THE SELF-PERCEPTION OF PROJECT MANAGERS COMPARED TO OTHER PROJECT ACTORS

Jeferson Carvalho Alvarenga, Robson Rosa Branco, André Bittencourt do Valle, Carlos Alberto Pereira Soares and Wainer da Silveira e Silva

SUMMARY

This interdisciplinary study aims to investigate project managers' perceptions on their own relevance to the success of a project, and later compare these results to other project actors' perceptions. In 2005, Turner and Müller elaborated some hypotheses in an attempt to explain the omission of the project manager as a critical success factor, raising pertinent questions on their self-perception and their perception by project actors. We surveyed 740 project management actors on the relevance of 35 factors considered critical for project success, including the project manager. Data were analyzed using parametrical proce-dures. Results show that there was no statistically significant dif-ference between groups in terms of the perception of the project manager's relevance to project success. Subgroup analysis indi-cate that project managers consider themselves critical to proj-ect success. The study indicates a change in scenario in the past few decades, and turning to sociology, psychology and practical philosophy, we alert that self-overestimation may lead to hubris and narcissism, two undesirable traits in project managers. This study is the first to investigate project managers' self-perception and compare it to their perception by other project actors.

Introduction

Researchers and practitioners have been increasingly interested in people's self-perception at the workplace and its connection with organizational behavior, teamwork, leadership, and productivity, including specific fields such as project management. Recent psychological studies have shown that self-perception influences self-esteem, motivation and social attitudes and behaviors, as well as other aspects such as the organizational environment (Swann *et al.*, 2007; Kim *et al.*, 2015). However, self-perception is a complex issue; it is open to distortions, inaccuracies, and biases which may lead to self-over-estimation or underestimation (Anderson and Spataro, 2005), fostering undesired organizational behaviors, such as hubris and narcissism (Ouimet, 2010).

Despite the importance of self-perception, there are no specific and intentional investigations about this aspect of project managers, how they evaluate their own relevance to project success. The omission of project managers as critical success factors in the last decades raises perceptions and difficult questions about project managers' self-perceptions (Turner and Müller, 2005).

Earlier studies on self-percep-tion in the workplace suggest that individuals tend to rate their own relevance higher than others would (Nilsen and Campbell, 1993; Yammarino and Atwater, 1993). However, Turner and Müller (2005) realized that most studies about critical success factors in the 60's and onwards interviewed project managers only and the results show that the project manager was not considered a critical success factor in the great majority of them.

This fact raises intriguing questions about the self-percep-tion of project managers. Many researchers build their approach based on the presumption that project managers play an impor-tant role in project success; however, would project mana-gers ever consider themselves irrelevant? Is it possible that the target public of these studies (the project managers themsel-ves) does not agree with the presumption of their own rele-vance? Is there a difference bet-ween project managers' percep-tions of their own relevance and the perception of their relevance by other project actors? Is it possible that, according to Turner and Müller (2005), there might be something about tea-mwork and the nature of the project management itself that could make project managers less critical, or even non-criti-cal, to project success?

Management literature affirms clearly that effective leadership is crucial to organi-zations and relevant to project success (Turner and Müller, 2005). Thus, theoretically, pro-ject managers are relevant to project success. However, com-menting the critical success factors investigations in the last decades, Geoghegan and Dulewicz (2008: 60) affirm that "no explicit reference is made to the leadership charac-teristics of project managers and their influence on success

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LA AUTO-PERCEPCIÓN DE LOS GERENTES DE PROYECTOS COMPARADA A OTROS ACTORES DEL PROYECTO

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RESUMEN

Este estudio interdisciplinario tiene como objetivo investigar las percepciones de los gerentes de proyecto sobre su propia relevancia para el éxito de un proyecto, y luego comparar estos resultados con las percepciones de otros actores del proyecto. En 2005, Turner y Müller elaboraron algunas hipótesis en un intento de explicar la omisión del gerente de proyecto como un factor de éxito crítico, planteando preguntas pertinentes sobre su autopercepción y su percepción por parte de los actores del proyecto. Se encuestó a 740 actores de gestión de proyectos sobre la relevancia de 35 factores considerados críticos para el éxito del proyecto, incluido el gerente del proyecto. Los datos se analizaron usando pro-

cedimientos paramétricos. Los resultados muestran que no hubo diferencias estadísticamente significativas entre los grupos en términos de la percepción de la relevancia del gerente de proyecto para el éxito del proyecto. El análisis de subgrupos indica que los gerentes de proyecto se consideran críticos para el éxito del proyecto. El estudio también indica un cambio en el escenario en las últimas décadas, alertando que la auto-sobreestimación puede conducir a la arrogancia y al narcisismo, dos rasgos indeseables en los gerentes de proyecto. Este estudio es el primero en investigar la autopercepción de los gerentes de proyectos y compararla con la percepción que tienen otros actores del proyecto.

A AUTO PERCEPÇÃO DOS GERENTES DE PROJETO COMPARADA A DE OUTROS ATORES DO PROTEJO

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RESUMO

Este estudo interdisciplinar tem como objetivo investigar as percepções dos gerentes de projeto sobre sua própria relevância para o sucesso do projeto e, posteriormente, comparar esses resultados com as percepções de outros atores do projeto. Em 2005, Turner e Müller elaboraram algumas hipóteses na tentativa de explicar a omissão do gerente de projetos como um fator crítico de sucesso em projetos, levantando questões pertinentes sobre sua autopercepção e sua percepção pelos atores do projeto. O estudo entrevistou 740 atores de gerenciamento de projetos sobre a relevância de 35 fatores considerados críticos para o sucesso do projeto, incluindo o gerente de projetos. Os dados foram analisados usando procedi-

mentos paramétricos. Os resultados mostram que não houve diferença estatisticamente significativa entre os grupos em termos da percepção da relevância do gerente de projeto para o sucesso do projeto. A análise de subgrupo indica que os gerentes de projeto se consideram altamente críticos para o sucesso do projeto. Nosso estudo indica uma mudança de cenário nas últimas décadas e considerando a sociologia, a psicologia e a filosofia prática, alertamos que a auto-superestimação pode levar à arrogância e ao narcisismo, dois traços indesejáveis nos gerentes de projeto. Este estudo é o primeiro a investigar a autopercepção dos gerentes de projetos e compará-los com sua percepção por outros atores do projeto.

