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Key Competencies for Project Managers: An Empirical Study

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Acknowledgements

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Abstract

Extant project management literature on the factors that impact the success of projects suggests that the traits, competencies and leadership style of project managers positively impact project success. Despite this understanding, the key competencies and personality traits of projects managers is an under researched area. While some studies are available that examine whether a particular behavioral trait of the project manager improves his / her efficiency, few studies prepare a list of the key competencies / traits of successful project managers. Given this consideration, the present study aims to prepare a comprehensive list of the traits / qualities of a project manager crucial for project success.

Data for the study was collected with the help of a questionnaire (n=88). An analysis of the data reveals a typical competency profile of a project manager. The top competencies of project managers as reflected by the results of the current study are effective communication, emotional intelligence, team spirit, ability to manage conflict and ability to deal with change. Implications of the findings are discussed.

Keywords

Competencies, behavioral traits, project manager, project success

Introduction

Projects are means with the help of which organizations across the world try to achieve their objectives (Anantatmula, 2010). It may be pertinent to mention that project budgets run into millions of dollars and the future success and profitability of many organizations is predicated on the outcome of projects. This makes project success a matter of utmost concern to organizations. Despite this understanding, projects fail for many different reasons (Anantatmula, 2010). As a result, project management literature often deliberates on ways to ensure project success (Ika, 2009).

The terminology "project success" is used in two distinct ways in project management literature. As per Cooke-Davies (2002), the traditional definition of project success relates to performance measures such as cost and time. The modern definition has been widened to include stakeholder requirements (Jugdev & Muller, 2005). In the present study, the terminology of project success is used in the modern broad sense.

Existing literature proposes many ways in which project success can be positively impacted. One such way is to identify individuals ideally suited to perform the role of project managers (Ulbrich, 2017). Anantatmula (2010, p. 14) observes:

> Projects fail to meet time and cost targets due to poor morale, lack of motivation, poor human relations, poor productivity, and lack of commitment from employees. It is evident…that people-related issues play a crucial role in project performance, underlying the importance of a project manager's management and leadership roles.

It is obvious from the above argument that the choice of a suitable project manager is crucial for the success of a project. Numerous other scholars have also made similar observations (Leban & Zalauf, 2004). Khan, Long and Iqbal (2014, p. 1282) elaborate:

> Project leadership competencies can significantly and positively affect the project success as well as organizational success. Researchers have affirmed belief that project leadership competency is the most influential factor in project success…project leadership competency positively and significantly influences the project success.

Therefore, it is safe to suggest that an important determinant of project success is the leadership style / behavioral traits / competencies of project managers (Ulbrich, 2017). Despite this understanding and general consensus in existing literature, this line of research has caught the attention of few scholars. The behavioral traits / competencies of project managers remains an under examined area in project management research (Turner & Muller, 2005). It may be apt to clarify that while some studies are available that examine whether a particular behavioral trait of the project manager improves the individual's efficiency, few studies prepare a list of the key competencies / traits of successful project managers for the 21st century.

The present study addresses this gap in the available literature in the field of project management and attempts to ascertain the important competencies of project managers. Based on a survey, this study aims to develop a checklist of the key competencies of project managers. Apart from plugging a gap in project management literature, this study has practical implications too. It will help practitioners charged with the responsibility of selection of project managers improve their criteria, shortlisting procedures, and success metrics.

The next sections of this document provide an overview of the problem statement, a survey of the relevant literature and the study methodology. At the end of this document, the relevant references are provided.

Problem Statement

Extant project management literature that examines the factors that impact the success rate of projects suggests that the influence of traits, leadership style and competencies of project managers on project success remains an under researched area (Turner & Muller, 2005). Despite conclusive evidence from the field of general management that establishes a relation between organizational success and the behavioral traits of managers (Kirkpatrick & Locke, 1991), project management literature has ignored this area. As such, project management literature is replete with call for research that develops a typical competency profile of a project manager (Turner & Muller, 2005; Ulbrich, 2017). Given this consideration, the present study aims to develop a detailed list of the traits / qualities of a project manager crucial for project success. Such a research has the potential to help reflective practitioners (1) understand key traits of successful project managers, and (2) choose the right people for the role of project managers. This is likely to positively impact the success rate of projects. Apart from the above-discussed practical motivations for conducting this study, the present study is also likely to contribute to the field of project management at a theoretical level.

Literature Review

This document presents a review of the relevant studies. The literature survey helped provide the required context and theoretical orientation to the problem. It also helped draft the survey instrument.

Studies on the behavioral traits of project managers in relation to project success suggest that this is an under researched area in project management research (Turner & Muller, 2005; Khan et al, 2014). However, empirical evidence from the field of general management suggests a definite link between the two constructs (Kirkpatrick & Locke, 1991). Ample literature is available that indicates the positive impact of effective leadership style / competencies / behavioral traits of managers on organizational success (Kirkpatrick & Locke, 1991). This encouraged some scholars to examine the relationship between the two constructs in the field of project management and identify key competencies / traits of project managers (Turner & Muller, 2005; Ulbrich, 2017). These studies are discussed in the next sub-section.

Key Competencies of Project Managers

As far back as 1987, Frame suggested that projects could significantly gain from specific leadership styles of project managers. Frame (1987) contended that different leadership styles were suitable for different project stages. Later, emphasizing the importance of the behavioral traits of project managers in relation to project success, Lee-Kelley, Leong and Loong (2003, p. 590) observed: "…the inner confidence and self-belief from personal knowledge and experience are likely to play an important role in a manager's ability to deliver a project successfully". As part of a larger study, Kendra and Taplin (2004) reached a similar conclusion. They found that the personal traits, leadership style and behavior of the project manager constitute important success factors.

If we categorically review the studies that examine the key traits of successful project managers, we come across some studies. A snapshot of this summary is exhibited in table 1.

Table 1: Key Competencies of Project Managers: A Summary of Literature Review

Author(s) (Year)	Competencies											
	Effective Communication	Ability to build trust among team members	Supportive	Honesty	Self-Confidence	Self-Belief	Ability to deal with change	Team Spirit	Ingenuity	Ability to manage conflict	Emotional Intelligence	Ambiguity Acceptance
Fedor, Ghosh, Caldwell, Maurer, & Singhal (2003)	√		√									
Lee-Kelley et al. (2003)					√	√						
Henderson (2004)	√											
Jugdev & Muller (2005)	√											
Krahn & Hartment (2006)	√	√		√				√		√		
Henderson (2008)	√											
Anantatmula (2010)	√	√	√									
Clarke (2010)	√										√	

