The attribution of success and failure in IT projects

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Abstract

Purpose – The purpose of this research is to determine how project managers attribute information technology (IT) project success and failure.

Design/methodology/approach – IT personnel from large Australian organisations completed an adapted version of the Attributional Styles questionnaire, which asked them to attribute causes along a number of attribution dimensions, for IT projects which have either succeeded or failed.

Findings – The results indicate that IT support workers attribute failure to external factors, whilst attributing success to themselves. On the other hand, executive management took a more balanced perspective which attribute success to external factors and only partially to themselves, whereas they attribute significant personal responsibility for failure.

Practical implications – More junior professionals and operational IT employees can learn from their senior professionals in attributing success and failure. Post-implementation reviews and debriefings conducted by senior IT professionals are ways of passing on their experience in relation to project and self-evaluations.

Originality/value – This paper takes a well established psychology theory and applies it to the management of information systems (IS)/IT projects. IS/IT research has not examined how IT professionals attribute success and failure within projects.

Keywords Project management, Information, Technology led strategy

Paper type Research paper

Introduction

The management of information technology (IT) projects is a challenging task with many projects failing to achieve their intended objectives (Latendresse and Chen, 2003). Many organisations do not critically examine the causes for project failure and this prevents them from learning from their mistakes (Hillam and Edwards, 2001). Failure can be classified as partial failure, in the sense of not delivering all of the anticipated benefits or in extreme cases, outright failure or abandonment of the system (Flowers, 1996). Although high levels of IT project failure have been widely recognised as the most pressing problem facing the IT profession, there is still no clear, accepted definition of IT project failure (Hillam and Edwards, 2001). Lyytinen and Hirschheim (1987) identified four major types of failures:

(1) correspondence failure;
(2) process failure;
(3) interaction failure; and
(4) expectation failure.

According to Krauth (1999), many IT project failures are due to one or more of the following reasons:

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- insufficient awareness of organizational issues;
- insufficient involvement of users;
- inadequate training of users; and
- poor alignment of IT adoption to the business strategy.

Key reasons for project failure include ineffective leadership (Gottschalk and Karlsen, 2005; Czurchy and Yasin, 2003), lack of support from the IT department (Latendresse and Chen, 2003), changed user requirements (Latendresse and Chen, 2003), and the project size and complexity (Huang *et al.*, 2004). For effective project outcomes the major project risks have to be managed during the project life-cycle (Baccarini *et al.*, 2004).

Project success is equally as complex to define as failure. Thong *et al.* (1996) have defined it as the extent to which an IT project actually contributes to achieving organizational goals. Project managers have a great influence on the success of IT projects, by performing a multitude of roles according to the project situation (Day, *et al.*, 2003). From an IT project manager's perspective, meeting user requirements is an extremely important contributor to IT project success (White and Fortune, 2002; Briggs *et al.*, 2003). However, according to Wateridge (1998), meeting time and budget are more important than meeting other long-term criteria such as delivering a quality system to users.

Despite the focus on IT project success and failure by researchers there has been relatively little attention given to how individuals attribute IT project success and failure. It has been suggested that during declining organisational performance, top managers who attribute failure to internal sources as opposed to external sources are more likely to show greater levels of strategic reorientation (Barker and Barr, 2002). How people attribute success and failure on an individual basis is likely to have a significant impact on the organisational perception of the final assessment of a project (Walsham, 1993). Hirschheim and Smithson (1988) proposed that the treatment of IS evaluation, for example, as a technical problem led to meaningless conclusions that overlooked the social activity inherent in the evaluation process. Walsham (1993) states that evaluation is a dynamic socio-political process within multi-level social contexts where personal assessments by stakeholders have a strong influence on the outcomes of evaluation. It is important, therefore, that those involved in projects can evaluate their contribution in a balanced way that benefits the organisation rather than securing the identity of individuals (Knights, 1995). To explore these issues, our paper examines how IT professionals attribute success and failure in relation to IT projects and explains how this information can be used to improve the outcomes of projects.

Attribution theory

The IT context is a relevant one in which to study explanations for success and failure because:

- this area contains a continuos flow of projects being undertaken;
- there are many contingencies in developing good IT projects;
- there are complex determinants for defining the success and failure of projects;
- the IT environment (e.g. funding of projects) is often unstable;

- many projects do "fail";
- responsibility is high as projects are often substantial and their success or failure has an impact on many users;
- there is a hierarchy of responsibility for IT project failures; and
- IT workers are, therefore, subject to continuous and often large motivational issues in dealing with the complexities of project failures.

Below we elaborate on the importance of each of these characteristics of the IT context in the light of a significant approach to the study of explanations for success and failure events.

