Project Manager Skills: for Employability in Information Technology

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Abstract

The purpose of this paper is to explore and analyse the additional skills that project managers require that go beyond technical project management skills to enable them to be successful. The above mentioned additional skills are made up of people skills, leadership skills, the understanding of the functioning of teams, and the understanding of the political environment of the project and are identified from the literature.

These additional skills are compared with the characteristics that were included in advertisements for 107 project management positions in the New Zealand information technology sector that were advertised across January and February 2009.

It was concluded that the additional characteristics are represented in the advertisements for project managers in the New Zealand information technology sector. Further to this it was also concluded that the level of importance of the different aspects of these characteristics could be more conclusively determined by researching the selection criteria that is used to select new project managers, as opposed to the characteristics that are found in advertisements for project management roles.

The results of this study point to the importance of these additional people and managements skills being covered in tertiary education qualifications that are in subjects related to information technology.

Keywords: Project Management, Skills

1 Introduction

The purpose of this paper is to analyse the skills that are required by highly successful project managers that go beyond the technical project management skills that are required by project managers, and to compare these with the characteristics that are being included in job advertisements for project management roles in the information technology sector in New Zealand.

2 Methodology

A literature review was conducted with the aim of determining what are seen as being the skills that are needed by project managers that result in them being better project managers.

These skills were analysed and grouped into technical project management skills and those skills that go beyond technical project management skills.

Job advertisements for 107 project management vacancies that were advertised across January and February 2009 were analysed with the aim of comparing them with the skills that go beyond the technical project management skills. The advertisements analysed were those that were advertised from 21 January 2009 to 27 February 2009 on seek.co.nz.

The main limitation of the study is that it focuses on what the advertisers of the positions chose to include in their advertisements, as opposed to what they actually base their selection criteria on, and as such, some of the advertisements may not include criteria that the advertisers saw as being a "given" for a project management role that may at the same time be a vitally important selection criteria.

3 Literature Review

3.1 The Importance of People Skills for Project Managers

There are many technical skills required by project managers with Cowie (2003) identifying the "setting objectives, critical path analysis, work breakdown structures, resource allocation and risk management", however Cowie (2003) went on to conclude that the success of a project often rests on the understanding of people and management related aspects, and that as such these should also be included in project management training courses along with the technical skills needed. The particular people and management related skills that were identified as being important were leadership, motivation, delegation, monitoring and control with a particular focus on influencing skills.

The need for project managers to have people skills is further highlighted in Flannes and Levin (2005) as reviewed in Indelicato (2005) who identify four key roles that need to be mastered by project managers, with these

roles being: Leader; Manager; Facilitator and Mentor. Idelicato (2005) goes on to point out the challenge of both communicating with a variety of stakeholders within the organisation as well as motivating the members of the project team.

The work of Neuhauser (2007) commences with the assertion that there are two aspects to the responsibilities of the project manager, with these being (a) the technical aspects of the project including planning, scheduling, budgeting, statistically analysing, monitoring and controlling and (b) the managing of the people related aspects of the project in such a manner as to motivate the project team to successful complete the project. These two aspects of the responsibilities are consistent with the technical skills and the understanding of people and management related aspects of the project management that were identified by Cowie (2003).

3.2 Hauschildt's Typology for Project Manager Selection

A typology with the potential of enabling more effective project manager selection was developed by Hauschildt, Keim and Medeof (2000) through the identification of seven factors, with the seven factors being organising under conflict; experience; decision making; productive creativity; organising with cooperation; cooperative leadership and integrative thinking. It is of interest to note that none of these factors directly relate to the technical skills that were identified by Cowie (2003), but that they are more directly related to the people and management related skills that were identified by Cowie.

The factors were analysed by Hauschildt et al (2000) resulted in project managers in their sample being organised into five clusters corresponding to five project manager types, with the project manager types being: Project Star; Promising Newcomer, Focussed Creative Expert; Uncreative Decision Maker and Thick-Skinned Pragmatist. The Project Star has an above average rating in all of the seven factors, with the only other type that has an above average rating in more than two of the seven factors being the Promising Newcomer who has an above average rating in all of the seven factors except for organising under conflict and experience. The other project manager types only have two factors at the most with an above average rating.