…Interestingly, project manager leadership or even management skills are not mentioned as success factors". This contrast between theory and empirical results rises relevant questions about the validity of the theoretical assumption of the relevance of project managers to project success.

The present work studies project managers' self-perception using an interdisciplinary approach, considering the omission of project managers as critical success factors in research conducted from the 60s onwards (Turner and Müller, 2005). To this end, we designed an approach in three main steps: determination of the critical success factors, survey of

expert opinions, and data analysis. The study is of exploratory nature and used 740 responses to a survey. Although there are no specific studies published about project manager self-perception and project success, we will briefly review the literature relevant to our study, before describing the methodology used and presenting the results obtained.

Theoretical Background

One of the purposes of 'project management' is to increase the likelihood of success. Project success has received abundant attention from researchers and practitioners over the past few decades (Ika, 2009; McLeod and

Doolin, 2012; Williams, 2015). Initially, studies on project success divided between two main lines of investigation: success criteria (Lim and Mohamed, 1999; Westerveld, 2003; Cserháti and Szabó, 2014) and critical success factors (McLeod and Doolin, 2012; Serrador and Turner, 2015; Alvarenga *et al.* 2018).

Lately, the focus has turned to the project manager and his or her competencies (Geraldi and Turner, 2012; Loufrani-Fedida and Missonier, 2015; Alvarenga *et al.* 2019). These studies placed the project manager at the center of the discussions about project success in recent decades, affirming that project managers are

relevant to project success (Stevenson and Starkweather, 2010). However, no study until now investigated specifically the self-perception of project managers related to project success, which limited bibliographic research. Yet, we found an indirect form of self-evaluation in the literature about critical success factors, considering that most of these studies surveyed project managers.

In the 1960s, studies identified a number of factors as more critical to project success, named 'Critical Success Factors' or CSF's (Baker *et al.*, 1988; Pinto and Covin, 1989; Pinto and Mantel, 1990; Cserháti and Szabó, 2014). But much of the vast body of

research conducted from the 1960s onwards surveyed project managers themselves, showing unexpected results regarding their criticality to project success (Turner and Müller, 2005). Many studies showed that project managers did not consider themselves critical success factors, contradicting basic presumptions in modern management (Rubin and Seeling, 1967; Morris and Hough, 1987; Pinto and Slevin, 1989).

In the 1980s, no mention was made to project managers in lists of CSF's produced by researchers (Turner and Müller, 2005). This was also true in the 1990s and in the early years of the new century (Pinto and Mantel, 1990), with very few exceptions (Belassi and Tukel, 1996; Chua et al., 1999). The absence of project managers is so evident that it drew the attention of researchers. In 2005, the Project Management Institute (PMI) commissioned a study by Turner and Müller (2005) to investigate whether or not project managers and their leadership were critical to project success. Based on bibliography reviews, the authors identified that no reference was made to project managers as CSF's. A few years later, Geoghegan and Dulewicz (2008) pointed out the same finding: project managers had not been mentioned as CSF's in the previous decades.

This issue is still relevant today because many research lines are based on the underlying presumption that project managers are relevant to project success, especially the investigations into the relationship between project managers' competences and success (Dainty et al., 2005; Geoghegan and Dulewicz, 2008; Müller and Turner, 2010). The presumption of the project manager's role in project success is also in line with the most basic presumptions of modern management (Turner and Müller, 2005).

Self-perception is susceptible to distortions and misperceptions, potentially leading to negative social consequences (Anderson and Spataro, 2005).

Therefore, this scenario raises interesting questions related to organization-based self-esteem (Gardner and Pierce, 2011) and employee self-concepts (Kim et al., 2015).

This paper presents and discusses the results of a survey including 124 project managers and 616 other project team members, carried out to investigate project managers perceptions on their own relevance to project success and compare this finding with the perception of the project manager relevance by other project members.

Materials and Methods

Determination of critical success factors

A challenge to our study was how to assess the project managers' self-perception and the perception of project managers by other actors in terms of their criticality to project success. A direct approach could lead to research bias, so we selected a less-direct approach used in other complex topics, such as narcissism (Pinto and Patanakul, 2015). The following section describes the steps in the development of our own data collection instrument, which encompasses the traditional universe of critical success factors, including the project manager.

Step 1: Comprehensive bibliographical review of factors critical to success.

A wide and detailed bibliographical search was carried out using several search engines and databases, especially the CAPES (Coordination for the Improvement of Higher Education Personnel) database, which provides access to the full texts available in more than 38,000 international and national periodicals, as well as to several databases (Web of Science, Scopus, Scielo, Elsevier, etc.) besides abstracts of academic and scientific studies to technical standards, theses, and dissertations and others, covering all areas of knowledge. The search was also carried out on the website

of the main scientific periodicals and Google Scholar, using the keywords 'critical success factors', 'project manager' and 'project success'. For the bibliographical search, we followed the recommendations of Webster and Watson (2002) and of Moher et al. (2009).

From the keywords, we identified 3,818 articles and conducted an exploratory reading based on a brief study of titles and abstracts in order to exclude all articles that did not have some evidence or information on the addressed issues, excluding 3,516 articles. Afterwards, a full reading was carried out excluding those who did not have primary information relevant to the study and did not have critical success factors lists as a final result. This step resulted in the exclusion of 283 papers and the remaining 19 articles (Appendix 1) were analyzed in detail. These exhibit completeness, coherency, impact, and authority, and were the basis for the data collection instrument. Figure 1 shows the literature search procedure using the PRISMA flowchart.

Step 2: Semantical and hermeneutical analysis (Holsti, 1969).

We analyzed each critical success factor based on the Content Analysis Method (Nachmias and Nachmias, 1976; Krippendorff, 2004) and then compared the meaning of each critical success factor, cross-checking them in a single, 72-item list.

Step 3: Construct determination

Constructs can be classified as reflective, formative, or mixed (Straub, 1989; Jarvis et al., 2003; Petter et al., 2007). In this study, the construct was classified as mixed. MSP

Step 4: Number of critical success factors

We shortened our data collection instrument so that respondents could focus on a smaller number of items, improving subjects' concentration and the quality of their responses (Straub, 1989). Because the construct is mixed, we were able to exclude individual measures to improve construct validity without affecting content validity (Petter et al., 2007). From the original list of 72 CSF's, the 35 items with the strongest bibliographical support were maintained, as observed in similar studies (Shen et al., 2010; Hwang and Lim, 2013). The remaining 37 items were excluded because they had been cited by one single author and were not a result of quantitative research.