Attribution theory[1] (originally Heider, 1958; Jones and Davis, 1965; Kelley, 1967; Ross, 1977; Hewstone, 1989; Weiner, 1986) represents an extensive examination of the perceived causes that many apply to events involving themselves or others. A central tenet is that people are motivated to render their world controllable and attributions function to achieve a sense of systematic personal control over environmental forces (Brehm, 1966; Wortman, 1976; Guilfoyle, 2000). Though not regarded as universal, in many cultures, particularly the modern western, there is an ideological/cultural conditioning to maintain a sense of control. This achievement is aided by what has been termed a self-serving (Weary, 1979) or ego-centric bias (Heider, 1958; Jones and Davis, 1965; Kelley, 1967). Many will perceive causes for success by locating themselves as the key agent in the success – thus in control of, or responsible for successful outcomes. Further, often there is a discounting of their own role in any failure – achieved by explaining away failure events as external to themselves and controlled by external forces. These self serving patterns of attribution are linked to positive emotions (Weiner, 1986). Indeed, attributing success and failure in a way that favours the self is considered a functional response to the social environment and is linked to maintaining self-efficacy (Kelley, 1967; Vallins and Nisbett, 1971; Fincham, 1983).

The counter-point to attributing as a function of favouring ones self and achieving the concomitant healthy rewards of perceiving control over the environment, occurs in conditions where such self serving attributions are hard to sustain. Self-effacing explanations tend to assume personal responsibility for failures and result in an attribution pattern which positions self as controlling (or in control of) failure rather than success (Wortman, 1976). The classical outcome is a form of "learned helplessness" (Abramson *et al.*, 1978; Abramson and Martin, 1981; Beach *et al.*, 1982). Here, ones own actions become consistently perceived as not leading to positive outcomes. This can spiral into a downward trend whereby the individual feels helpless to act for fear of being implicated further in failure (Storms and McCaul, 1976; Halpin and Guilfoyle, 2004).

It is important to note that while many theorists view attribution patterns as a personality characteristic (Abramson and Martin, 1981), based on our cultural account/ideological account (see above) we argue it is more likely that an individual's tendency towards certain attributions becomes styled or "habituated" over some time and is based on exposure to a normative sense about what is an appropriate attribution pattern. This argument is based on evidence that people will form an attribution style applied to familiar situations; and thus are likely to hold different attribution patterns which they can deploy for different contexts (for example, home versus work) (Peterson and Seligman, 1984; Curtona *et al.*, 1985; Anderson *et al.*, 1988). Thus, an attribution

style depends on the context. We argue further, therefore, that the "cultural" environment within organisations is critical in effectively shaping its attribution patterns, and by studying these patterns we can reflect on the potential attribution culture that exists within a project. Further, to this, because attributions are linked to motivations, the question becomes, critically, what are the potential ramifications for future motivations to engage in, complete, adjust to failure or actively create new projects within the organisation? To comment on this we turn more specifically to models for establishing attribution patterns.

The work of Weiner (1986) and his theory of attributions, motivations, and emotions based on social learning theory are authoritative here. It extends the classic attribution work of Heider (1958) who argued perceivers attribute their own actions either to internal (personal, dispositional forces) or to external (transient environmental factors) into four dimensions that are central to an individuals' explanations of success and failure. Attributions made within each dimension impact on achievement motivation, sense of self and have affective consequences (Feather and Simon, 1971; Frieze and Weiner, 1971). The *locus* dimension is essentially Heider's (1958) and internal attributions for success and external attributions for failure will affect self esteem and pride. A stability dimension (whether the cause is stable over time or transient) relates to future expectations of success, hopefulness and hopelessness. The dimension of globality (whether the cause relates to just one situation or transfers to many situations) (Stratton, 1997) relates to the severity of symptoms. The controllability dimension is different to *locus* in that it relates, for example, to internal qualities such as effort or learned ability and thought to be controllable rather than a fixed ability and relates to feelings of shame and guilt (Higgins and Hay, 2003).

Collectively, a theoretically damaging (or pessimistic) attribution for a failure should be apparent as an internal-stable-global-controllable attribution chain. Attributing failure this way assumes full personal responsibility by implicating an unchangeable generalisation about self as the cause of failure (Abramson *et al.*, 1978). Likewise, if positive events are met with an external, unstable, and specific causal attribution (Abramson *et al.*, 1978; Furnham *et al.*, 1994); self-esteem is thwarted. This is reversed for a self-serving (optimistic) attribution; where the perceiver claims an internal, stable-global-controllable aspect of their personality as the cause of a success and explains away failure as due to external-unstable-specific-uncontrollable causes.