This suggests that the aspects that set aside the highly successful project managers from the others is that they have more of the factors identified by Hauschildt et al (2000), and have the potential to develop the others as the Promising Newcomer project managers would develop the experience factor in time and with that experience be likely to develop the "organising under conflict" factor, thereby turning them into Project Stars. The consequence of this would be that the aspects that set aside the Project Stars and Promising Newcomers from the other project manager types are that they have all of the following: decision making; productive creativity; organising with cooperation; cooperative leadership and integrative thinking

3.3 The Results-Oriented Project Manager Profile

Ten competencies were identified by Gillard and Price (2005) as being required by effective project managers, with these competencies being broken down into five clusters. The five clusters and ten competencies are shown in Table 1.

Cluster	Competency
Goal and Action Management	Diagnostic Use of Concepts
	Efficiency Orientation
	Proactive
Leadership	Self-Confidence
	Use of Oral Presentations
Human Resource Management	Managing Group Processes
	Use of Socialised Power
Directing Subordinates	Developing Others
	Use of Unilateral Power
Focus on Others	Stamina and Adaptability

Table 1 – Competencies of Effective Project Managers (Gillard and Price, 2005)

The goal and action management cluster is described by Gillard and Price (2005) as being the project manager's ability to keep the project on track both in terms of the project's mission and goal. This cluster is therefore consistent with the technical skills described by Cowie (2003). The remaining clusters identified by Gillard and (2005) of leadership; human resource management; directing subordinates and focus on others are consistent with the people and management related skills that were identified by Cowie (2003).

Gillard et al (2005) goes on to describe the characteristics of the "results-oriented project manager profile" which include a number of aspects outside of the technical skills needed by a project manager. These include awareness of environmental influences, political awareness, team creation and leadership, building sound interpersonal relationships and oral presentation skills.

3.4 Project Manager or Project Champion

Kerzner (2006) draws a distinction between the role of project manager and the role of project champion that has parallels to the two aspects of the responsibilities of the project manager that were identified by Neuhauser (2007). In Kerner's comparison of project managers and project champions there are nine (9) aspects that are compared with the added suggestion that the project champion is more of a project engineer than a project manager as they are more concerned with the technical aspects of the project. The significant differences between the project manager and project champion are that the project managers tend to be more people and process related, with the project manager preferring to work in groups, being more committed to their responsibilities that technology and managing people rather than things. These people and process related aspects of the project manager are consistent with the importance of the understanding of people and management relates aspects

of project management identified previously by Cowie (2003). Kerzner also suggests that just because the project champion does not have the people and process related skills, this does not necessarily mean that they would not be successful in managing projects.

A range of personal characteristics required by project manager was developed by Archibald (1976, p55) and is cited by Kerzner (2006). Of the fourteen (14) characteristics identified, very few were related to the technical project management skills identified by Cowie (2003), with the vast majority being management related or people related which is again consistent with the work of Cowie. Kerzner (2006) goes on to list the ten (10) skills for project managers that are included in the PMBOK® Guide in section 9.3.2. Six (6) of this list including team building, leadership, conflict resolution, entrepreneurship, administration and management support which are all people and management related, while the remain four (4) are technical expertise, planning, organisation and resource allocation which are more related to the technical aspects of project management as per Cowie (2003).

3.5   The Importance of Team Building

The importance of team building skills were also highlighted by Kerzner (2006), and as part of this emphasised the need for effective communication, demonstrating interest in the personal growth of team members and commitment to the project. This aspect of team building skills was also highlighted earlier by Gillard et al (2005) who identified team creation and leadership and Indelicato (2005) who highlighted the challenges of motivating team members. These aspects of team creation and leadership were analysed by Gibson and Nesbit (2006) who retrospectively applied the concepts of Belbin Team Roles to a project and concluded that having an understanding of the different roles that team members can play can greatly assist the formation of a project team, thereby increasing the chances of success of the project that they are undertaking. This suggests that the understanding of Belbin Team Roles, and their application in the forming of project teams is one of the types of people and management related skills and understanding that would result in project managers being more successful.

The application of organisational patterns were also analysed by Gibson and Nesbit (2006) with respect to the same project. It was found in this particular project that the retrospective use of organisational patterns as described by Coplien and Harrison (2005) would have seen some aspects of the project organised differently, particularly as to how the project fitted inside and was managed within the organisation that the project was being completed in. This retrospective analysis suggests that having an understanding, not necessarily of the organisational patters described by Coplien and Harrison (2005), of how projects fit in with the external and internal political influences of an organisation would give project managers more chance of being successful. This is especially important and significant when it comes to negotiating for additional resourcing for a project. The

importance of understanding the internal and external influences affecting a project is also consistent with Gillard and Price (2005) identifying awareness of environmental influences and political awareness as being characteristics of highly successful project managers and with Idelicato (2005) pointing out the challenge of both communicating with a variety of stakeholders within an organisation.