Step 5: Content validity

We assessed content validity (Straub et al., 2004) using Lawshe coefficient (Lawshe, 1975). Experts were selected according to their seniority in project management and masters or doctoral degree in related fields. Nine experts were invited to assess each critical success factor as 'essential', 'useful, but not essential' or 'not necessary' to project success. All CSF's were
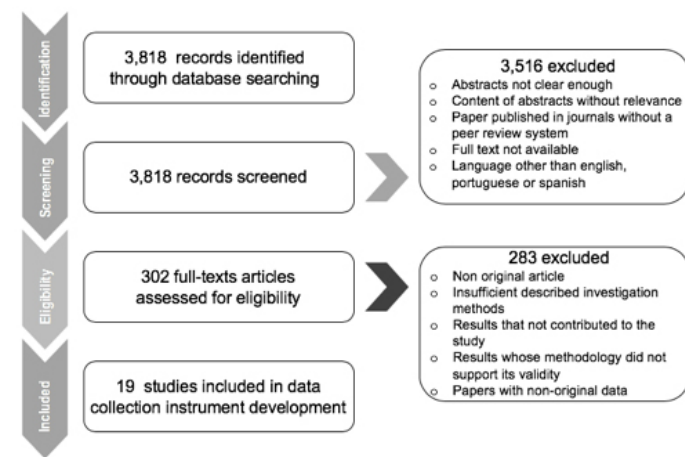
Figure 1. PRISMA flowchart.

considered essential by the nine experts, and included in the data collection instrument (Table I).

Survey of expert opinions

The respondents rated all CSF's according to a five-point Likert scale, ranging from scarcely relevant to extremely relevant (Likert, 1932; Clason and Dormody, 1994). The CSF's were not grouped in a hierarchical model or in any other category, as it is usual in other studies (Kog and Loh, 2012; Hwang and Lim, 2013; Gudienė et al., 2014). Critical success factors were randomized to prevent bias, which could adversely affect our results.

The first part of the survey was demographical, where respondents identified themselves according to their role in project management. This information was used to group respondents and compare their perceptions on the project managers' relevance to project success. All actors rated all the CSF's, including the project manager factor.

Data collection instrument and respondents reliability

We checked both the data collection instrument and respondent reliability using Cronbach's Alpha (Cronbach, 1951), which estimates the reliability of both the instrument and the respondents by measuring the variance of every item and every answer (Martins et al., 2011).

Statistical procedures

Two statistical procedures were used to investigate project managers' perceptions on their own relevance to project success and to compare with the perceptions by other project actors.

A parametric statistical method was used to compare the nine groups. ANOVA was the method of choice for its robustness to assess population distinctiveness (Agresti and Agresti, 1979; Montgomery and Runger, 2010). The null hypothesis is that all the groups means are equal, thus H0: $\mu1= \mu2= ...\mu9$; therefore, the perception of project managers' criticality does not differ among the different actors. The alternative hypothesis is that at least two groups means are different from each other, which means H1: At least two of $\mu1$, $\mu2$, ...$\mu9$ are different; in this case, at least one group of actors place different emphasis on project managers' relevance. Differences were interpreted by the probability (p-value), considering the level of significance of $p<0.05$ with a confidence interval of 95%. After comparisons, we computed the mean and standard deviation for each group of actors and ranked the CSF's.

Results

The survey was run for eight weeks and included 740 professionals in the field of project management. To accomplish our objectives, we included the widest possible range of project actors. In our study, each category of actors was considered a different sample. The different actors who completed the survey as per their self-identified role in project management are the following: managers 18.0%; project managers 16.5%; engineers 15.1%; analysts 6.6%; directors 5.5%; coordinators 5.2%; consultants 4.2%; supervisors 3.2%; and other actors 25.7%. Figure 2 summarizes the length of experience of respondents in different areas of project management.

According to Cronbach's Alpha, data reliability was high (0.9125), which is compatible with the large number of respondents and the number of questions. All the critical success factor included in our analysis are listed in Table I.

The first objective of this study is to investigate project managers' perceptions on their own relevance to project success. To accomplish this objective, we used descriptive statistics considering just the project managers respondents and only the 'project manager' critical success factor (Table II). The descriptive statistics show that project managers consider themselves highly relevant to project success since virtually two-thirds evaluated themselves as 'extremely relevant'.

The second objective was to compare the self-perception of project managers with the perceptions by other project actors. To accomplish this objective, we compared the group of project managers to the other groups using ANOVA, again considering only the 'project manager' critical success factor (Table III). Results are significant in terms of their rejection of the null hypothesis (H0) when p-value<0.05. The degrees of freedom are 8, and the F-statistic to compare the means for the nine groups is 1.604, with p= 0.120 This means results are not statistically significant to reject the null hypothesis. Table IV shows the results of multiple comparisons between groups.

Thus, ANOVA results indicate that there is no statistically significant difference between groups of project actors in terms of the perception of the project manager's relevance

TABLE I
CRITICAL SUCCESS FACTORS

Aligning Projects with Business Plans	Politics
Breaking the Project into Subprojects	Progress meetings
Budget management	Project commitment
Client acceptance	Project Manager
Client Consultation	Project Monitoring
Communication	Project objectives
Contract management	Project Planning
Definition tech. op. specifications	Project Team
Environment effects	Resource Allocation
Estimate Realistically	Risk Management
Feedback capabilities	Schedule Duration
Financial support	Stakeholder Management
Legal problems	Success Criteria
Management policy	Technical tasks
Operational Concept	Top management support
Organizational environment	Trouble-shooting
Organizational learning	Urgency
Personnel selection	

TABLE II
SELF PERCEPTION OF PROJECT MANAGER

Scarcely relevant	Little relevant	Relevant	Very relevant	Extremely relevant
0%	0%	11,34%	24,74%	63,91%