The work of Furnham *et al.* (1994) has extended the basic concepts of attribution theory into the applied area of work environments. They identify that internality and perception of personal control over positive outcomes were positively correlated with job commitment, involvement, and satisfaction. Individuals who saw failure as internal, stable, and global were less productive and persistent than the individuals who had an optimistic explanatory style on the attributional style questionnaire (Furnham *et al.*, 1994). Similarly, an optimistic attributional style (i.e. internal, stable and global attributions for good events and external, unstable and specific attributions for bad events) has been found to be significantly correlated with job satisfaction, performance and success at work (Proudfoot *et al.*, 2001). Furnham *et al.* (1994) has developed the Attributional Styles questionnaire in order to study the sorts of attribution patterns that occur within different applied work settings. In the present design, we extend this work into the IT area which we identify as an important theoretical and applied context for the study of success and failure attributions.

Research design and methodology

Theoretical model and constructs

For the theoretical model in this research we rely on the attribution work of Weiner (1986) and the application of this to work situations by Furnham *et al.* (1994). This area of psychology has been given considerable attention and has led to clearly defined constructs which have been validated through a large number of studies (Furnham *et al.*, 1994). As a result of the refinements in the theoretical model over time the constructs have been rigorously validated and reduced to single items (Figure 1). These constructs are internal/external, stable/unstable, global/specific, and controllable/uncontrollable.

Sample

A questionnaire was sent to information systems (IS) and IT personnel involved with the delivery of projects in 500 Australian organisations randomly selected from the top 2,000 Australian organisations (Dun and Bradstreet mailing list). Two follow-up mailings were carried out to improve the response rate. Late returns were compared with other responses received earlier in order to check for non-response bias. No significant differences were detected between the two samples. In total, 116 responses were received, representing a response rate of 23.2 per cent. This response rate is

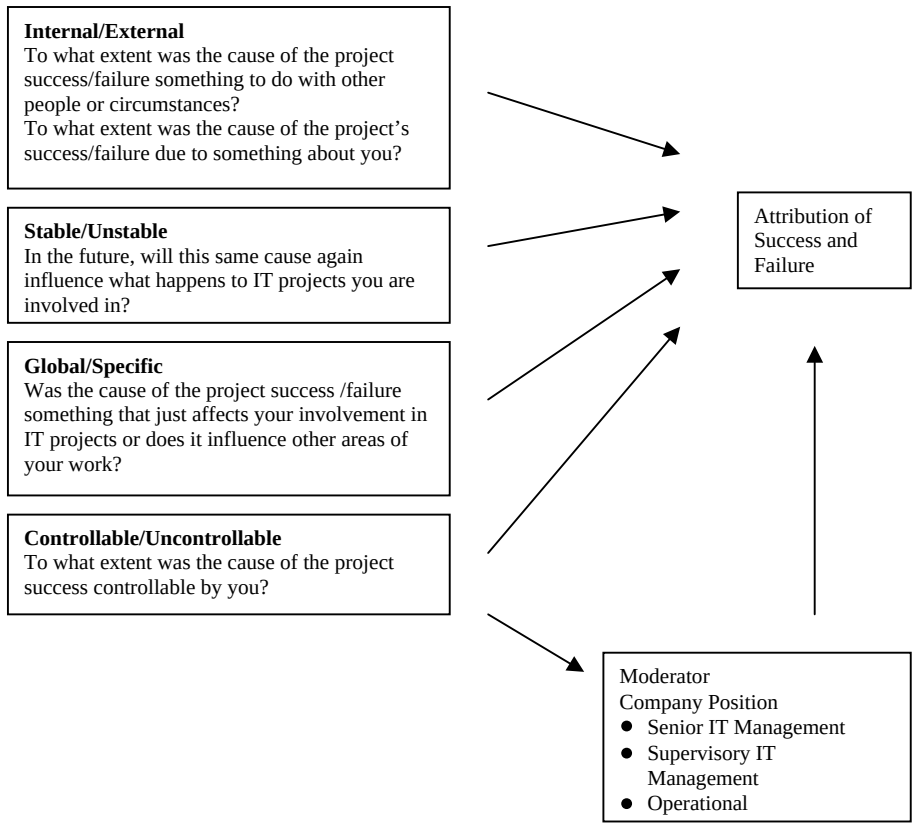

Figure 1.
Theoretical model

considered acceptable for a survey focusing on industry practitioners (Alreck and Settle, 1985).