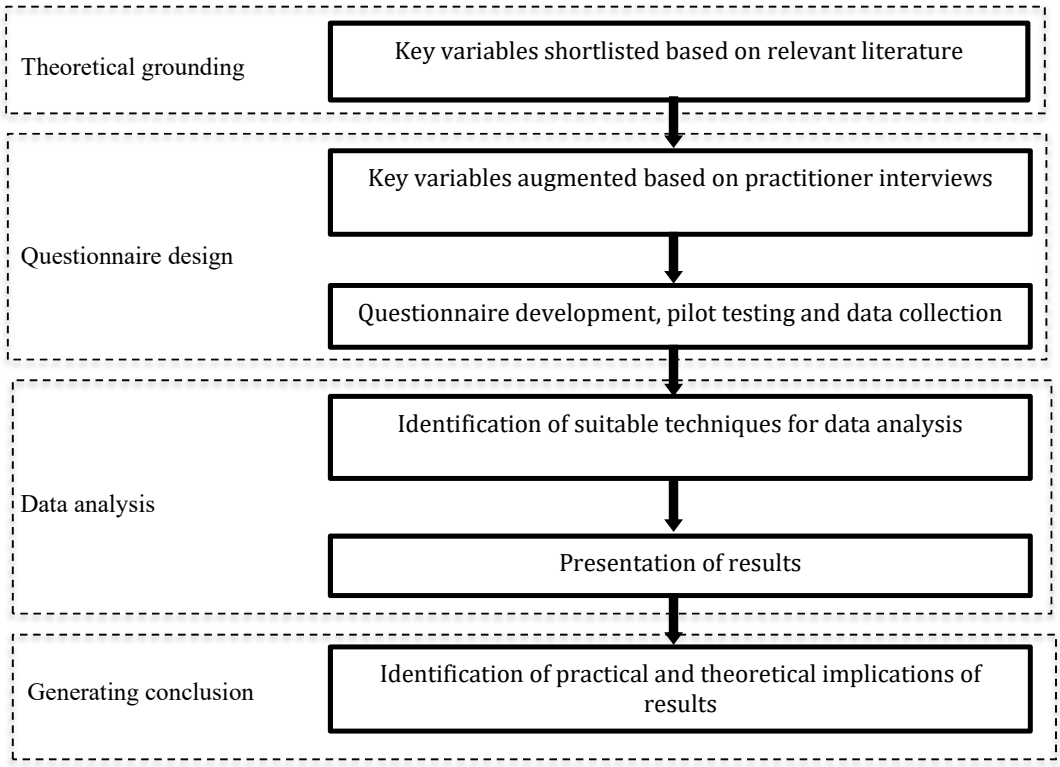
Muller & Turner (2010)	√								√		√	
Stevenson & Starkweather (2010)	√						√					√
Davis (2011)	√								√		√	
Bakhsheshi & Nejad (2011)				√								
Turner & Zolin (2012)	√	√										
Creasy & Anantatmula (2013)	√							√		√		
Hagen & Park (2013)												√
Turner, Maylor & Swart (2015)									√			√
Ulbrich (2017)	√											√

Source: Prepared by the author

Methodology

The purpose of this thesis is to prepare a list of the key competencies of project managers. The solution approach used for this study is presented in figure 1.

Figure 1. Study Methodology



Source: Author's study

As can be seen from Figure 1, to start with, literature gap will be identified based on a survey of the literature. This literature gap will help shape the study problem. Further, review of literature will be conducted to identify key variables for the questionnaire. To identify relevant studies for literature review, relevant key words will be used to search for suitable articles. The appropriate articles from the search will be retained and fresh search will be undertaken to look for more articles. The references sections of the articles that come up during the initial search will be referred to further identify pertinent articles. Some of the suitable journals identified by the author to shortlist the relevant studies include *Project Management Journal, International Journal of Project Management, Decision Sciences, Engineering Management Journal* and *IPEDR (International Proceedings of Economics*

Development and Research. Both empirical and review articles will be reviewed. Use of both types of studies is a recommended practice is research (Nakata & Huang, 2005). Furthermore, the key variables identified based on literature review will be augmented by five/six practitioner interviews. Interviewees will be people typically working in project management teams for a period of over five years. This approach is recommended when dealing with an under researched topic (Rao & Perry, 2003). The final list of draft attributes will become the basis of the questionnaire.

Before the administration of the questionnaire, a pilot test would be conducted to pretest the instrument. The questionnaire would be administered only after ensuring that it is generally understandable. The author will attempt to collect data from at least 100 respondents (through convenience sampling).

The collected data would be analyzed with the help of suitable data analysis techniques. The results would be displayed in a reader friendly manner. The practical and theoretical implications of the results would be identified and discussed. The author also hopes to compare the findings of the study with the available literature on the subject to make a meaningful contribution to the field of project management.

Results

This section presents the details of data collection and data analysis. It throws particular light on how the survey instrument was developed, tested and administered. Details of the profile of respondents and the technique used for data analysis are also presented in this section. This section is divided into five sub sections: questionnaire development, data collection, respondent profile, research method, and data analysis and data presentation.

Questionnaire Development

An extensive review of literature was undertaken to identify the variables used in the questionnaire (key competencies of project managers). The results of the literature survey are exhibited in table 1. As can be seen, 12 variables were identified based on the literature survey: effective communication, ability to build trust, supportive, honesty, self-confidence, self-belief, ability to deal with change, team spirit, ingenuity, ability to manage conflict, emotional intelligence and ambiguity acceptance. Further, interviews were conducted to augment the list of variables and make it more relevant. In all, three interviews were conducted. The details of the interviewees are exhibited in table 2 (a). As can be seen, all the three interviewees were from different industries/departments: information technology, legal and human resources. This helped ensure that the competencies included in the questionnaire were not industry/department specific. The interviews were conducted in an unstructured manner. The interviewees were asked to identify themselves and answer just one question: "What in your opinion are the key competencies of a project manager?" Full freedom was given to the interviewees to articulate their responses. Based on the output of the interviews, two more variables: technical competence and negotiation skills were added to the list of variables. The final list constituted 14 unduplicated variables. This list became the basis of the questionnaire used to collect data. For list of variables used in the questionnaire refer to table 2 (b). For questionnaire refer to Annexure 1.

In the questionnaire, the respondents were asked to rank the five most important competencies of project managers on a scale of 1 to 5 (1 being the most important). In case the respondent felt that two variables should be allotted the same rank, he/she was allowed to do so (no restrictions were imposed). The questionnaire also contained questions on the demographic profile of the respondents: gender, age and number of years of relevant work experience.

Table 2 (a): Details of Interviewees

Name	Designation	Company
Aman Chhina	Senior Director	Cognizant, NJ, USA
Ashish Sidhu	Independent Contractor	Department of Justice, London, UK
Sukhpreet Kaur	Project Head	Ministry of Human Resource Development, New Delhi, India

Source: Prepared by the author

Table 2 (b): List of Variables Used in the Questionnaire

Serial Number	Competency
1.	Effective communication
2.	Ability to build trust
3.	Supportive
4.	Honesty
5.	Self-confidence
6.	Self-belief
7.	Ability to deal with change
8.	Team spirit
9.	Ingenuity

10.	Ability to manage conflict
11.	Emotional intelligence
12.	Ambiguity acceptance
13.	Technical competence
14.	Negotiation skills

Source: Prepared by the author

Data Collection

The questionnaire exhibited in Annexure 1 was used to collect data for the study. Before proceeding with data collection the questionnaire was pretested to ensure that it was generally understandable and free of errors. The pilot test was conducted on five respondents randomly selected from the relevant population.

All people with relevant work experience, that is, work experience in the field of project management (either as project managers or as team members) constituted the study universe. The sampling technique used by the author was convenience sampling. The following link was used to collect data:

https://goo.gl/forms/X1c4DjN7pvy6Pn1C2

In all 88 responses were received. The final analysis is based on the 88 responses received.

Respondent Profile

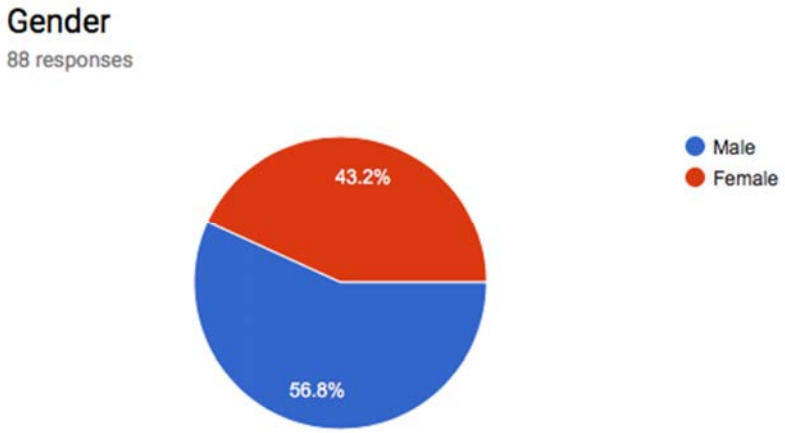
The profile of respondents is exhibited in table 3. It is also graphically exhibited in figures 2 to 4.