TABLE III
ANOVA RESULTS

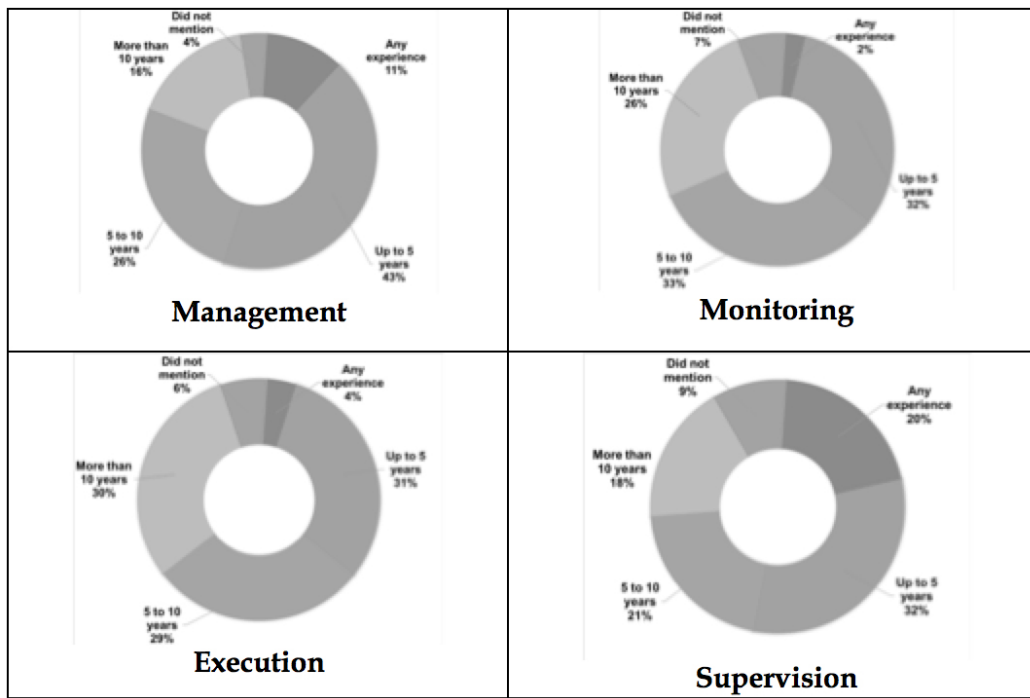|	Sum of squares	Gl	Average Square	F	Sig.
Amongst groups	7,132	8	0,892	1,604	0,120
In groups	408,469	735	0,556		
Total	415,601	743			

Figure 2. Length of experience.

to project success. Therefore, project managers show no relevant difference in terms of their perception of their own relevance compared to the other project actors.

Aiming to complement the study, we made statistical tests on a Likert scale by each category of project actors. Table V shows the results generated by the statistical tests on the Likert scale. Considering all the CSF's included in our study, engineers, project managers, and supervisors ranked the 'project manager' factor among the highest: it was the third most relevant factor for engineers, and the fifth for project managers and supervisors. Analysts and consultants ranked project managers as the sixth most relevant factor. Project managers hold the seventh position for other actors, the ninth for directors and managers, and the twelfth for coordinators. The data shows that project managers' self-perception would be rated higher if compared to other actors' perceptions. However, it would be ranked lower when compared to engineers' perceptions, equally high when compared to supervisors' perceptions, and once again higher when compared to other actors' perceptions.

In terms of criticality, the project manager ranked third to engineers, but twelfth to coordinators. There was no statistically significant difference between groups in terms of the perception of the project managers' relevance to project success; however, coordinators, directors, and managers considered other items more relevant to project success, contributing to the lower ranks observed in this group.

Discussion

We investigated project managers' perception of their own relevance to project success and compared it with the perception of project managers' criticality by other project actors. The results reveal that most project managers surveyed consider themselves 'extremely important' to project success. Their self-perception is that they are highly relevant to project success.

Returning to questions raised earlier (Would project managers ever consider themselves irrelevant? and, Is it possible that project managers do not agree with the presumption of their own relevance?) the results affirm that project managers perceive themselves as highly relevant to project success. Therefore, project managers agree and support the presumption of their relevance to project success used by researchers in the literature.

Considering the question if there is a difference between project managers' perceptions on their own relevance and the perception of their relevance by other project actors, ANOVA show that there is no statistically significant difference between groups in terms of the perception of project manager's relevance to project success. The project manager was considered relevant to project success by all the actors, although at different levels.

Furthermore, the results also strongly contest the hypothesis by Turner and Müller (2005) that there might be something about the nature of project management itself and about project teamwork that could make the project manager less

critical to project success, or that project managers' leadership might even have no impact on project success. The project manager was considered critical by all nine actor groups surveyed in our study; it ranked among the top ten critical factors for eight respondents and among the top six factors for five respondents.

Consequently, project managers perceive themselves as highly critical to project success and there is no relevant difference between the perception of their own relevance to project success compared with the perception of project managers' criticality by other project actors.

Considering the historical omission of the project manager as a critical success factor, our study indicates a change in this scenario: the change in project managers' self-perception in the past few decades. To better understand this change, we should compare the results of our study with Pinto and Covin's (1989) seminal work on CSF's. In their study, respondents evaluated CSF's in each phase of construction projects and R&D projects. The project manager and his/her competence and authority were among the CSF's. Data from 508 respondents showed that the project manager, his/her leadership, competence, and authority were not considered critical success factors at any stage in both types of projects (Pinto and Covin, 1989).

Comparing both results, our data shows a markedly different scenario. What would be an explanation for such change? A feasible explanation might be the continuous professionalization of project managers, propelled by project management institutions that have contributed to standardized, regulated certifications over the past few decades (Gemünden, 2015). The professionalization of project managers has led to their growing appreciation; the relevance to project success seems to be clear for project managers themselves as well as for other actors.