Questionnaire

The structure of the questionnaire addressed several issues in how project managers attribute IT project success and failure, and followed the key elements of the model in Figure 1 with a mix of seven-point Likert scale, nominal scale and open-ended questions. The questionnaire is based on a previously validated attributional styles survey conducted by Furnham *et al.* (1994). In our adaptation, we use an event specific questionnaire and the respondents nominate the event (so it is "real" rather than a prescribed abstract or artificial scenario and thus it relates to their current experience and is salient to them as a success or failure).

Findings

An overview of the sample characteristics can be seen in Table I. An overwhelming majority of the respondents were male (83 per cent) and aged between 41 and 60 (60.7 per cent). Almost half have been working in the same organisation for more than 5 years (42.8 per cent), with 42 per cent working in the same organisation between 1 and 5 years. Most responses were from chief information officers (CIOs) and other senior IT managers (40.5 per cent), with the remaining from operational/line managers (36 per cent) and IT operations/support staff (23.4 per cent). Table I also indicates that almost all responding organisations had their own IT department (95.4 per cent) and most had outsourced at least some part of their IT functions (67 per cent).

Many reasons or causes for IT project failure were mentioned by the respondents. The top five reasons were lack of user support and involvement, lack of properly defined project scope, lack of executive management support and commitment, imprecise defined objectives and knowledge of the IT project, and poor project management and leadership. Most of the failed IT projects mentioned by the respondents were medium in size (68.8 per cent) and 68.9 per cent of the respondents strongly denied the cause of the project's failure had something to do with them (internality). IT support workers were most likely to strongly deny the responsibility for IT project failure (80 per cent) than other two groups (executives – 64.3 per cent and line managers – 65.8 per cent). Just over half of the respondents (53.6 per cent) believe that the same cause would influence what happens to IT projects that they are involved in (stability). In particular, respondents who were in line management roles (64 per cent) were more likely to agree to the fact that the same cause would influence other IT projects than the respondents who were in executive roles (42.9 per cent) and in IT support roles (50.1 per cent).

Half of the respondents (52.4 per cent) believed that the cause of the project failing had affected their involvement in IT projects or other areas of their work (globality). Not surprisingly, 60.8 per cent of the respondents believed that the cause of the project failing had something to do with other people or circumstances (externality). Only 16 per cent of the respondents indicated that the cause of the project failing had nothing to do with others. Moreover, 70.8 per cent of the respondents agreed that the cause of the project failing was not something that was controllable by them and only 11.3 per cent disagreed (controllability). Finally, 70.8 per cent of the respondents considered the failed IT project to be important (degree of importance). In terms of

Range	Percentage
(a) Industry sectors	
Education	17.0
Government and utilities	16.1
Manufacturing	13.4
Health	9.8
Construction, mining and engineering	9.8
Retailing or wholesale distribution	8.1
IT and communication	7.1
Banking and finance	5.4
Transportation	3.6
Other	9.7
(b) Annual turnover (A$m)	
< 10	3.6
1-5	2.7
6-10	5.4
11-50	8.0
51-100	22.3
> 100	45.5
Unsure/do not know	12.5
(c) Total number of employees	
< 10	5.4
11-50	3.6
51-100	4.5
101-250	5.4
251-500	14.3
> 500	67.0
(d) ICT job responsibility	
IT operations/support	23.4
Operational/line management	36.0
CIO/executive management/director	40.5
(e) IT department	
Yes	95.4
No	4.6
(f) IT functions outsourced	
Yes	67.0
No	33.0

Table I.
Sample characteristics

rating the criteria for IT project failure, the respondents had agreed that "went over time" was one of the major reasons for the failure (73.5 per cent). The respondents were not able to agree on the two other criteria – "went over budget" and "low user satisfaction". However, they did not rate "no organisational benefits" as one of the criteria for project failure. Interestingly, 60 per cent of the respondents would still like to be involved in a similar IT project in the future.

Many reasons or causes for IT project success were mentioned by the respondents. The top five reasons were good user support and involvement, good project management and leadership, effective planning, executive and sponsor commitment, and total organisation and project team commitment. The results are consistent with findings by Cook and Davis (2003) in which a project manager should possess good project management skills, the ability of emphasizing the goals to the team members,