4   Analysis of Literature Review

A number of issues arise from the review of the literature including that highly successful project managers need to have (a) people and management related skills as opposed to only having technical project management skills, (b) a good understanding of the political environment that the organisation exists in and (c) a good understanding of the way in which project teams can function and be created.

4.1   People and Management Related Skills

It is clear from the literature review that there is more than one type of skill or understandings that are required by highly successful project managers. Some of the writers, including Cowie (2003), Gillard and Price (2005), Neuhauser (2007) and Kerzner (2006) have separated out the skills into a group of technical related skills and people or management related skills. The technical related skills identified typically include the planning, scheduling, organising and allocation of resources amongst other things. The people and management related skills identified by these particular writers include leadership, motivation, team building, and other people management related activities.

Kerzner (2006) in separating the project champion from the project manager has identified additional aspects in the project manager's armoury of skills that give them a greater chance of successfully managing projects. These include wider aspects of projects such as leadership, building sound interpersonal relationships and oral presentation skills which were some of the skills identified by Gillard and Price (2005).

The work of Hauschildt et al (2000) also highlighted the importance of people and management related skills for project managers through the development of a typology for project manager selection. Of interest in this was that only a small proportion of project managers (identified as being the Project Stars) have above average ratings in all aspects of the typology, with those identified as being Promising Newcomers having the potential to develop into Project Stars over time. The other project manager types identified had the capacity to successfully manage some times of projects, but not all types. This suggests that the highly successful project managers are those that can manage all types of projects, regardless of size, complexity etc and as such need a wide range of people and management related skills, with this wide range of skills being found in the seven factors identified by Hauschildt et al (2000).

4.2 The Political Environment that Projects Exist In

The importance of understanding and being able to operate in the political environment that the project exists in was illustrated by Gillard and Price (2005) relating political awareness and the influences of external factors, with Idelicato (2005) identifying the need for communication with a variety of stakeholders. These aspects highlight the benefit of frameworks like organisational patterns (Coplien and Harrison, 2005) as described in Gibson and Nesbit (2006) for understanding how the project fits into the overall organisational culture and environment, particularly when it comes to seeking additional resources for a project.

4.3 Project Team Creation and Functioning

The importance of team work for managing projects was highlighted by Gillard and Price (2005) with team creation and leadership being one of the characteristics of their "results-oriented project manager profile". The preference for working in groups by successful project managers was one of the aspects that set project managers apart from project champions in Kerzner (2006), with team building being one of the ten skills indentified for project managers in the PMBOK® Guide. Indelicato (2005) also highlighted the challenges of motivating team members. The use of tools such as Belbin Team Roles as described in Gibson and Nesbit (2006) how such tools can aid in the formation of project teams that have more chance in completing projects successfully.

5 Project Management Positions Advertised in the Information Technology Sector

An analysis of project management positions advertised in the New Zealand information technology sector across January and February 2009 was conducted with the results being presented in this section.

5.1 Method of Analysis

The literature review conducted in this paper highlighted the importance of the following skills for project managers in general:

- People and management skills

- Understanding of the political environment that the organisation exists in

- Understanding of the function and creation of project teams

Using these as the basis for the analysis the key aspects that were looked for in the advertisements were:

- Whether the position itself was in fact project management related as some were classified under project management where in reality they were not project management roles

- Leadership and management skills

- Interpersonal skills and communication skills

- Aspects relating to working in a team

- Building relationships with internal and external stakeholders

- Strategic orientation

- The requirement for some form of project management certification.

5.2 Results and Analysis

A total of 107 positions that had "IT&T" as their main classification and "Project Management" as their sub-classification were analysed. Of these positions there were five (5) that did not mention the term project management at all in the text of their advertisement, and as such these were not included in the analysis.

Table 2 shows the proportions of the positions that were advertised as limited tenure contract positions, with the others being permanent positions. This shows that just over one third of the positions advertised were for limited time periods suggesting that there are a significant proportion of the project management roles that may be for one-off projects.

	Number	Percentage
Specifically advertised as contract positions	35	34.3%
Not specifically advertised as contract	67	65.7%
Total Advertised	102	100.0%

Table 2 – Proportions of Positions Advertised as Being Contract Positions

The key aspects that were included in each advertisement are summarised in Table 3 in descending order based on how frequently that they appear in the advertisements.