TABLE IV
MULTIPLE COMPARISONS

(I) Actors	(J) Actors	Average difference (I-J)	Standard error	Sig.	Confidence interval 95% Inferior limit	Superior limit
Project Managers	Analysts	0,068	0,126	1,000	-0,32	0,46
	Consultants	0,068	0,150	1,000	-0,40	0,53
	Coordinators	0,301	0,137	0,406	-0,12	0,73
	Directors	0,333	0,134	0,244	-0,08	0,75
	Engineers	0,009	0,097	1,000	-0,29	0,31
	Managers	0,142	0,093	0,844	-0,15	0,43
	Other actors	0,167	0,086	0,585	-0,10	0,44
	Supervisors	0,039	0,166	1,000	-0,48	0,56
Analysts	Project manager	-0,068	0,126	1,000	-0,46	0,32
	Consultants	0,001	0,171	1,000	-0,53	0,53
	Coordinators	0,234	0,160	0,873	-0,26	0,73
	Directors	0,266	0,158	0,756	-0,23	0,76
	Engineers	-0,059	0,128	1,000	-0,46	0,34
	Managers	0,074	0,124	1,000	-0,31	0,46
	Other actors	0,100	0,119	0,996	-0,27	0,47
	Supervisors	-0,029	0,186	1,000	-0,61	0,55
Consultants	Project manager	-0,068	0,150	1,000	-0,53	0,40
	Analysts	-0,001	0,171	1,000	-0,53	0,53
	Coordinators	0,233	0,179	0,931	-0,32	0,79
	Directors	0,265	0,177	0,858	-0,29	0,82
	Engineers	-0,059	0,151	1,000	-0,53	0,41
	Managers	0,074	0,149	1,000	-0,39	0,54
	Other actors	0,099	0,144	0,999	-0,35	0,55
	Supervisors	-0,030	0,203	1,000	-0,66	0,60
Coordinators	Project manager	-0,301	0,137	0,406	-0,73	0,12
	Analysts	-0,234	0,160	0,873	-0,73	0,26
	Consultants	-0,233	0,179	0,931	-0,79	0,32
	Directors	0,032	0,167	1,000	-0,49	0,55
	Engineers	-0,293	0,139	0,467	-0,72	0,14
	Managers	-0,160	0,136	0,961	-0,58	0,26
	Other actors	-0,134	0,131	0,984	-0,54	0,27
	Supervisors	-0,263	0,193	0,913	-0,86	0,34
Directors	Project manager	-0,333	0,134	0,244	-0,75	0,08
	Analysts	-0,266	0,158	0,756	-0,76	0,23
	Consultants	-0,265	0,177	0,858	-0,82	0,29
	Coordinators	-0,032	0,167	1,000	-0,55	0,49
	Engineers	-0,324	0,136	0,294	-0,75	0,10
	Managers	-0,191	0,133	0,882	-0,61	0,22
	Other actors	-0,166	0,128	0,933	-0,57	0,23
	Supervisors	-0,295	0,192	0,837	-0,89	0,30
Engineers	Project manager	-0,009	0,097	1,000	-0,31	0,29
	Analysts	0,059	0,128	1,000	-0,34	0,46
	Consultants	0,059	0,151	1,000	-0,41	0,53
	Coordinators	0,293	0,139	0,467	-0,14	0,72
	Directors	0,324	0,136	0,294	-0,10	0,75
	Managers	0,133	0,095	0,900	-0,16	0,43
	Other actors	0,158	0,089	0,691	-0,12	0,43
	Supervisors	0,030	0,168	1,000	-0,49	0,55
Managers	Project manager	-0,142	0,093	0,844	-0,43	0,15
	Analysts	-0,074	0,124	1,000	-0,46	0,31
	Consultants	-0,074	0,149	1,000	-0,54	0,39
	Coordinators	0,160	0,136	0,961	-0,26	0,58
	Directors	0,191	0,133	0,882	-0,22	0,61
	Engineers	-0,133	0,095	0,900	-0,43	0,16
	Other actors	0,025	0,084	1,000	-0,24	0,29
	Supervisors	-0,103	0,165	0,999	-0,62	0,41
Other actors	Project manager	-0,167	0,086	0,585	-0,44	0,10
	Analysts	-0,100	0,119	0,996	-0,47	0,27
	Consultants	-0,099	0,144	0,999	-0,55	0,35
	Coordinators	0,134	0,131	0,984	-0,27	0,54
	Directors	0,166	0,128	0,933	-0,23	0,57
	Engineers	-0,158	0,089	0,691	-0,43	0,12
	Managers	-0,025	0,084	1,000	-0,29	0,24
	Supervisors	-0,129	0,161	0,997	-0,63	0,37
Supervisors	Project manager	-0,039	0,166	1,000	-0,56	0,48
	Analysts	0,029	0,186	1,000	-0,55	0,61
	Consultants	0,030	0,203	1,000	-0,60	0,66
	Coordinators	0,263	0,193	0,913	-0,34	0,86
	Directors	0,295	0,192	0,837	-0,30	0,89
	Engineers	-0,030	0,168	1,000	-0,55	0,49
	Managers	0,103	0,165	0,999	-0,41	0,62
	Other actors	0,129	0,161	0,997	-0,37	0,63

An excerpt from Mulcahy's book (2013) used in Project Manager Certification preparation highlights what the author calls 'PMI-ism', i.e., the way of thinking of the Project Management Institute, one of the most important project management institutions. The first PMI-ism highlighted by Mulcahy is that "project managers can save the universe. They are 'wonderful' and 'great', and must be very skilled" (Mulcahy, 2013: 16). The author frames the picture with a certain irony. However, it seems clear that she is pointing out the very high expectations and confidence in project managers reflected in specialized literature. There is a great emphasis on the project managers' value and relevance to project success, characterizing the project manager as a "hero who carries on his or her shoulders the heavy load of responsibility for a project's success or failure" (Loufrani-Fedida and Missonier, 2015: 1221).

Our study shows that this emphasis has indeed contributed to reinforce the perception of the project managers' relevance to project success; also, the 'PMI-ism' has apparently shaped the minds of all project actors, including project managers. This scenario can foster relevant reflections; there may be a dark side to all the high hopes and expectations. As in many other cases, the difference between medicine and poison is the dose.

Considering the decades-long omission of project managers in studies on CSF's, Turner and Müller (2005) speculate that project managers might be 'too modest' to consider themselves critical to project success. However, our results indicate a change in this scenario. We can now speculate that project managers might be avoiding excessive modesty, while dangerously approaching the lack of it. According to recent research, this might lead to negligence of good project management practices, with potentially disastrous consequences to organizations, projects,