gathering users support, and excellent interpersonal skills in order to achieve IT project success (Cook and Davis, 2003; Lucas, 1975). Most respondents indicated that they were highly involved with the successful projects (66.1 per cent). Additionally, most of the successful IT projects mentioned by the respondents were medium in size (57.8 per cent). Most respondents (60.5 per cent) indicated the cause of the project's success had something to do with them. A large majority of the respondents (79.9 per cent) believe that the same cause would influence what happens to IT projects that they are involved in. Most respondents (74.8 per cent) believed that the cause of the project success had affected their involvement in IT projects or other areas of their work. The length of employment of the respondents appeared to be positively related to their perception of globality (0.301). Almost half of the respondents (49.5 per cent) believed that the cause of the project success had something to do with other people or circumstances. Surprisingly, 24.7 per cent of the respondents strongly believed that the cause of the project success had something to do with other people or circumstances. Only 15.6 per cent of the respondents strongly disagreed. Respondents who were in executives roles (65.9 per cent) were much more likely to attribute the project success to others and/or circumstances than the respondents who were in IT support roles (31.6 per cent) and in line management roles (46.1 per cent). Moreover, 74.3 per cent of the respondents agreed that the cause of the project success was something that was controllable by them and only 11.9 per cent disagreed. Almost every respondent 93.6 per cent considered the successful IT project to be important. There was a positive correlation between the degree of importance of the IT project and the size of the responding organizations in terms of employee numbers (0.473). In terms of rating the criteria for IT project success, a large majority of the respondents had agreed all four criteria were rated. Not surprisingly, almost every respondent (95.5 per cent) would like to be involved with successful IT projects in the future, especially those respondents who attributed the cause of the successful IT projects to themselves (0.306).

Attribution dimensions

We performed confirmatory factor analyses (principal component analysis with a Varimax rotation and Kaiser normalization) one for each set of attribution items (success and failure) (Table II). For both, two parallel factors were identified. For success the rotation converged in three iterations, accounting for 68.9 per cent of the variance in scores. The first factor (36.5 per cent of variance) for IT project success was characterised by internal (0.845) and controllable (0.732) (and negatively related to external (−0.650)) attributions. This corresponds to the core "internality" attribution dimension identified by Weiner. High scores on this factor identify a worker who attributes success to themselves and as under their control and is not caused by others. A second factor (27.3 per cent of variance) was characterised by global (0.820) and

	Internality				Global/stable			
	Failure		Success		Failure		Success	
IT support	−0.34	*0.19*	0.33	*0.18*	0.05	*0.18*	−0.35	*0.19*
Line manager	0.22	*0.17*	0.05	*0.17*	0.14	*0.17*	0.07	*0.17*
Executive manager	0.09	*0.16*	−0.24	*0.16*	−0.17	*0.16*	0.18	*0.16*

Table II. Means and standard deviations for each factor across project success and failure

stable (0.801) attributions. High scores here indicate an attribution of success as due to own stable and global qualities/involvement. Traditionally, the ultimate "internal" attribution pattern posits a single dimension for internality which includes stable, global, controllable and internal attribution as the extreme case for internality. However, in our sample the two factors above were discernible.

Supporting attributions theory, which suggests attribution categories are transferable (universal) across success and failure outcomes; attributions for IT project failure fell into the same two factors (three iterations and accounting for 55.66 per cent of total variance). Internality (31.2 per cent of variance) was characterised by internal (0.848), controllable (0.831) attributions (others as cause did not load onto this factor). A person scoring highly for this factor will attribute failure to personal factors under their own control. The second factor (24.5 per cent of variance) consisted of global (0.782) and stable (0.745) attributions and a pattern that claims responsibility for failure due to personal global/stable forces. In order to include loadings from each of the underlying theoretical attribution dimensions (stable, global, controllable and internal), but perform a separate analysis for the two factors identified in our sample, we calculated (regression based, mean $= 0$, SD $= 1$) factor scores for "internality" and "globality/stability". The primary focus was the extent to which different job responsibilities engender different attribution patterns for success and failure as measured by these two factors. We performed two repeated measures analyses of variance; the first contrasting "internality" attributions for success and failure; the second global/stable attributions for success and failure.

Repeated measures ANOVA using project outcome (success and failure) as the repeated measure and job responsibility (it support, line and executive managers) as the independent factor, identified no main effects, however, a significant interaction effect for outcome by responsibility, $F(2, 102) = 4.45$, $p < 0.05$, as shown in Figure 2. *Post hoc* analysis (Tukeys HSD and single degree of freedom F ANOVA) showed IT