Table 3: Demographic Profile of the Respondents

Gender	Male	56.8%
	Female	43.2%
Age (in years)	< 20	5.7%
	20-35	50%
	35-50	28.4%
	50-60	11.4%
	> 60	4.5%
Experience in project management/as team member (in years)	< 1	9.1%
	1-5	45.5%
	5-10	23.9%
	>10	21.6%

Source: Prepared by the author

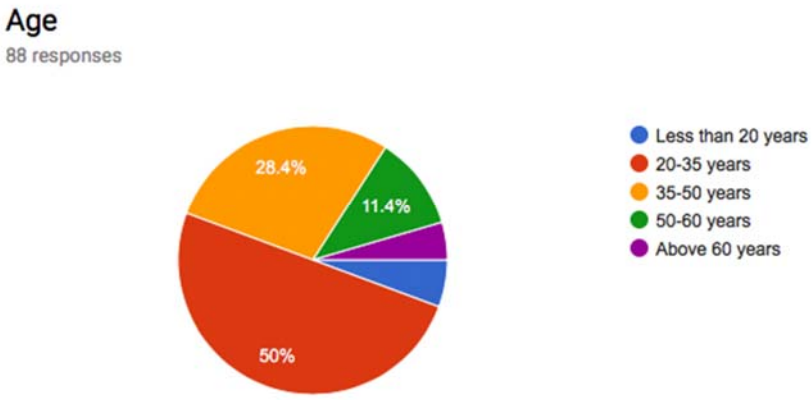
Figure 2: Gender Split of the Respondents



Source: Survey conducted by the author

Figure 2 exhibits the gender split of the respondents. As can be seen, male respondents outnumbered the female respondents. 56.8 per cent of the respondents were male and 43.2 per cent of the respondents were female.

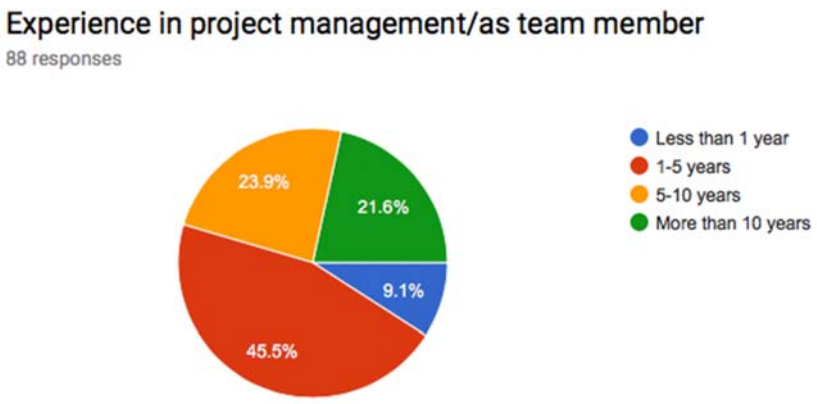
Figure 3: Descriptive Statistics of the Age of the Respondents



Source: Survey conducted by the author

Figure 3 exhibits the descriptive statistics of the age of the respondents. 5.7 per cent of the respondents were below the age of 20 years. 50 per cent respondents were in the age bracket of 20 to 35 years. 28.4 per cent respondents were in the age bracket of 35 to 50 years. 11.4 per cent respondents were in the 50 to 60 age group and 4.5 per cent respondents were over 60 years in age.

Figure 4: Descriptive Statistics of Relevant Experience of Respondents



Source: Survey conducted by the author

Figure 4 presents the descriptive statistics of relevant experience of respondents in the field of project management as managers or team members. As can be seen, 9.1 per cent respondents had relevant experience of less than one year, 45.5 per cent had relevant experience between one and five years, 23.9 per cent had relevant experience between five and ten years and 21.6 per cent respondents had experience of over ten years.

Research Method

To find the most important competencies of project managers/rank the competencies of project managers, the author used weighted summation. The use of this method is suggested if the aim is to make incomparable variables (competencies of project managers in the present case) comparable and establish priorities.

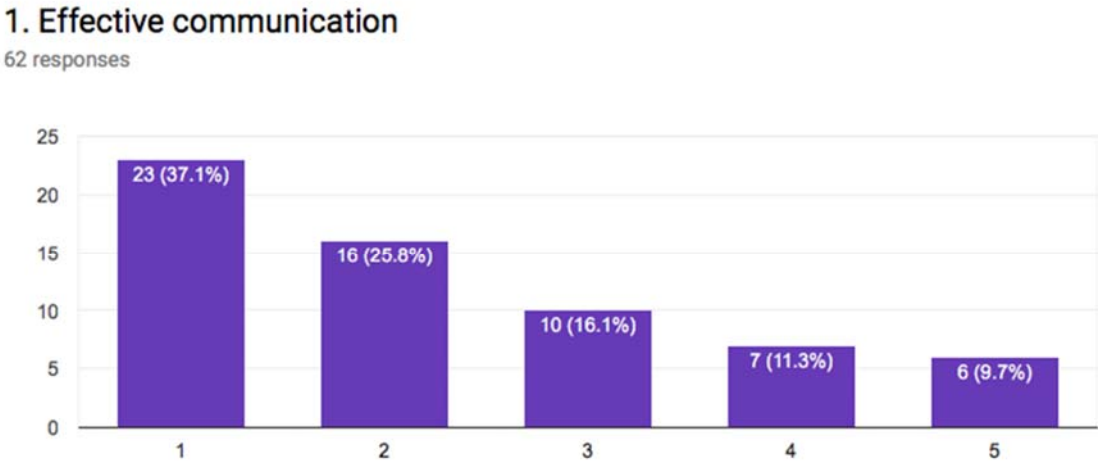
In the present case, based on the ranks allotted to the various competencies in the questionnaire, weighted scores were calculated. These scores were calculated for each

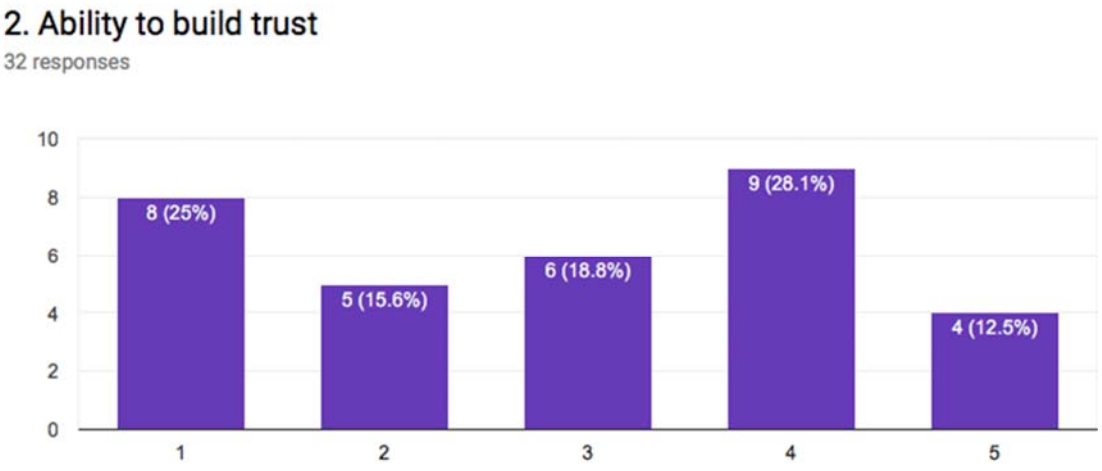
variable. These weighted scores were summated arrive at a final score per variable. This final summated score helped provide a single aggregate score per variable. The final importance of the variables was assessed based on the aggregate scores (Herwijnen, 2006). Since, rank 1 was the most important rank, it was assigned a weight of 5. Rank 2 was assigned a weight of 4 and so on. Since, rank 5 was the least important rank, it was assigned a weight of 1. Ranks were multiplied with their weights and the scores for a particular variable were added to arrive at the final summated score. For details refer to table 5.