Critical Success Factors	Managers			Project Managers			Engineers			Analysts			Directors			Coordinators			Consultants			Supervisors			Other Actors		
	M	SD	R	M	SD	R	M	SD	R	M	SD	R	M	SD	R	M	SD	R	M	SD	R	M	SD	R	M	SD	R
Client acceptance	4,50	0,66	3	4,46	0,71	6	4,32	0,82	7	4,45	0,71	3	4,20	0,71	6	4,28	0,86	8	4,61	0,67	5	4,42	0,83	9	4,43	0,81	3
Align projects with business	4,12	0,83	14	4,24	0,78	10	4,11	0,84	11	4,22	0,87	9	4,02	0,82	12	4,10	0,79	14	4,23	0,96	8	4,13	0,74	18	4,09	0,79	12
Resource allocation	4,00	0,72	18	3,90	0,68	19	3,91	0,79	19	3,88	0,81	19	3,90	0,86	18	4,05	0,83	16	4,10	0,70	13	4,08	0,72	8	3,90	0,81	17
Organizational environment	3,66	0,88	27	3,63	0,82	26	3,57	0,85	25	3,65	0,88	26	3,68	0,72	23	3,54	0,68	27	3,58	0,67	25	3,67	0,96	27	3,69	0,85	25
Top management support	4,31	0,72	6	4,52	0,65	3	4,41	0,69	4	4,43	0,71	4	4,46	0,74	2	4,46	0,68	2	4,81	0,48	1	4,42	0,72	7	4,38	0,82	5
Financial support	4,10	0,71	15	3,95	0,80	18	4,04	0,84	15	4,08	0,84	12	3,98	0,91	14	4,00	0,76	17	4,10	0,79	12	3,88	0,61	19	4,07	0,80	13
Organizational learning	3,44	0,78	31	3,48	0,94	29	3,47	0,91	30	3,35	0,69	31	3,51	0,81	29	3,51	0,76	28	3,55	0,68	28	3,50	0,88	30	3,42	0,91	31
Feedback capabilities	3,91	0,78	21	3,81	0,79	22	3,65	0,89	24	3,78	0,85	21	3,54	0,84	26	3,74	0,88	22	3,55	0,77	27	3,71	0,86	24	3,85	0,86	21
Project Commitment	4,51	0,66	2	4,49	0,66	4	4,39	0,65	5	4,47	0,65	2	4,46	0,60	1	4,36	0,63	5	4,48	0,72	4	4,46	0,59	1	4,42	0,67	4
Communication	4,59	0,70	1	4,64	0,57	1	4,52	0,66	2	4,37	0,83	7	4,39	0,86	3	4,44	0,72	3	4,42	0,81	5	4,54	0,78	4	4,58	0,64	2
Operational concept	3,28	0,76	34	3,23	0,78	33	3,33	0,88	32	3,10	0,74	35	3,37	0,62	33	3,26	0,75	33	3,42	0,85	29	3,46	0,78	32	3,34	0,84	32
Project monitoring	4,19	0,74	12	4,31	0,70	8	4,26	0,77	8	4,06	0,75	13	4,17	0,63	7	4,38	0,59	4	4,06	0,68	15	4,46	0,78	6	4,31	0,73	6
Success criteria	3,76	0,77	23	3,66	0,95	24	3,55	0,89	26	3,67	0,85	25	3,59	0,87	25	3,46	0,79	30	3,35	0,91	30	3,79	0,88	28	3,71	0,82	23
Tech. and op. specifications	4,04	0,76	17	4,08	0,82	13	4,07	0,88	13	3,98	0,78	15	3,83	0,74	20	4,28	0,79	7	3,97	0,95	18	4,04	0,91	23	3,97	0,85	16
Breaking the project	3,18	0,87	35	3,14	0,95	34	3,12	0,91	35	3,18	0,91	34	3,24	1,04	35	3,05	0,86	35	3,26	0,86	32	3,38	0,92	33	3,21	0,89	35
Schedule duration	3,73	0,97	24	3,55	1,03	28	3,51	1,03	28	3,51	0,89	28	3,41	0,87	30	3,74	0,85	21	3,19	0,91	34	3,58	1,14	29	3,55	1,04	28
Progress meetings	3,59	0,82	28	3,58	0,82	27	3,52	0,87	27	3,55	0,77	27	3,51	0,78	28	3,38	0,75	32	3,58	0,81	26	3,75	0,90	25	3,58	0,84	27
Project team	4,29	0,69	7	4,31	0,77	9	4,23	0,71	9	4,20	0,68	10	4,27	0,63	5	4,18	0,64	10	4,48	0,68	3	4,25	0,74	12	4,17	0,74	11
Estimate realistically	4,06	0,81	16	4,01	0,77	15	3,97	0,73	17	3,73	0,81	22	3,98	0,72	17	3,62	0,96	24	3,84	1,07	19	4,04	0,75	21	3,88	0,82	19
Environment effects	3,37	0,92	32	3,12	0,88	35	3,26	0,91	34	3,18	1,03	32	3,39	0,77	32	3,18	0,79	34	3,23	0,88	33	3,42	1,10	34	3,29	0,89	34
Budget management	4,43	0,70	5	3,96	0,85	17	4,09	0,79	12	4,24	0,75	8	4,10	0,77	10	4,13	0,86	13	4,16	0,86	9	4,25	0,79	10	4,17	0,76	10
Project Manager	4,26	0,77	9	4,49	0,70	4	4,45	0,67	3	4,39	0,70	6	4,12	0,78	9	4,15	0,71	12	4,39	0,67	6	4,42	0,78	5	4,29	0,81	7
Contract management	3,69	0,75	25	3,89	0,80	20	3,98	0,81	16	3,69	0,80	24	3,76	0,89	22	3,87	0,89	19	3,61	0,80	24	4,04	0,75	11	3,77	0,86	22
Risk management	4,17	0,81	13	4,04	0,78	14	4,05	0,77	14	3,96	0,89	16	3,98	0,85	15	4,28	0,72	6	4,10	0,91	14	4,17	0,70	16	4,21	0,82	9
Stakeholder management	3,96	0,84	19	4,17	0,74	11	3,92	0,91	18	4,10	0,90	11	3,85	0,76	19	4,15	0,67	11	4,13	0,85	10	4,04	0,62	13	4,05	0,82	14
Project objectives	4,21	0,79	11	4,33	0,83	7	4,34	0,72	6	4,39	0,70	5	4,15	0,79	8	4,26	0,68	9	4,10	0,79	11	4,46	0,66	2	4,22	0,85	8
Project Planning	4,46	0,68	4	4,55	0,66	2	4,58	0,62	1	4,51	0,71	1	4,37	0,66	4	4,69	0,52	1	4,39	0,76	7	4,67	0,64	3	4,58	0,62	1
Politics	3,33	0,88	33	3,33	0,95	31	3,34	0,94	31	3,43	0,74	29	3,32	0,79	34	3,44	0,91	31	3,32	0,79	31	3,21	0,83	35	3,29	0,92	33
Operational concept	3,69	0,90	26	3,70	0,86	23	3,69	0,93	22	3,73	0,81	23	3,59	0,77	24	3,59	0,88	25	3,71	0,90	22	3,83	0,82	22	3,59	0,80	26
Legal problems	3,82	0,86	22	3,65	0,97	25	3,66	0,98	23	3,92	0,89	18	3,98	0,79	16	3,72	0,92	23	3,81	0,91	21	4,08	0,78	20	3,70	0,94	24
Client consultation	3,93	0,82	20	3,87	0,78	21	3,90	0,86	20	3,98	0,95	14	3,78	0,91	21	3,82	0,82	20	3,97	0,87	17	4,00	0,88	17	3,90	0,97	18
Trouble-shooting	4,23	0,70	10	4,09	0,79	12	4,13	0,75	10	3,96	0,82	17	4,07	0,69	11	4,05	0,79	15	4,03	0,84	16	4,04	0,91	15	4,01	0,76	15
Personnel selection	4,28	0,68	8	4,00	0,83	16	3,88	0,85	21	3,84	0,72	20	4,00	0,92	13	3,97	0,67	18	3,81	0,65	20	4,17	0,82	14	3,87	0,86	20
Technical tasks	3,50	0,75	30	3,40	0,89	30	3,49	0,90	29	3,43	0,76	30	3,54	0,60	27	3,51	0,82	29	3,68	0,83	23	3,50	0,66	31	3,43	0,78	30
Urgency	3,57	0,81	29	3,27	0,92	32	3,31	1,08	33	3,18	1,03	33	3,41	0,84	31	3,59	0,85	26	3,16	0,90	35	4,42	0,83	26	3,50	1,01	29