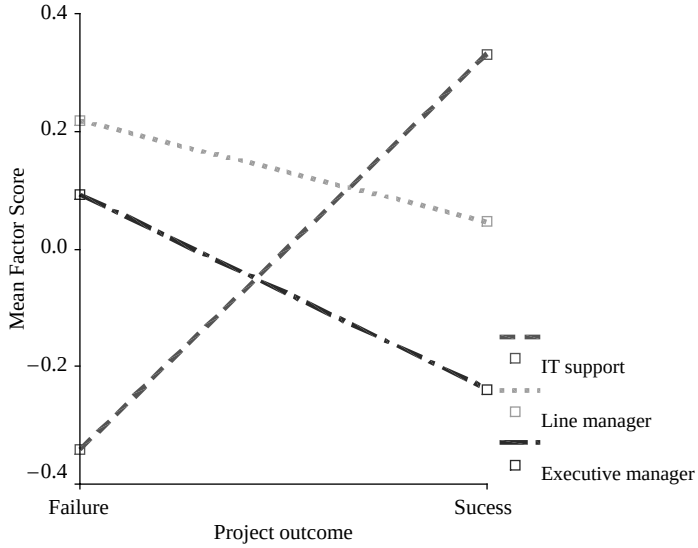

Figure 2.
Interaction between job responsibility and internal attributions for failure and success of IT projects

support workers attributed their self significantly more to IT project success (mean = −0.34) than to IT project failure (mean = 0.33), $F(1, 28) = 5.10$, $p < 0.05$). Line managers attributed to their own self more so than other workers, however, they attributed their role equally for failure and success. The reverse was true for executive managers, who took more responsibility for their project failure than their project successes (this trend approached significance, $p = 0.08$).

Globality/stability

Repeated measures ANOVA using project outcome (success and failure) as the repeated measure and job responsibility (it support, line and executive managers) as the independent factor, identified no main effects but a significant interaction effect for outcome by responsibility, $F(2, 102) = 3.99$, $p = < 0.05$, as shown in Figure 3.

Post hoc analysis of the interaction effect showed that while there were trends towards IT support and line managers attributing global and stable factors to failure rather than success these differences were not significant. There was, however, a significant reverse effect of executive managers who attributed success to global and stable factors (mean = 0.18) more than to project failure (mean = −0.17), $F(1, 39) = 3.99$, $p < 0.05$.

Discussion

The study of attribution of project success and failure in IT projects has the potential to improve our understanding of project management and the attitudes and perspectives that make a good project manager. Using an adapted version of the Attributional Styles questionnaire (Furnham *et al.*, 1994) we asked IT personnel to attribute causes along a number of attribution dimensions for IT projects which have succeeded and failed. The key findings of the study have implications for researchers and

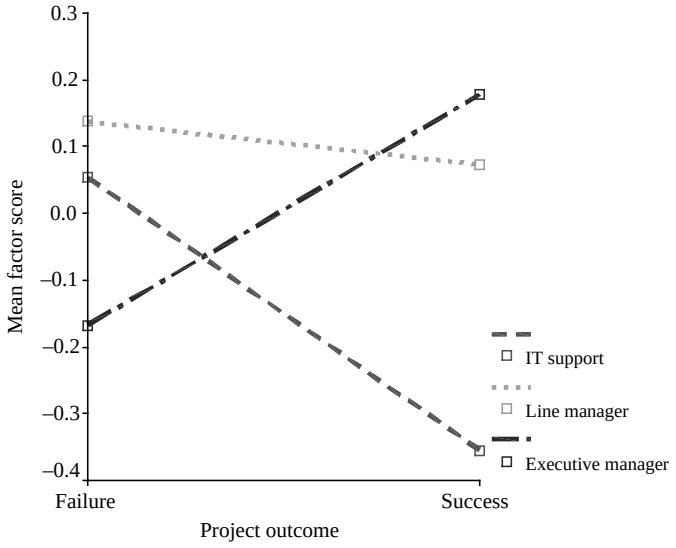

Figure 3.
Interaction between job responsibility and global/stable attributions for failure and success of IT projects

practitioners in the IT field. Professionals in the IT field do not attribute success and failure the same way. In particular, IT support workers and executive IT managers react differently. IT support workers attributed success more to themselves than other workers but did not attribute failure to themselves. Executives on the other hand, attribute a significant amount of failure to themselves but success to external factors. Line managers attribute a significant amount of responsibility for success and failure to themselves. These findings are not related to the specific job tasks completed by the employees within projects as the survey asked people about the overall success or failure of a project and not their specific task in that project.

Clearly, senior IT professionals are more experienced in managing projects than IT support workers. This being the case then what can we learn from their responses? Executives take some responsibility for the failure of a project. They are senior people and are accountable for failures to some extent. Interestingly, they do not over attribute failure to themselves as may be the case with line managers. They would seem to have a greater awareness of the environmental conditions and factors that contributed to the success of a project and as a result do not attribute the success of the project to themselves. In other words, they take a perspective that recognises their individual role in failure and their importance of the team and wider organisational conditions when they are involved in a success.

