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Craig Standing

Eric Kordt

Oliver Standing

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Craig Standing, Eric Kordt and Oliver Standing
Centre for Innovative Practice Edith Cowan University
Western Australia

ABSTRACT

Internet related projects are often complex because of the need to work with a range of stakeholders and satisfy a range of expectations. These projects are consequently difficult to manage as projects. Attribution theory enables us to examine how individuals and groups attribute success and failure in relation to projects so that we can better prepare workers for their roles in teams. This paper explores how attribution theory impacts on projects management and makes recommendations on how to develop effective project teams and team members.

KEYWORDS

Information technology, project management, attribution theory

1. INTRODUCTION

The management of information technology (IT) projects including internet projects is a challenging task with many projects failing to achieve their intended objectives. Many organisations do not critically examine the causes for IT 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). In the information technology sector high levels of IT project failure have been widely recognised as the most pressing problem facing the IT profession, yet there is still no clear, accepted definition of IT project failure (Hillam and Edwards, 2001).

The purpose of this research is to determine how IT project managers attribute project success and failure. Despite the focus on project success and failure by researchers there has been relatively little attention given to how individuals attribute 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 IT evaluation, for example, as a technical problem has 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 attribution theory impacts on project management and explains how this information can be used to improve the outcomes of projects.

A project is a temporary entity that has a purpose, typically to produce a product or service, a report or strategy, or create or adapt a process. Projects usually have defined starts and ends. The project terminates when the objectives have been achieved or when it is clear the objectives cannot be met. Of course, projects vary considerably in their complexity and can range from one or two people to thousands of people (PMBOK Guide, 2008). The Project Management Body of Knowledge covers nine areas all of which can be impacted upon by attribution concepts (PMBOK Guide, 2008): Project integration management, Project quality

management, Project scope management, Project time management, Project human resource management, Project cost management, Project risk management, Project communications management, Project procurement management. Web site development and electronic commerce applications are typically complex in nature because they involve multiple stakeholder groups such as developers, internal users, project sponsors, customers and potential customers. This complexity has an associated risk in terms of meeting project requirements and outcomes. The study of attribution of success and failure in internet projects has the potential to provide us with valuable insights in relation to managing these projects.

2. ATTRIBUTION THEORY

Despite the problems associated with completing projects there is limited research on the emotional and behavioural impact of project success and failure on individuals. This is partly because of the complex nature of the project environment where the individual is part of a team with its own social dymanics (Kendra & Taplin, 2004). The objective of this paper is examine where and how individual emotional and behavioural features impact on project management. We use an individual differences variable from social psychology termed attributional style (Cort, Griffith & White, 2007).

An individual's style indicates the way in which an individual explains their own success and failure based on an event. Attributional style is capable of revealing whether an individual will tend to experience job satisfaction, performance and success in an occupational context (optimistic attributional style) or have a tendency to be less productive and less persistent over the long term (depressive attributional style) (Ashforth & Fugate, 2006, Furnham et al., 1994).

The origins of attribution theory can be traced to the work of Fritz Heider's (1958) naïve psychology and Julian Rotter's (1966) social learning theory. Naïve psychology is "the principles we use to build up our picture of the social environment and which guides our reactions to it" (Heider, 1958, p.5). A key feature of social learning theory is locus of control and is based on whether an indicual perceives they can influence their own destiny (Rotter, 1966).

Attributional theory as posited by Bernard Weiner through several iterations represents one of the most comprehensive theoretical models about the influence of attributions on behaviour. Based on the work of Heider (1958) and Rotter (1966), Weiner et al (1972) based the original attributional model of achievement motivation around the assumption that "individuals allocate the causes of success and failure to four elements: ability, effort, task difficultly and luck" (Weiner et al., 1972, p. 240). These causal elements previously identified by Heider (1958) and linked to the two causal dimensions of locus of control and stability by Weiner et al (1972).

The locus of control represents the internal and external locus of control from Rotter (1966) whilst stability was introduced to represent the causes which are perceived to fluctuate over time (Weiner, 1972, p. 240). Stability derived from Heiders (1958) work in which he contrasted dispositional and relatively stable characteristics such as ability and task difficulty with unstable characteristics such as effort and luck (Weiner, 1979, p. 240) as presented in Table 1.

Table 1. Determinants of success and failure (Based on Weiner et al., 1972 p. 240)

Stability	**Locus of Control**	
	Internal	**External**
Stable	Ability	Task Difficulty
Unstable	Effort	Luck

Based on this research and the growing body of research into the attribution process, Weiner (1979) presented a revised attributional theory of achievement motivation. The revised attributional theory incorporated several significant changes. The most notable is the inclusion of the controllability causal dimension.

The controllability causal dimension was originally identified by Heider (1958) through personal (intentional) and impersonal (unintentional) causes and subsequently incorporated into the achievement domain by Rosenbaum (1972) as intentionality (Weiner, 1979, p. 6). The inclusion of this causal dimension into Weiner's (1979) attributional theory is based largely on Rosenbaum (1972) who argued that causal

elements such as mood and effort were both internal and unstable when they were instead quite distinct (Weiner, 1979, p. 6). This acknowledgement tending to support Malle (2004) who criticised Heider's (1958) personal and impersonal causal dimensions as having lost the dimension of intent in the translation to internal and external causes. However, unlike Rosenbaum (1972), Weiner (1979) argued that intent instead reflected control as "a lack of effort does not signify that there was an intent to fail" (Weiner, 1979, p. 6). In conjunction with the inclusion of controllability, Weiner (1979) renamed the locus of control as the locus of causality to reflect the fact that it was "conceived as a backward looking" (Weiner, 1979, p. 6) instead of forward looking as presented by Rotter (1966). The revised attributional theory of achievement motivation based on this update is presented in Table 2.