Data Analysis and Data Presentation

The first step in data analysis was to exactly assess the number of respondents who had allotted a particular rank to a particular competency. This data was collected from figures 5(a) to 5(n).

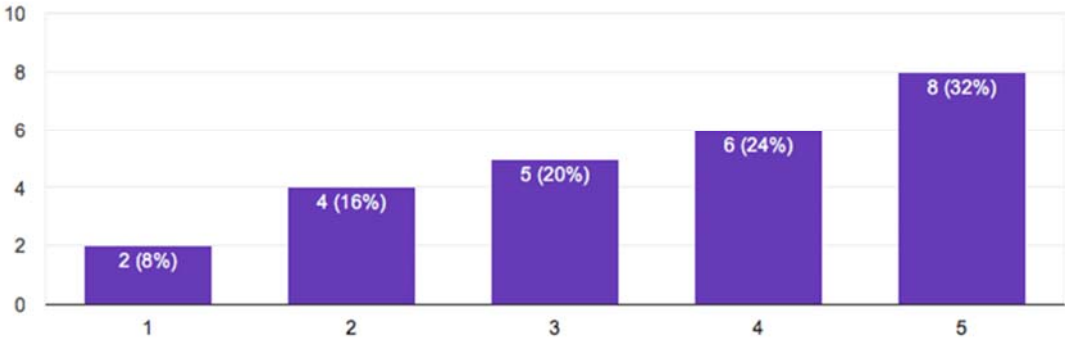
Figures 5(a) to 5(n): Descriptive Statistics of Ranks Allotted by Respondents to the Various Variables in the Questionnaire





