. *The 1998 ASTD Training and Performance Yearbook*. Woods, J.

- & Gortada, J. (Eds.). McGraw-Hill, New York, 1998.
- Gong, Y., "Subsidiary staffing in multinational enterprises: agency, resources, and performance", *Academy of Management Journal*, 46(6), 728-739, 2003.
- Griffin, R.W. and Moorhead, G., *Organizational behavior: Managing people and organizations* (10th Ed.). Cengage Learning: Boston, MA, 2010.
- Hair, J. Jr., Black, W., Babin, B., and Anderson, R. *Multivariate Data Analysis*, Prentice-Hall, Upper Saddle River, NJ, 2010.
- Herazo, B., Lizarralde, G., and Pacquin. "Sustainable development in the building sector: A Canadian case study on the alignment of strategic and tactical management", *Project Management Journal*, 43(2), 84-100, 2012.
- Howell, J.A. and Sheab, C.M., "Individual differences, environmental scanning, innovation framing, and champion behavior: Key predictors of project performance", *The Journal of Product Innovation Management*, 18, 15-27. 2001.
- Hu, L.T. and Bentler, P.M., "Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives", *Structural Equation Modeling*, 6, 1-55, 1999.
- Jensen, M.C. and Meckling, W. "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics* 3, 305-360. 1976.
- Keil, M., Koo, H., and Tianjie, D., "Understanding the most critical skills for managing IT projects: A Delphi study of IT project managers", *Information & Management*, 50(7), 398-414, 2013.
- Kemery, E.R. and Stickney, L.T., "A multifaceted approach to teamwork assessment in an undergraduate business program", *Journal of Management Education*, 38(3), 462-479, 2014.
- Kharbanda, O.P. and Pinto, J.K., *Successful Project Managers: Leading Your Team to Success*, John Wiley & Sons, New York, 1995.
- Kumar, S. and Hsiao, J.K., "Soft skills the hard way: Planting a seed of leadership in engineering classes", *Leadership and Management in Engineering*, 7(1), 18-23, 2016.
- Kyllonen, P.C., "Soft skills for the workplace", *Change: The Magazine of Higher Learning*, 4(6), 16-23, 2013.
- Larson, E.W. and Gobeli, D.H., "Significance of project management structure on development success", *IEEE Transactions on Engineering Management*, 36(2), 119-125, 1989.
- Levasseur, R.E., "People skills: Developing soft skills – A change management perspective", *Interfaces*, 43(6), 566-571, 2013.
- MacCallum, R.C., Browne, M.W., and Sugawara, H.M., "Power analysis and determination of sample size for covariance structure modeling", *Psychological Methods*, 1, 130-149. 1996.
- Marion, J.W., Richardson, T.M., Earnhardt, M.P., "Project manager insights: An analysis of career progression", *Organisational Project Management*, 1(1), 53-73, 2014.
- Mitchell, G.W., Skinner, L.B., and White, B.J., "Essential soft skills for success in the twenty-first century workforce as perceived by business educators", *Delta Pi Epsilon Journal*, 52, 43-53, 2010.
- Northouse, P.G., *Leadership: Theory and Practice* (6th Ed.). Sage Publications, Thousand Oaks, CA, 2013.
- Nunnally, J.C., *Psychometric theory*, (2nd ed.), McGraw-Hill, New York. 1978.

- Pinto, J.K. and Slevin, D.P., "Critical factors in successful project implementation", *IEEE Transactions on Engineering Management*, 34(1), 22-27, 1987.
- Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide, 5th ed.)*, Project Management Institute, Newtown Square, PA, 2013.
- Qualtrics, Provo, UT, USA.
<http://www.qualtrics.com>
- Richardson, G.L., *Project management theory and practice*, CRC Press, Taylor & Francis Group, Boca Raton, FL, 2010.
- Ritter, B.A., Small, E.E., Mortimer, J.W., and Doll, J.L., "Designing management curriculum for workplace readiness: Developing students' soft skills", *Journal of Management Education*, 42(1), 88-103, 2018.
- Schanzenbach, D.W., Nunn, R., Bauer, L., Mumford, and Breitwieser, A. *Seven facts on noncognitive skills from education to the labor market*, 2016. Retrieved October 7, 2017 from <https://www.hamiltonproject.org>.
- Shenbar, A.J., What's the next generation of project management? Paper presented at PMI® Global Congress 2012, Project Management Institute, Newtown Square, PA, 2012.
- Shenhar, A.J. and Dvir, D., *Reinventing project management*, Harvard Business School Press, Boston, MA, 2007.
- Silva de Araujo, C.C. and Pedron, C.D., "IT project manager competencies and IT project success: A qualitative study", *Organisational Project Management*, 2(1), 53-75, 2015.
- Stevenson, D.H. and Starkweather, J., "PM critical competency index: IT execs prefer soft skills", *International Journal of Project Management*, 28(7), 663-671. 2010.
- Stoll, R.C., *Wellness: The good the bad and the opportunity*, Xlibris Corporation, Bloomington, IN, 2012.
- Theron, R.A., Schlechter, P.N., Crafford, A., and O'Neill, C., *Industrial Psychology*, Pearson Education, New York. 2006.
- Weaver, W., The mathematics of communications, In C.D. Mortensen (Ed.), *Communication Theory*, Transaction Publishers, New Brunswick, NJ, 27-37, 1949.
- Willard, M., Wiedmeyer, C., Flint, W.R., Weedon, J.S., Woodward, R., Feldman, I., and Edwards, M., "The sustainability professional: 2010 competency survey report", *Environmental Quality Management*, 20, 49-83, 2010.
- Yadin, A., "Enhancing information systems students' soft skills: A case study", *International Journal of Modern Education and Computer Science*, 4(10), 17-25, 2012.
- Zheng, G., Zhang, C. and Lei, L., "Practicing and evaluating soft skills in IT capstone projects", the 16th Annual Conference on Information Technology Education, 109-113, 2015.

APPENDIX:

Survey instrument

ORGANIZATIONAL BEHAVIOR	Strongly Disagree	Disagree	Somewhat	Somewhat Agree	Agree	Strongly Agree
The following statements measure overall performance of your firm's organizational behavior. Please circle the appropriate number that best indicates the level of your firm's overall performance.						
LEADERSHIP In our organization, we set the following criteria to measure leadership.						
Create a clear vision	1	2	3	4	5	6
Initiate an atmosphere of mutual trust	1	2	3	4	5	6
Take responsibility for decisions without shifting blame	1	2	3	4	5	6
Embrace authentic diversity	1	2	3	4	5	6
Celebrate organizational and team success	1	2	3	4	5	6
COMMUNICATIONS In our organization, we set the following criteria to measure team communications.						
Communicate decisions promptly and effectively	1	2	3	4	5	6
Listen for completeness	1	2	3	4	5	6
Encourage people to communicate their differing opinions	1	2	3	4	5	6
Maintain open communications that resolve conflicts	1	2	3	4	5	6
Employ superior written techniques	1	2	3	4	5	6
Exhibit excellent oral presentation skills	1	2	3	4	5	6