IT support workers show immaturity in relation to over estimating their role in success but not accepting responsibility for failure. Line managers also seem to overestimate their role in both successes and failures. IT workers employed in the junior ranks of the profession exhibit a less mature perspective in relation to success and failure of projects and can learn from the reactions of senior managers. Figure 4 shows a model of maturity in relation to IT project management from an IT professional's perspective.

Managerial implications

The results and insights from the study indicate the need for particular types of training and experience. IT professionals need to be aware of the pattern of how they attribute success and failure within IT projects and reflect on their contribution to projects. Post implementation reviews should include a review of the role of individual members and their impact on the outcome of the project in addition to other factors which contributed to the project's success or failure. This type of review if lead by senior project managers would facilitate knowledge sharing and enable junior professionals to gain a more balanced view of their impact on the project (Wong, 2005). It would also help in identifying the factors which contribute to success and failure in

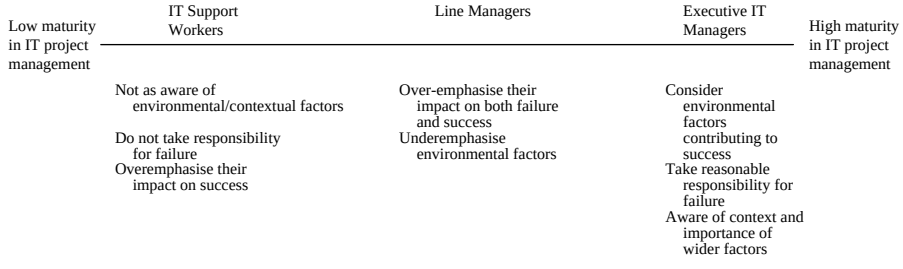

Figure 4.
Characteristics of IT project management maturity

the external environment and this knowledge would be useful for future project involvement. Junior members of the profession should be given a variety of roles over time so that they can gain different insights into external factors which impact on projects. Wider organisational experiences should also help in gaining awareness of broader organisational goals and this will improve the alignment of individual projects to organisational objectives.

The ability to assess risks in relation to projects has been recognised as important in ensuring good project outcomes (Baccarini *et al.*, 2004). Our findings show that executive project managers are better at identifying the external factors that contribute to success and in addition those factors in the environment which are stable. This recognition of critical factors is all part of risk management and an important attribute of senior management (Quayle, 1999). Selection of applicants to senior project positions should consider this skill.

In the absence of formal evaluations of team members, employees are likely to construct their own versions of how they contributed to the success or failure of a project. These perspectives may be constructed on the basis of securing the identity of individuals and teams (Knights, 1995) and hence those that are less secure in their positions or professions are more likely to attribute success to themselves and failure to external factors. This perspective is problematic since research has found that organisations that attribute failure internally are more likely to show greater levels of strategic reorientation (Barker and Barr, 2002). Those who over-attribute failure are less likely to be enthusiastic about being involved in future projects and in more extreme cases could even suffer stress. Supervisory managers in particular may fall into this danger group. Fear of being punished for project failure is a significant reason why biases arise in project evaluation and so effective evaluation of individuals needs to be separated from rewards and punishments (Udo, 1993). This is important if organisations wish to be innovative and globally competitive (Garcia-Morales *et al.*, 2006; Yang *et al.*, 2006).

Limitations and future research

Some limitations in this research also need to be acknowledged. First, the inconsistent definitions of what constitutes IT project success or failure between research studies make research findings difficult to compare and generalize. Secondly, according to Sohal and Ng (1998), the views expressed in the questionnaire responses are of a single individual from the responding organization and perhaps those interested in the research topic may be more likely to complete and return the questionnaire. Those replying may be more likely to carry out evaluation and be satisfied with their evaluation processes than the average non-respondent. Furthermore, our study took place at a particular point in time. Future research can be also conducted to look at the long-term effectiveness of IT projects as well as to investigate the required input parameters for IT projects both in Australia and in other countries.

Note

1. In describing the theory we prefer to cite the original authors because the theory has not been applied to the IT area and because the many other applications refer to diverse areas which might not be in concordance with the IT context.

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Appendix

Section 1: background information

Place a tick in the response box. Please answer every question.