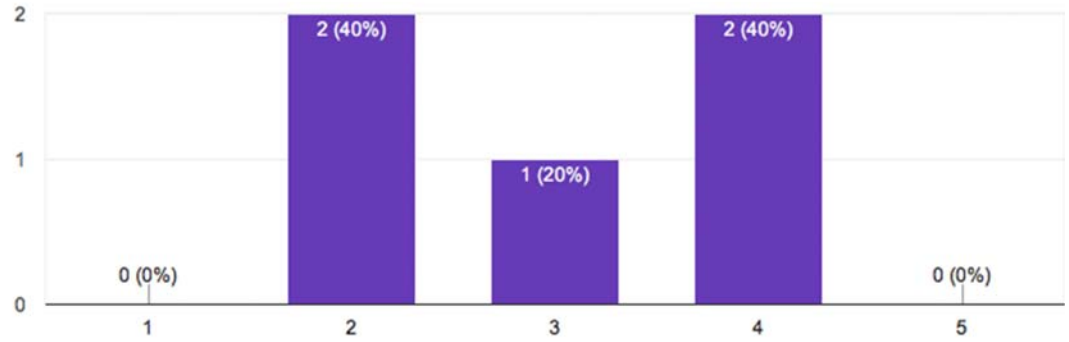
3. Supportive

25 responses



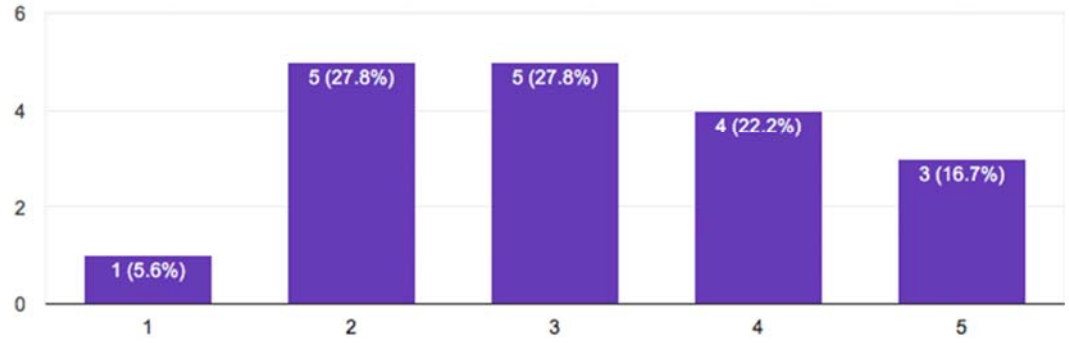
4. Honesty

5 responses



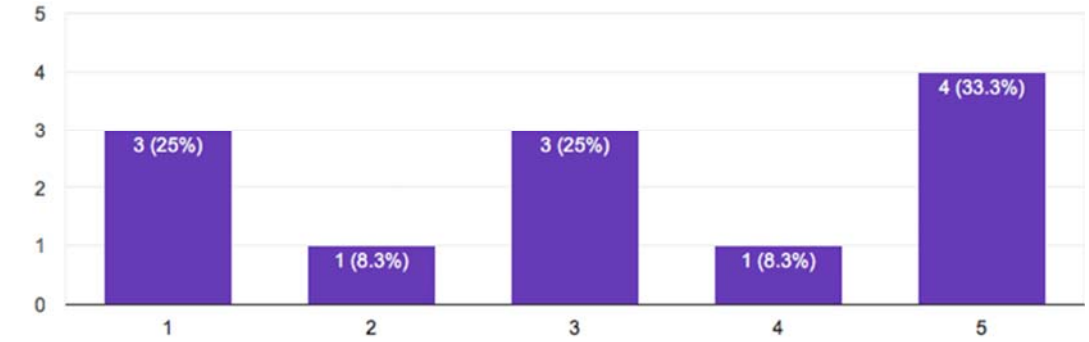
5. Self-confidence

18 responses



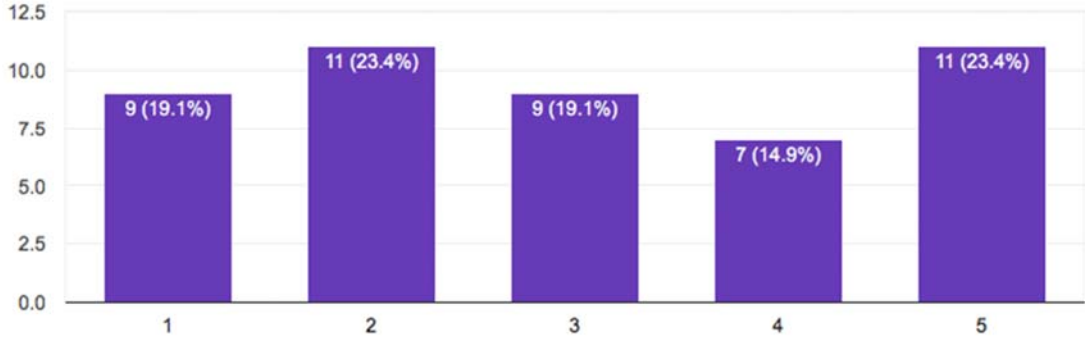
6. Self-belief

12 responses



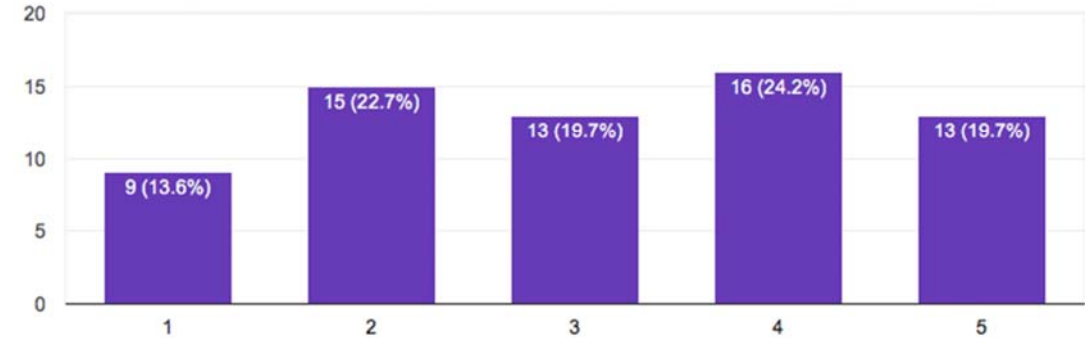
7. Ability to deal with change

47 responses



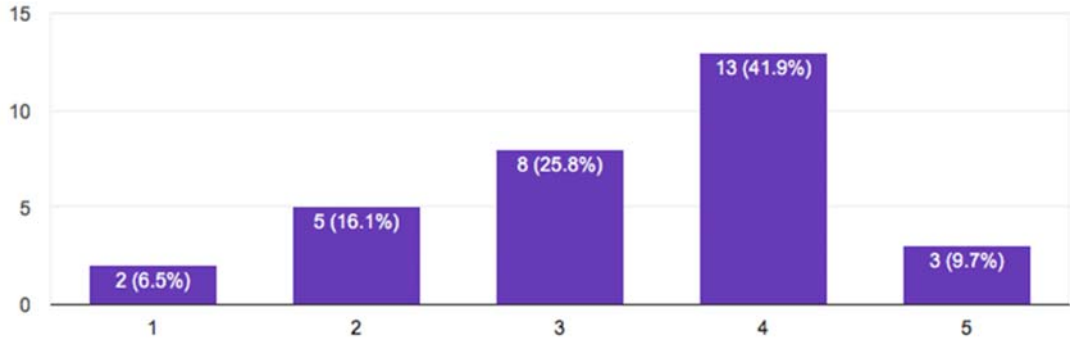
8. Team spirit

66 responses



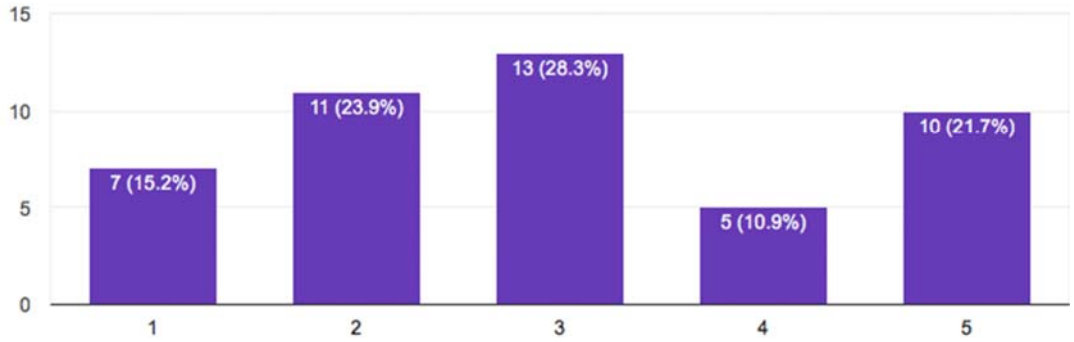
9. Ingenuity

31 responses



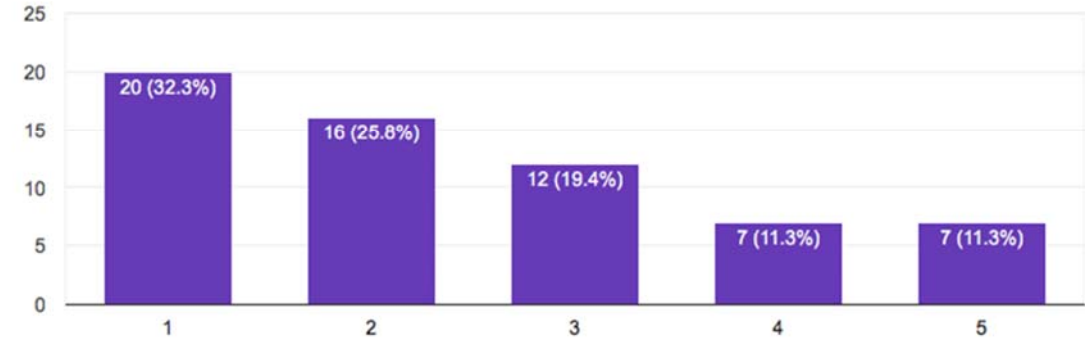
10. Ability to manage conflict

46 responses



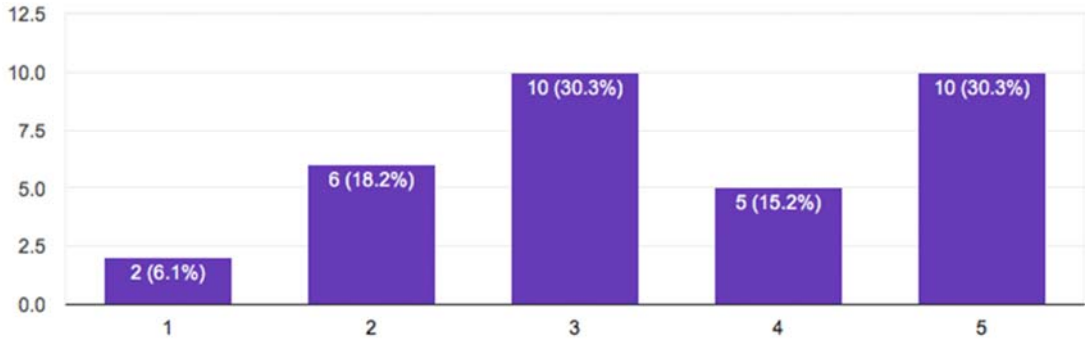
11. Emotional intelligence

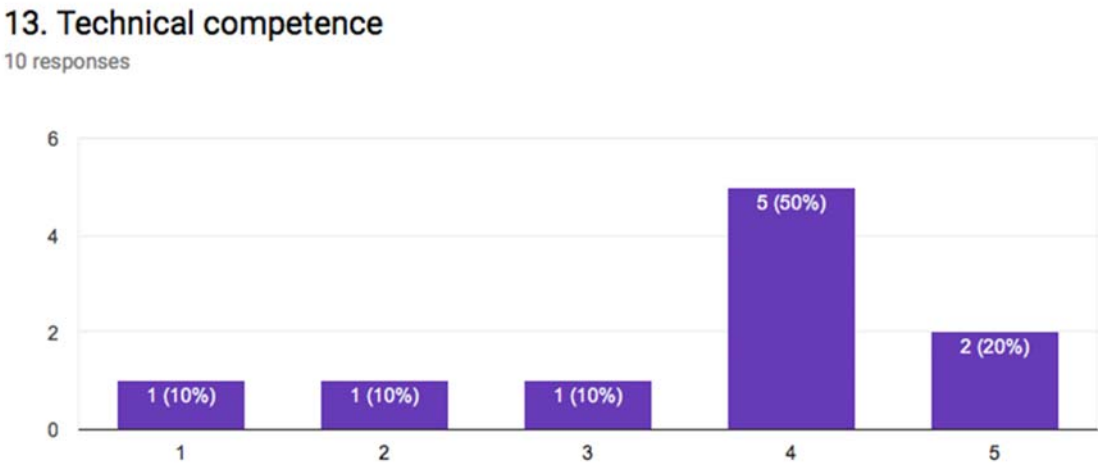
62 responses

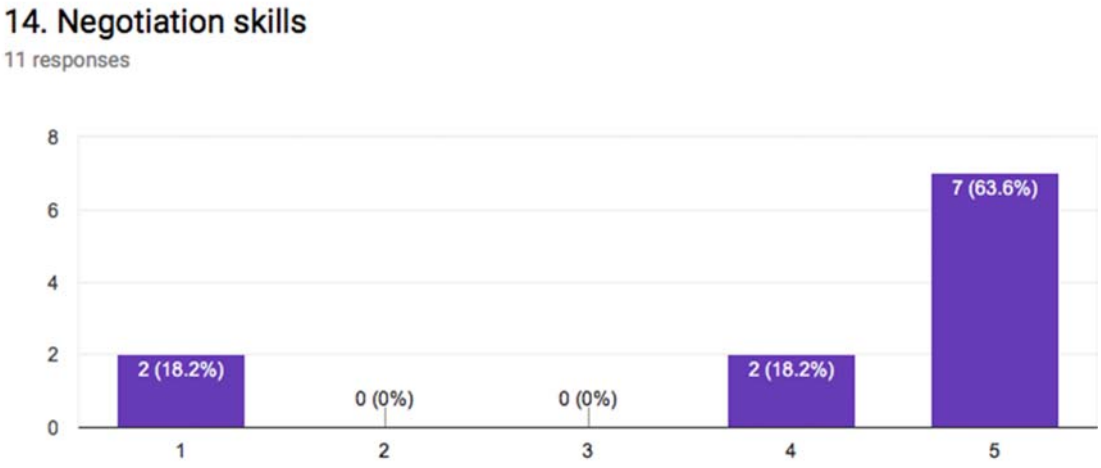


12. Ambiguity acceptance

33 responses







The output of the figures 5(a) to 5(n) is reflected in table 4 in the form of columns A to E. In columns A1 to E1, the weighted scores (number of ranks * weight assigned to a particular rank) are exhibited. The final summated score is exhibited in the last column: F. This score was calculating by aggregating all the weighted scores.

Table 4: Summated Scores of the Competencies of Project Managers

Competency	A	A1	B	B1	C	C1	D	D1	E	E1	F