M: mean, SD: standard deviation, R: rank.

and teams (Picone *et al*., 2014; Gemünden, 2015).

Similar to the movement of a pendulum, project managers' self-perception might swing from one extreme to the other before settling in a healthy, balanced position, as observed in other historical dialectical movements. After a hypothetical generation of 'excessively modest' project managers, there might be now an impending risk of an unbalanced, immodest generation.

Several recent studies have investigated the impact of overconfidence and ignorance of their own limitations under the concept of 'hubris' (Bollaert and Petit, 2010; Brady and Davies, 2010; Bodolica and Spraggon, 2011). Hubris is a Greek term meaning an extreme and unreasonable feeling of pride and confidence in yourself. Researchers differentiate between authentic pride and hubristic pride; the latter leads to self-centered, disrespectful,

and arrogant behaviors (Brosi *et al*., 2016). This organizational behavior is a pitfall that may prevent project managers from perceiving their own limitations, while overestimating their capabilities. Hubristic pride would therefore predispose project managers to very low rates of risk perception, potentially leading to a scenario conducive to bad decisions that would probably lead to failure (Picone *et al*., 2014).

Picone *et al*. (2014: 449-450) state that "individuals affected by hubris tend to attribute successes exclusively to their dispositions and skills, while crediting failures only to external forces." Project managers affected by hubris may credit success exclusively to their contributions, competence, and leadership. This unbalanced perspective could affect the individual's self-perception (Sala, 2003), making them underestimate their limitations and weaknesses while

overestimating their skills and competences. This poor self-perception may also disconnect project managers from their teams, preventing them from listening and learning from their colleagues and peers and turning them into poor decision-makers.

Pinto and Patanakul (2015) investigated narcissism in the context of project management. The concept of narcissism comes from the Narcissus myth: a young, handsome man who fell in love with his own image and died for it (Graves, 1990; Lenardon and Morford, 2006). There are differences between narcissism as a psychiatric clinical disorder (Narcissistic Personality Disorder; APA, 2013) and narcissism from a social personality perspective (Gardner and Pierce, 2011). For Twenge and Campbell (2009) narcissism is epidemic in Western cultures today, and there is data to support their statement. Pinto and Patanakul

(2015) affirm that 'millennials' and 'post-millennials' (people born from 1980s onwards; Westerman *et al*., 2011) are a remarkably narcissist generation. The emphasis placed on project managers and the narcissistic traits of the present generation might be working symbiotically. Mintzberg (2009) states that today's individualism is behind "the rise of the egocentric, heroic form of leadership that is wreaking so much havoc on today's organizations" (Mintzberg, 2009: 37). Narcissism is tragic because self-admiration and self-absorption lead to illusions of superiority, imbalanced self, lack of personal connections, vanity, sense of uniqueness and entitlement, antisocial behaviors, and relationship problems (Twenge and Campbell, 2009).

Ancient Greece might once again offer us a relevant concept. In book two of *The Nicomachean Ethics* (Aristotle, 1893), the philosopher defines a

central concept of his ethics, called 'Doctrine of the Mean' (Urmson, 1973; Losin, 1987; Hursthouse, 2006; Kraut, 2008). To Aristotle (1893: 37), virtue means avoiding extremes and finding meson, the middle ground: "The man who shuns and fears everything and never makes a stand, becomes a coward; while the man who fears nothing at all, but will face anything, becomes foolhardy".

Once again, balance and the ability to find the middle ground are crucial to virtue and ethics. Humility is to avoid a distorted self-perception, neither overestimating nor underestimating it (Anderson and Spataro, 2005). It has long been a forgotten virtue: "however, in the aftermath of corporate scandals, which have been ascribed to abuse of power, hubris, and deceit in top executives, there seems to be an increased interest in humility as a fundamental virtue connoting self-awareness, openness, and transcendence" (Jeung and Yoon, 2016: 1122).

With this in mind, project managers may enjoy appreciation and recognition without losing balance, which leads to hubris and narcissism. In balance, project managers can achieve a realistic self-perception, becoming relevant for project success as cautious decision makers, good team workers, and solid ethical models for other project actors. As Loufrani-Fedida and Missonier (2015: 1233) said, the good news is that project managers can work together with their teams and lighten the burden of having to save the day, because "the project manager cannot be a hero anymore".

Conclusion

Our interdisciplinary study investigated project managers' perceptions of their relevance to the success of a project and compared this finding with the perception by other project actors. The results show that there is no statistically significant difference between groups. However, individual group results show that project

managers see themselves as highly critical to project success, also indicating a change in the scenario in the past few decades.

The findings are vastly supported by the literature, which increasingly emphasizes the relevance of project managers to project success. The project manager role is changing, becoming ever more crucial in an hypercompetitive, rapidly changing, global market.

The practical implication of these changes in the self-perception of project managers is the need for a balanced self-perception. Project managers must be aware of their relevance to project success and at the same time avoid hubris and narcissism, exaggerated self-perceptions that lead to destructive behaviors in the organizational context. Project managers can avoid these perils developing ancient humility, which is to avoid a distorted self-perception, neither overestimating nor underestimating themselves. The capacity to find balance is essential to virtue and ethics.