Key Aspects Included	Number	Percentage
Building relationships with stakeholders	63	61.8%
Leadership and management skills	53	52.0%
Interpersonal skills and communication skills	37	36.3%
Aspects relating to working in a team	29	28.4%
Requirement for Project Management Certification.	25	24.5%
Strategic orientation	18	17.6%
Total Positions Advertised	102	100.0%

Table 3 – Percentage of Advertisements Including Different Key Aspects in Descending Order

The advertisements were separated out in to those that were contract roles and those that were permanent roles with the key aspects that were included in each group of advertisements being shown in Table 4 and Table 5 respectively. A visual comparison of the percentage that each key aspect appeared in each advertisement is shown in Figure 1.

Key Aspects Included	Number	Percentage
Building relationships with stakeholders	17	48.6%
Leadership and management skills	15	42.9%
Interpersonal skills and communication skills	13	37.1%
Aspects relating to working in a team	12	34.3%
Requirement for Project Management Certification.	7	20.0%
Strategic orientation	7	20.0%
Total Positions Advertised	35	100.0%

Table 4 – Percentage of Advertisements for Contract Positions Including Different Key Aspects in Descending Order

Key Aspects Included	Number	Percentage
Building relationships with stakeholders	46	68.7%
Leadership and management skills	38	56.7%
Interpersonal skills and communication skills	24	35.8%
Requirement for Project Management Certification.	18	26.9%
Aspects relating to working in a team	17	25.4%
Strategic orientation	11	16.4%
Total Positions Advertised	67	100.0%

Table 5 – Percentage of Advertisements for Permanent Positions Including Different Key Aspects in Descending Order
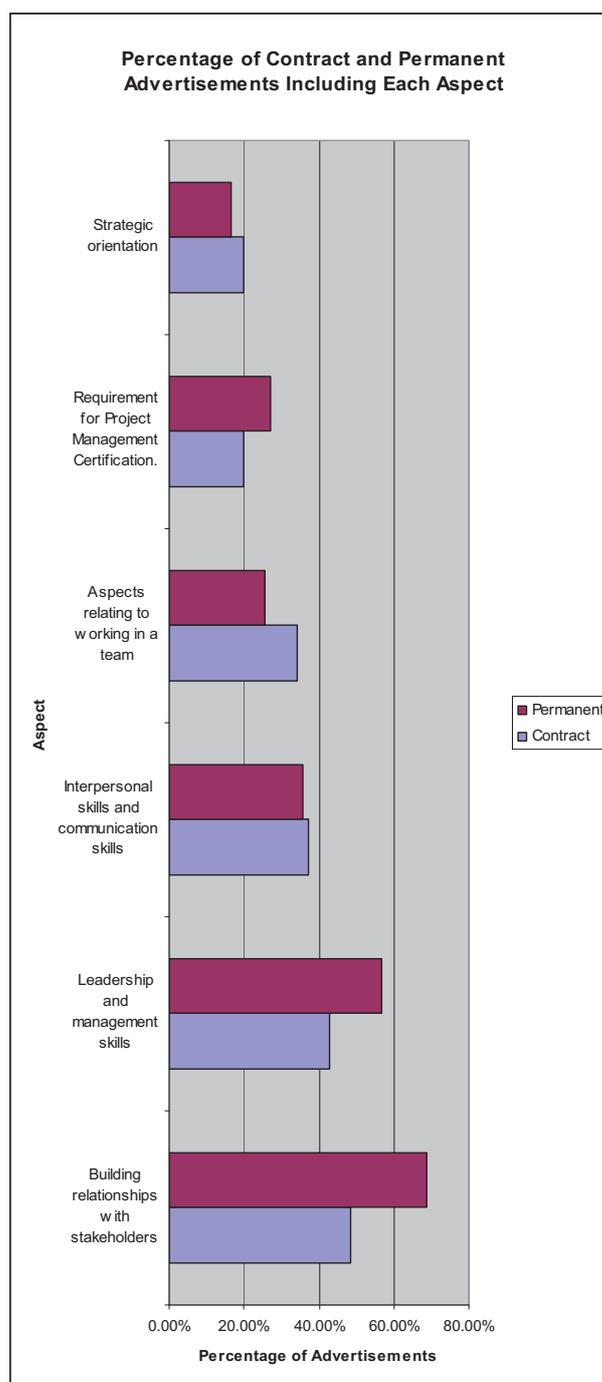

Figure 1 – Comparison of Key Aspects across Advertisements for Contract and Permanent Positions

5.3 Discussion

The data in Table 3 shows that the most frequently occurring of the key aspects in all of the advertisements is that of building relationships with key stakeholders, and when the data in Table 4 and Table 5 is observed, it can be seen that this is the most frequently occurring key aspect in both the contract and permanent groups.