Effective communication	23	115	16	64	10	30	7	14	6	6	**229**
Ability to build trust	8	40	5	20	6	18	9	18	4	4	**100**
Supportive	2	10	4	16	5	15	6	12	8	8	**61**
Honesty	0	0	2	8	1	3	2	4	0	0	**15**
Self-confidence	1	5	5	20	5	15	4	8	3	3	**51**
Self-belief	3	15	1	4	3	9	1	2	4	4	**34**
Ability to deal with change	9	45	11	44	9	27	7	14	11	11	**141**
Team spirit	9	45	15	60	13	39	16	32	13	13	**189**
Ingenuity	2	10	5	20	8	24	13	26	3	3	**83**
Ability to manage conflict	7	35	11	44	13	39	5	10	10	10	**138**
Emotional intelligence	20	100	16	64	12	36	7	14	7	7	**221**
Ambiguity acceptance	2	10	6	24	10	30	5	10	10	10	**84**
Technical competence	1	5	1	4	1	3	5	10	2	2	**24**
Negotiation skills	2	10	0	0	0	0	2	4	7	7	**21**

Source: Prepared by the author

A: Number of rank 1 assigned

A1: Weighted score (A*5)

B: Number of rank 2 assigned

B1: Weighted score (B*4)

C: Number of rank 3 assigned

C1: Weighted score (C*3)

D: Number of rank 4 assigned

D1: Weighted score (D*2)

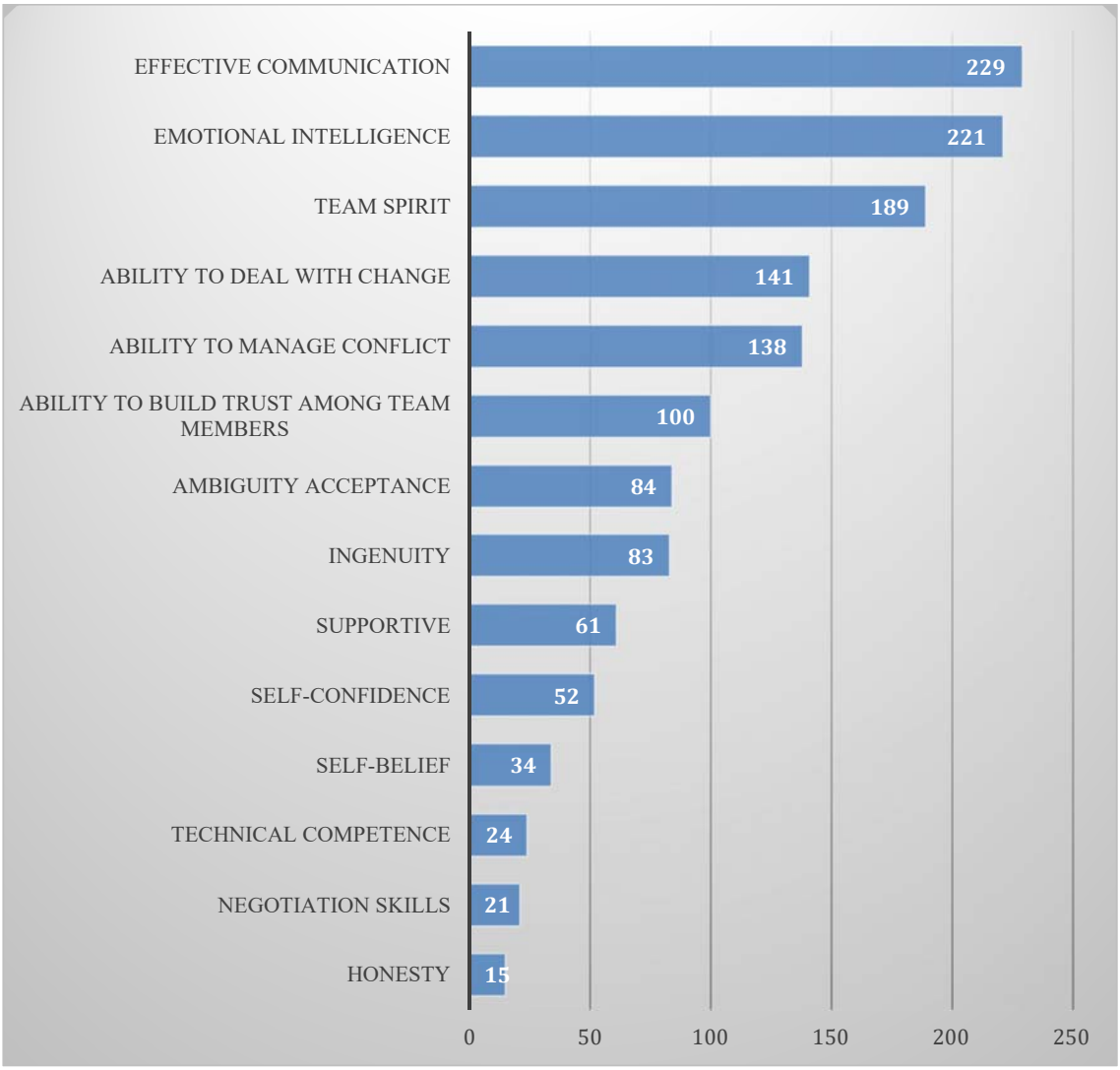
E: Number of rank 5 assigned

E: Weighted score (E*1)

F: Summated score (A1+B1+C1+D1+E1)

Based upon the summated score of each variable, figure 6 has been created. This figure shows the final summated score of each competency.