1. Gender ☐ Male ☐ Female
2. In which age band are you?
   ☐ < 20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ > 65
3. In which state are you situated in?
   ☐ WA ☐ VIC ☐ NSW ☐ SA
   ☐ QLD ☐ NT ☐ ACT ☐ TAS
4. How many people are currently employed in your organisation?
   ☐ < 10 ☐ 11-50 ☐ 51-100 ☐ 101-250 ☐ 251-500 ☐ > 500
5. Which of the following best describes your main ICT job responsibility?
   ☐ IT operations/support ☐ operational/line management
   ☐ CIO/executive management/director
6. Do you have a specific IT department within your organisation? ☐ Yes ☐ No
   If no, please specify who is responsible for IT planning and expenditure
   _____
7. Are any of your organisation's IT functions outsourced? ☐ Yes ☐ No
8. What type of company is your organisation?
   ☐ Manufacturing ☐ Retail
   ☐ Construction, mining and engineering ☐ Wholesale and distribution
   ☐ Health ☐ Information technology and communication
   ☐ Banking and finance ☐ Tourism
   ☐ Education ☐ Pharmaceutical
   ☐ Food beverage and tobacco ☐ Transportation
   Other (please specify) _____
9. Please indicate the length of time you have been employed by your organisation:
   ☐ < 6 months ☐ 1-2 years ☐ 6-10 years
   ☐ 6-12 months ☐ 3-5 years ☐ > 10 years
10. What is your organisation's estimated annual turnover (A$ Million)?
    ☐ < 1M ☐ 1-5M ☐ 6-10M ☐ 11-50M
    ☐ 51-100M ☐ > 100M ☐ unsure/do not know

Section 2: project failure

Please think about a completed or abandoned IT project that you have been involved in that you would consider to be a failure.

11. Please, first describe what you think was the main reason (or cause) for why this project *failed* and then refer to this when completing the next scale

. . . . . .

. . . . . .

12. How much involvement did you have in this IT project? *Low involvement* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *High involvement*

13. What was the size of the IT project? *Small* 1 ☐ 2 ☐ 3 ☐ *Medium* 4 ☐ 5 ☐ 6 ☐ *Large* 7 ☐

14. Please indicate the extent to which you agree with each of the following:

a. To what extent was the cause of the project's *failure* due to something about you? *Not at all due to me* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally due to me*

b. In the future, will this same cause again influence what happens to IT projects you are involved in? *Will never again influence* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Will always influence*

c. Was the cause of the project *failing* something that just affects your involvement in IT projects or does it influence other areas of your work? *Influences just this situation* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Influences all areas*

d. To what extent was the cause of the project *failing* something to do with other people or circumstances? *Not at all due to others/circumstances* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally due to others/ circumstances*

e. To what extent was the cause of the project *failing* controllable by you? *Not all controllable by me* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally controllable by me*

f. Did you consider this to be an important IT project? *Not all important* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Extremely important*

15. Please rate this project on the following criteria for IT project *failure* (and please add any other criteria you can think of).

	Totally disagree						*Totally agree*
a. Went over budget	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
b. Went over time allocated	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
c. Had no great organisational benefits	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
d. Had low user satisfaction	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
e. Others: please specify _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
f. Others: please specify _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
g. Others: please specify _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐

16. I would like to be involved in a similar IT project in the future *Totally disagree* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally agree*

Section 3: project success

Please think about a completed or abandoned IT project that you have been involved in that you would consider to be a success.

17. Please, first describe what you think was the main reason (or cause) for why this project succeeded and then refer to this when completing the next scale

. . . . . .

. . . . . .

18. How much involvement did you have in this IT project? *Low involvement* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *High involvement*

19. What was the size of the IT project? *Small* 1 ☐ 2 ☐ 3 ☐ *Medium* 4 ☐ 5 ☐ 6 ☐ *Large* 7 ☐

20. Please indicate the extent to which you agree with each of the following:

a. To what extent was the cause of the project's *success* due to something about you? *Not at all due to me* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally due to me*

b. In the future, will this same cause again influence what happens to IT projects you are involved in? *Will never again influence* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Will always influence*

c. Was the cause of the project *success* something that just affects your involvement in IT projects or does it influence other areas of your work? *Influences just this situation* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Influences all areas*

d. To what extent was the cause of the project *success* something to do with other people or circumstances? *Not at all due to others/circumstances* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally due to others/circumstances*

e. To what extent was the cause of the project *success* controllable by you? *Not all controllable by me* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally controllable by me*

f. Did you consider this to be an important IT project? *Not all important* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Extremely important*

21. Please rate this project on the following criteria for IT project *success* (and please add any other criteria you can think of).

	Totally disagree						*Totally agree*
a. Stayed within budget	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
b. Stayed within time allocated	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
c. Had great organisational benefits	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
d. Had high user satisfaction	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
e. Others: please specify _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
f. Others: please specify _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
g. Others: please specify _____	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐

22. I would like to be involved in a similar IT project in the future *Totally disagree* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ *Totally agree*

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