In both the contract and permanent groups of advertisements the second and third most frequently occurring key aspects were (a) leadership and management skills and (b) the need for interpersonal skills and communication skills, with the least frequently

occurring key aspects for both groups being the need for a strategic orientation.

The only key aspects that were rated in a different order across the two groups were those relating to working in a team and the requirements for project management certification, with those relating to working in a team occurring more frequently than the need for project management certification in the contract advertisements (34.3% compared with 20.0%), and the other way around (25.4% compared with 26.9%) in the permanent advertisements. However the different between the frequencies of these two key aspects in the permanent advertisements is low enough to not be significant.

This suggests that there is potentially no real difference in the order that key aspects appear in the advertisements across the contract and permanent positions. This could be the basis of a further study.

The ranking of the key aspects in Table 3 showing, the building of relationships with key stakeholders as being the frequently occurring key aspect down to the need for a strategic orientation being the least frequently occurring key aspect, may suggest at first glance that this is the order of importance of the key aspects. As indicated in the limitations of the study, this does not take into account that some of the advertisers in writing their advertisements may have taken some of the less frequently occurring key aspects as being "given" and that as such they did not need to be included in the advertisements. This could also be the basis of a further study in which employers were specifically asked to rate the importance of the key aspects that have been the subject of this study.

With Figure 1 showing the comparison in the frequency of the key aspects across the advertisements for contract and permanent positions it can be seen that there are some where the key aspect appears more frequently in the permanent position advertisements and others where the key aspect appear more frequently in the contract position advertisements. These are shown in Table 6 and Table 7 respectively, where it can be seen that (a) building relationships with stakeholders and (b) leadership and management skills appear at least 10% more frequently in advertisements for permanent positions (Table 6).

Key Aspects Included	Contract	Permanent	Difference
Building relationships with stakeholders	48.6%	68.7%	20.1%
Leadership and management skills	42.9%	56.7%	13.8%
Requirement for Project Management Certification	20.0%	26.9%	6.9%

Table 6 – Key Aspects Appearing More Frequently in Advertisements for Permanent Positions

In Table 7 it can be seen that none of the key aspects appear at least 10% more frequently in advertisements for contract positions, with the biggest difference being in aspects relating to team work with the difference in 8.9%.

Key Aspects Included	Contract	Permanent	Difference
Aspects relating to working in a team	34.3%	25.4%	8.9%
Strategic orientation	20.0%	16.4%	3.6%
Interpersonal skills and communication skills	37.1%	35.8%	1.3%

Table 7 – Key Aspects Appearing More Frequently in Advertisements for Contract Positions

As indicated earlier in the analysis and discussion, this does not necessarily mean that there is a difference in the level of importance between the different aspects across the permanent and contract positions, but it is a signal that an area for further study is the significance of the difference in the importance of the aspects across the two different types of project management roles.

6   Conclusions

Highly successful project managers need to not only have the technical project management skills identified by writers such as Cowie (2003), but need to have a very wide range of people and management related skills as can be found in the seven skill factors identified by Hauschildt et al (2000) as well as a good understanding of the political environment that the project exists in.

Possessing all of the seven people and management related skill factors identified by Hauschildt et al (2000) would enable a project manager to manage a wide range of different types of projects, whereas project managers possessing only some of these skill factors would be more suited to managing a narrower range of project types.

Of the six key aspects identified, between 17.6% and 61.8% were referred to in each advertisement indicating that there is a representation of the people and management related skills identified in the literature review present across the advertisements. However, the level of importance of the different aspects of these characteristics could be more conclusively determined exploring the areas that have been identified for further research. This further research would include a questionnaire that asks those involved in the selection of new project managers (both in contract and permanent roles) to rate the relative importance of the six key aspects identified with a view to determining:

- The relative importance of each key aspect to the selection as opposed to the frequency with which they are advertised

- The difference in the importance of each key aspect based on whether the role being filled was a permanent role or a contract role. This would serve to identify a difference in the relative importance of

each key aspect when it comes to ranking them, and to identify key aspects with a statistically higher importance in one type of role than the other.

This study does highlight that the people and management skills that go beyond technical project management skills are in fact sought by those advertising to fill project management roles in the New Zealand information technology sector, and as such are vitally important to include in qualifications in the tertiary education sector that are related to information technology.

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