Figure 6: Key competencies of Project Managers (Summated Scores)



Source: Prepared by the author

Based on the summated scores of each competency, ranks have been assigned to each competency. For details refer to table 5. The competency with the highest summated score has been assigned a rank of 1. The competency with the second highest summated score has been assigned a rank of 2 and so on. The five most important competencies (based on their ranks) have been highlighted in table 5.

Table 5: Key Competencies of Project Managers

Competency	Summated Score	Rank
Effective communication	**229**	**1**
Emotional intelligence	**221**	**2**
Team spirit	**189**	**3**
Ability to deal with change	**141**	**4**
Ability to manage conflict	**138**	**5**
Ability to trust	100	6
Ambiguity acceptance	84	7
Ingenuity	83	8
Supportive	61	9
Self-confidence	52	10
Self-belief	34	11

Technical competence	24	12
Negotiation skills	21	13
Honesty	15	14

Source: Prepared by the author

The information contained in table 5 provides a clear cut ranking of the 14 competencies of project managers. It is clearly visible from table 5 that the most important competency of project managers is effective communication, followed by emotional intelligence, team spirit, ability to deal with change and ability to manage conflict.

In the sequence of importance, the other competencies of project managers are ability to trust, ambiguity acceptance, ingenuity, supportive, self-confidence, self-belief, technical competence, negotiation skills and honesty.

Discussion

This section deals with a discussion of the study results. The implications of the results from a practical, as well as theoretical perspective have also been discussed. Lastly, this section highlights the limitations of the study and provides scope for future research.

The objective of the present study was to establish the key competencies of project managers. For the same, a primary survey with the help of a well-designed questionnaire was conducted. Only people with relevant work experience (project managers/team members) were approached for the purpose of data collection. At the end of the survey 88 usable responses were obtained.

With the help of data collected from 88 respondents, the current study prepared a typical competency profile of a project manager (exhibited in figure 6). The study found that the top five competencies of project managers are effective communication, emotional intelligence, team spirit, ability to deal with change and ability to manage conflict.

It may be of interest to note that the variables used in the questionnaire were primarily selected based on a literature survey (12 out of the 14 variables used in the questionnaire were selected based on literature review). Only two variables were included in the questionnaire based on the inputs received from three practitioners (details available in the preceding section). However, both the variables included in the questionnaire at the behest of the practitioners did not achieve good scores.

The findings of this study can be useful for practitioners in the field of project management. The results will help reflective practitioners understand the key competencies of successful project managers. They will also help in the choice of right persons for the role of project managers. This is likely to positively impact the success rate of projects. Further, since this study plugs in a literature gap, it also adds to the existing project management literature.

Like every other study, the present study too suffers from some limitations. The sample size of the study (n=88) may prevent generalization of results. Also, the sampling technique used by the author: convenience sampling, has its inherent limitations. The author sent a reminder to a number of respondents to fill the questionnaire. This could have given rise to non-response bias/unengaged responses. Further, while care was taken to ensure that all competencies of project managers were included in the questionnaire, there is a possibility that the author may have skipped some competency.

Future researchers may conduct this study devoid of its limitations. They may also examine if the required competencies of project managers vary by industry and gender. Future scholars may also undertake a more energetic literature review or conduct more interviews of relevant practitioners to ensure that all competencies of project managers are included in the instrument used for data collection. The author also recommends the use of a qualitative approach to conduct similar studies in the future.

Conclusion

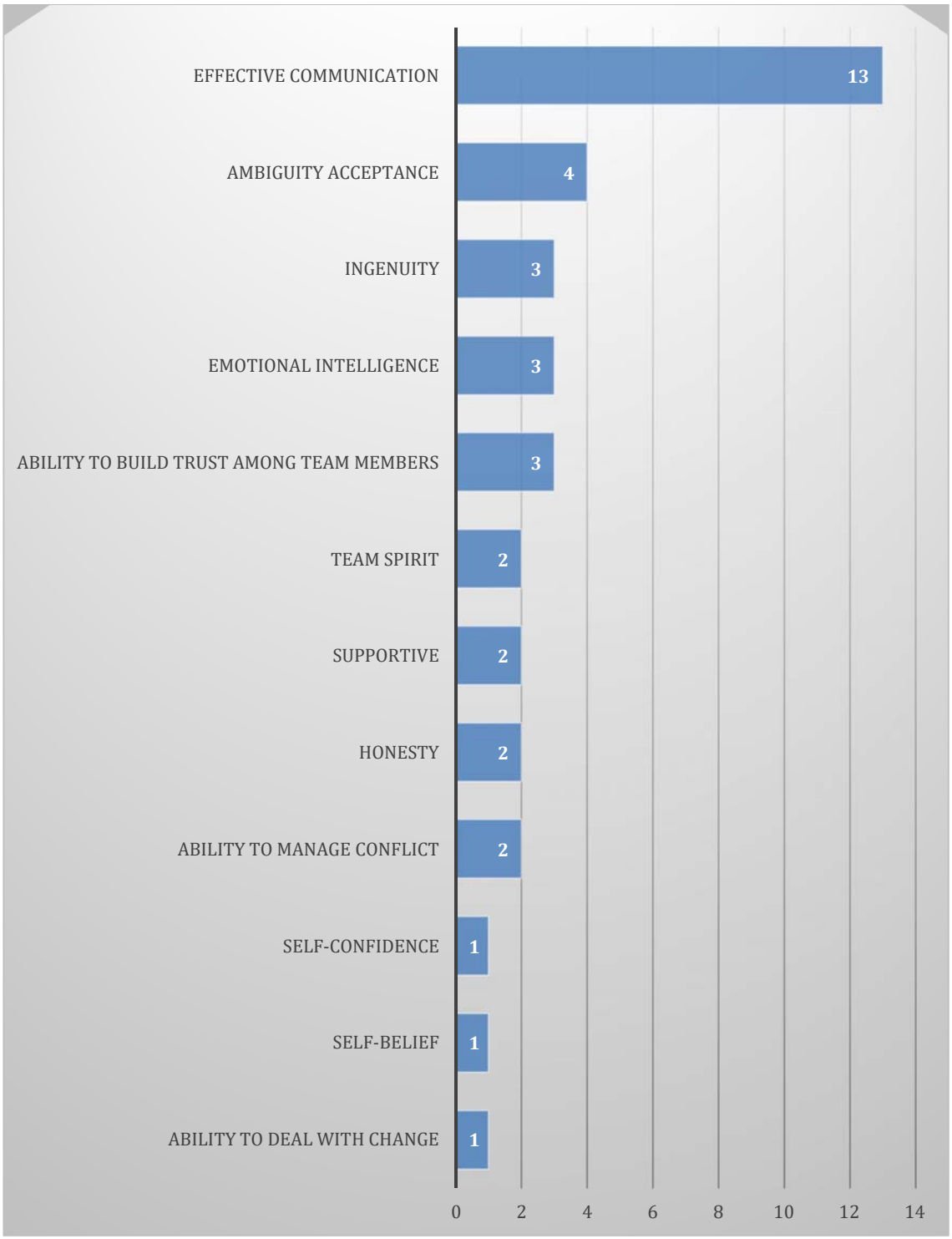
To conclude it can be said that in line with the objective, the present study established the key competencies of project managers. The study found that the top competencies of project managers are effective communication, emotional intelligence, team spirit, ability to deal with change and ability to manage conflict.

The various stages of the study have been exhibited in detail in the methodology section (figure 1). The data for the study was collected with the help of a questionnaire. The survey was closed after 88 usable responses were obtained. Demographic profile of the respondents has been discussed in detail along with the results of the study. Finally, the author has provided the limitations and scope for future research. It is the understanding of the author that the results of the study make a definite contribution to the field of project management. To provide further meaning to the results of this study, the findings of this study have been integrated with the existing literature on the subject. The next and the last sub-section of this study deals with that.