Future development of this study could explore narcissism among project managers using the Narcissistic Personality Inventory (NPI), as well as investigate the potential correlation between the project managers' narcissism and project success.

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Andersen *et al.* (2006)	Rich project communications, Stakeholder endorsement of project plans, Well structured and formal project approach, Strong project commitment, Early stakeholder influence, Well understood and accepted project purpose, Clear project constraints, Project execution flexibility and Influence over on-going project processes
Baker *et al.* (1988)	Clear goals, Goal commitment of project team, On site project manager, Adequate funding to completion, Adequate project team capability, Accurate initial cost estimates, Minimum star-up difficulties, Planning and control techniques, Task orientation (vs. Social Orientation) and Absence of bureaucracy
Belout and Gavreau (2004)	Project Mission, Management support, Project schedule, Client acceptance, Personnel, Technical tasks, Communication, Monitoring, Trouble-shooting and Client consultation
Camilleri (2011)	Project Strategic Fit, Project Scope, Project Organization Structure, Project Team Structure, Project Planning and Control, Management and Leadership, Employee Commitment and Participation, Internal and External Communication, Information Flow and Knowledge Management, Project Risk Management, Project Competency Development
Cicmil (1997)	Understanding and identification of the client/customer/end-user needs, Specification of project requirements and project constraints, Organizational behaviour factors (structure, functions, performance, etc), Wide view in the process of project planning and project implementation, Monitoring and control during the project implementation phase and Measurement and assessment of project progress against the plan
Cleland and King (1983)	Project Summary, Operational Concept, Top management support, Financial support, Logistic requirements, Facility support, Market intelligence, Project schedule, Executive development and training, Manpower and organization, Acquisition, Information and communication channels and Project review
Clarke (1999)	Communication throughout the project, Clear objectives and scope, Breaking the project into sub-projects or work packages, Using project plans as working documents.
Cooke-Davies (2002)	Adequacy of company-wide education on the concepts of risk management, Maturity of an organisation's processes for assigning ownership of risks, Adequacy with which a visible risk register is maintained, Adequacy of an up-to-date risk management plan, Adequacy of documentation of organizational responsibilities on the project, Keep project (or project stage duration) as far below 3 years as possible (1 year is better), Allow changes to scope only through a mature scope change control process, Maintain the integrity of the performance measurement baseline, The existence of an effective benefits delivery and management process that involves the mutual co-operation of project management and line management functions, Portfolio- and programme management matched to the corporate strategy and business objectives, A suite of project, programme and portfolio metrics that provides direct ''line of sight'', Feedback on current project performance and An effective means of ''learning from experience'' on projects, that combines explicit knowledge with tacit knowledge
Cserháti and Szabó (2014)	Elaboration of objective structure, Elaboration of task structure, Improvement of project plans, Definition of scope and responsibilities, Selection of contractors, Control of contractors, Responsibility sharing in sub-contracts, Financial conditions in sub-contracts, Competence and skills of project leader, Competence and skills of team members, Commitment of project team, Communication within the project team, Information sharing within the project team, Support of teamwork, Support of individual efforts, Organisational learning, Communication with project owner, users, contractors and sponsors and Partnerships with local and national stakeholders
Dvir *et al.* (1998)	Definition of operational need, Urgency of need, Alternative solutions, Definition of technical and operational specifications, Pre-contract activities, Customer follow-up team, Project preparations and design policy, Technological infrastructure and design methods, Management policy, Technological infrastructure, Prototypes, Number of design cycles, Design freeze timing, Design considerations, Project milestones, Project control, Effectiveness of project control, Budget management, Discussions and reports, Organizational environment, Manager style, Communication style, Flexibility in management, Delegation of authority, Organizational learning, Team characteristics and Manager qualifications
Kerzner (2009a)	Consider employee recomendations, Recognize that change is necessary, Understand the executive role in project management, Willing to place company interest before personal interest, Willing to accept accountability, Willing to see associates advance, Recognize the need for corporatewide systems, Support uniform status monitoring/reporting, Recognize the importance of effective planning, Recognize that cost and schedule are inseparable, Track actual costs, Develop project management training
Kerzner (2009b)	Time management, Cost Management, Quality limits, Acceptance by the customer, Follow-on work from this customer, Using the customer's name as a reference on your literature, Commercialization of a product, With minimum or mutually agreed upon scope changes, Without disturbing the main flow of work, Without changing the corporate culture, Without violating safety requirements, Providing efficiency and effectiveness of operations, Satisfying OSHA/EPA requirements, Maintaining ethical conduct, Providing a strategic alignment, Maintaining a corporate reputation and Maintaining regulatory agency relations
Locke (1984)	Make project commitments known, Project authority from the top, Appoint competent project manager, Set up communications and procedures, Set up control mechanism and Progress meetings
Morris and Hough (1987)	Project objectives, Technical uncertainty, Innovation, Politics, Community involvement, Schedule duration, Urgency, Financial contract, Legal problems and Implement problems
Pinto and Slevin (1987)	Clearly defined goals, Competent project manager, Top management support, Competent project team members,
Pinto and Govin (1989)	Mission, Top management support, Project schedule, Client consultation, Personnel, Technical tasks, Client acceptance, Monitoring and feedback, Communication, Trouble-shooting, Characteristics of the project team leader, Power and politics, Environment effects and Urgency
Pinto and Mantel (1990)	Top Management Support, Schedule/Plans, Client Consultation, Personnel, Technical Tasks, Client Acceptance, Monitoring and Feedback, Communication and Trouble-shooting
Turner (2009)	Align Project Plans with Business Plans, Define Procedures for Managing Projects, Communicate Priorities to the Parties Involved, Develop Project Plans Developed on Multiple Levels, Use Simple Planning Tools, Encourage Creativity, Estimate Realistically, Obtain Cooperation, Obtain Commitment of the Resource Providers, Ensure Resources are Available When Required, Define Management Responsibility, Ensure Good Communication, Differentiate between Technical Management and Project Management, Understand the Purpose of Control, Monitor Progress against the Plan, Hold Effective Review Meetings and Combine Responsibility with Authority
Westerveld (2003)	Leadership and Team, Policy and Strategy, Stakeholder management, Resources, Contracting, Project management, Success criteria and External factors