Comparison with Existing Literature

Figure 7 exhibits the key competencies of project managers based on existing literature. According to existing literature the most important competency of a project manager is effective communication, followed by ambiguity acceptance, emotional intelligence and ingenuity.

Figure 7: Key Competencies of Project Managers Based on Existing Literature



Source: Prepared by the author

A comparison of the findings of the study with the existing literature shows that some of the results of the current study are in synchronization with existing literature. As per the existing literature, effective communication is the most important competency of a project manager. The findings of the current study are perfectly in tune with the existing literature on this point. As per the current study too, effective communication is the most important trait of a project manager. Further, as per the current study, emotional intelligence is the second most important trait of a project manager. Figure 7 reflects the same. As per existing literature emotional intelligence is the third most important trait of a project manager. Other important qualities of project managers as per existing literature are ambiguity acceptance and ingenuity. While the current study exhibits these as required competencies of project managers, it does not rate them very high (the scores attained by these variables in the current study are not very high; the ranks are 7 and 8).

Table 6 below highlights the top five qualities based on this study and review of existing literature.

Table 6: Comparison with existing literature

Rank	Current Study	Literature Review
1	Effective communication	Effective communication
2	Emotional intelligence	Ambiguity acceptance
3	Team spirit	Emotional intelligence
4	Ability to deal with change	Ingenuity
5	Ability to manage conflict	Supportive / Ability to build trust among team members

Source: Prepared by the author

References

Anantatmula, V.S. (2010). Project manager leadership role in improving project performance. *Engineering Management Journal, 22*(1), 13-22.

Bakhsheshi, A.H.F., & Nejad, S.R. (2011). Impact of project managers' personalities on project success in four types of project. Retrieved January 2, 2018, from https://pdfs.semanticscholar.org/7ab7/29b0f2e83d51462e862909597c8097482eef.pdf

Clarke, N. (2010). The impact of a training programme designed to target the emotional intelligence abilities of project managers. *International Journal of Project Management, 28*(5), 461-468.

Cooke-Davies, T. (2002). The "real" success factors on projects. *International Journal of Project Management, 20*(3), 185-190.

Creasy, T, & Anantatmula, V.S. (2013). From every direction – how personality traits and dimensions of project managers can conceptually affect project success. *Project Management Journal, 44*(6), 36-51.

Davis, S.A. (2011). Investigating the impact of project managers' emotional intelligence on their interpersonal competence. *Project Management Journal, 42*(4), 37-57.

Fedor, D.B., Ghosh, S., Caldwell, S.D., Maurer, T.J., & Singhal, V.R. (2003). The effects of knowledge management on team members' ratings of project success and impact. *Decision Sciences, 34*(3), 513-539.

Frame, J.D. (1987). *Managing projects in organizations.* San Francisco: Jossey Bass.

Hagen, M., & Park, S. (2013). Ambiguity acceptance as a function of project management: A new critical success factor. *Project Management Journal, 44*(2), 52-66.

Henderson, L.S. (2004). Encoding and decoding communication competencies in project management – An exploratory study. *International Journal of Project Management, 22*(6), 469-476.

Henderson, L.S. (2008). The impact of project managers' communication competencies: Validation and extension of a research model for virtuality, satisfaction, and productivity on project teams. *Project Management Journal, 39*(2), 48-59.

Herwijnen, M. (2006). Weighted summation. Retrieved May 2, 2018, from http://www.ivm.vu.nl/en/Images/MCA2_tcm53-161528.pdf

Ika, L.A. (2009). Project success as a topic in project management journals. *Project Management Journal, 40*(4), 6-19.

Jugdev, K., & Muller, R. (2005). A retrospective look at our evolving understanding of project success. *Project Management Journal, 36*(4), 43-47.

Kendra, K. & Taplin, L.J. (2004). Project success: A cultural framework. *Project Management Journal, 35*(1), 30-45.

Khan, S.R., Long, C.S., & Iqbal, S.M.J. (2014). Leadership competency: A tool for project success. *Middle-East Journal of Scientific Research, 19*(10), 1280-1283.

Kirkpatrick, S.A., & Locke, E.A. (1991). Leadership: Do traits matter? *Academy of Management Executive, 5*(2), 48-60.

Krahn, J., & Hartment, F. (2006). Effective project leadership: A combination of project manager skills and competencies in context. Retrieved April 12, 2018, from https://www.pmi.org/learning/library/leadership-project-manager-skills-competencies-8115

Leban, W., & Zalauf, C. (2004). Linking emotional intelligence abilities and transformational leadership styles. *Leadership & Organization Development Journal, 25*(7/8), 554-564.

Lee-Kelley, L., Leong, K., & Loong, K. (2003). Turner's five functions of project-based management and situational leadership in IT services projects. *International Journal of Project Management, 21*(8), 583-591.

Muller, R., & Turner, R.J. (2010). Leadership competency profiles of successful project managers. *International Journal of Project Management, 28*(5), 437-448.

Nataka, C., & Hunag, Y. (2005). Progress and promise: The last decade of international marketing research. *Journal of Business Research, 58*(5), 611-618.Stevenson, D.H., & Starkweather, J. (2010). PM critical competency index: IT execs prefer soft skills. *International Journal of Project Management, 28*(7), 663-671.

Rao, S., & Perry, C. (2003). Convergent interviewing to build a theory in under-researched areas: Principles and an example investigation of internet usage in inter-firm relationships. *International Journal of Qualitative Market Research, 6*(4), 236-247.

Sandhu, S. (2018). *Key competencies for the twenty-first century project manager.* (Student Paper) Harrisburg University.

Turner, J.R., & Muller, R. (2005). The project manager's leadership style as a success factor on projects: A literature review. *Project Management Journal, 36*(1), 49-61.

Turner, N., Maylor, H., & Swart, J. (2015). Ambidexterity in projects: An intellectual capital perspective. *International Journal of Project Management, 33*(1), 177-188.

Turner, R., & Zolin, R. (2012). Forecasting success on large projects: Developing reliable scales to predict multiple perspectives by multiple stakeholders over multiple times frames. *Project Management Journal, 43*(5), 87-99.

Ulbrich, K.G.F. (2017). Ambiguity acceptance and translation skills in the project management literature. *International Journal of Managing Projects in Business, 10*(2), 423-450.

Annexure 1: Questionnaire

S. No. _____

Key Competencies for Project Managers – A Survey

Dear Respondent

This is a survey for research work, **"Key Competencies for Project Managers".** You are requested to provide factual information and oblige. All the information disclosed by you will be used only for academic purposes.

- Sahil Sandhu

Kindly go through the following list of competencies for project managers and rank the first five competencies in the order of importance (give rank 1 to the most important competency).

Serial Number	Competency	Rank
1.	Effective communication	
2.	Ability to build trust	
3.	Supportive	
4.	Honesty	
5.	Self-confidence	
6.	Self-belief	
7.	Ability to deal with change	
8.	Team spirit	
9.	Ingenuity	
10.	Ability to manage conflict	
11.	Emotional intelligence	
12.	Ambiguity acceptance	
13.	Technical competence	
14.	Negotiation skills	

Demographic profile (mark √)

Name (optional) _____

Gender	Age	Experience in project management/as team member
Male ☐	Less than 20 yrs ☐	< 1 year ☐
Female ☐	20-35 yrs ☐	1-5 yrs ☐
	35-50 yrs ☐	5-10 yrs ☐
	50-60 yrs ☐	> 10 yrs ☐
	Above 60 yrs ☐	

Thank you for your cooperation