Table 2. Revised determinants of success and failure (Weiner, 1980)

Locus of Causality	**Controllable**		**Uncontrollable**	
	Stable	**Unstable**	**Stable**	**Unstable**
Internal	Stable effort of self	Unstable effort of self	Ability of self	Fatigue, mood and fluctuations in skill of self
External	Stable effort of others	Unstable effort of others	Ability of others; task difficulty	Fatigue, mood and fluctuations in skills of others; luck

Whilst not incorporated in Weiner's (1979) revised attributional model of achievement and motivation or subsequent work, Weiner (1979) made specific reference to the fact that a fourth causal structure of globality from Abramson, Seligman & Teasdale's (1978) reformulated model of learnt helplessness could be incorporated into the model (p. 7). This causal structure based on global (can affect a variety of situations) and specific causes (limited to narrow and specific situations).

Whilst Weiner's attributional model of achievement motivation is notable for developing dimensions for achievement outcomes, Weiner's work is also notable for integrating attribution theory with expectancy of success and emotions. This integration has enabled researchers to "understand the effects of attributions on the dynamics of behaviour" (Anderson & Weiner, 1992, p. 307).

3. TWO STUDIES OF ATTRIBUTION IN PROJECTS

We report findings from two studies conducted by the authors using survey and interview methods to analyse how attribution theory impacts on project management participants.

3.1 Study One

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. 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. 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.

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).

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).

The key findings of the study have implications for researchers and 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.

3.2 Study Two

The case study selected for this research is based around interviews and focus groups conducted within a large Commonwealth government department located in the Australian Capital Territory (ACT). This

approach ensured that critical organisational support was available, such as obtaining access to individuals, which resulted in an improved response rate and ability to conduct in-depth interviews (e.g. additional time availability). Interviews were conducted with 30 employees which included 10 support workers, 10 line managers and 10 executive managers. In addition, five focus groups discussed the issues.

To determine if attributional style varied with experience, reflected through increasing job responsibility levels, the first research question posed was: Does attributional style vary as an individual's level of seniority changes for a successful and failed Information Technology project? Based on the interview findings it is evident that all job responsibility levels exhibit an optimistic attributional style. The optimistic attributional style being due to the following optimistic tendencies being evident:

Internality – all job responsibility levels tend to attribute success to internal causes and failure to external causes;

Stability – all job responsibility levels tend to attribute success to stable causes;

Globality – support workers tend to attribute success to global causes and failure to specific causes, whilst line and executive managers attributed success to global causes; and

Controllability – all job responsibility levels tend to attribute success to controllable causes and failure to uncontrollable causes.

These optimistic tendencies were partially offset by the following pessimistic tendencies:

Globality – line and executive managers attributed failure to global causes. The tendency to attribute failure to global causes based on the learned theory of helplessness is likely to lead to increased feelings of helplessness across situations (Abramson et al., 1978, p. 68); and

Stability – all job responsibility levels attributed failure to stable causes. The tendency to attribute failure to stable causes based on their formulated model of learned helplessness has the potential to lead to any depressive deficits to persist (Abramson et al., 1978, p. 56).

The relationship between these optimistic and pessimistic attributional tendencies is illustrated in Figure 18 in which it is clearly evident that the causal dimensions tended to be optimistic (i.e. top left and right quadrants). Due to the dominance of optimistic attributional tendencies it is clear that an optimistic attributional style was evident in all job responsibility levels. Based on both the optimistic and pessimistic attributional tendencies it is evident that the degree of optimism did marginally vary between the job responsibility levels due to the causal dimension of globality. In particular, line managers and executive managers attributed failure to global causes unlike support workers who attributed failure to specific causes.

To determine the reasons why the increased pessimism was evident for line and executive managers relative to support workers, the following research question was posed:

Why does attributional style vary as an individual's level of seniority changes for a successful and failed Information Technology project?

Based on an analysis of the interviews and focus groups in relation to the causal dimension of globality (i.e. where the difference existed), several reasons have emerged to provide an answer to this research question. The main reasons identified are:

Adverse Impact on Perceived Professionalism by Peers Following Failure – line and executive managers, in contrast to support workers, indicated through the interviews that failure would impact how they are professionally perceived which in turn would impact subsequent projects (i.e. global consequences). For instance, if individuals perceive a project manager to be incompetent due to a significant project failure, they will be less likely to fully trust that project manager in subsequent projects (DuPont, 1988, p. v). The lack of trust is capable of compromising their ability to influence individuals and garner support for future projects which is critical for effective management;

Continued Inability to Influence Stakeholders and/or Management – based on the focus groups, line and executive managers, in contrast to support workers, are increasingly dependent on their ability to influence stakeholders and/or management to ensure project success (e.g. ensure resource availability, change request management). In the unfortunate event that line and executive managers are unable to influence stakeholders and/or management due to factors such as organisational politics, it is highly probable that this may persist and impact subsequent projects (i.e. global consequences) making it increasingly difficult to meet expectations. The ability of managers to influence projects is pivotal to project success and highly dependent on their experience (Hyvari, 2006, p. 31). The inability to influence stakeholders and/or management due to a lack of empowerment is likely to increase feelings of helplessness and organisational tension (Spreitzeir, 2007, p. 1084);

Strategic Impact of the Project Failure – based on the focus groups, line and executive mangers, in

contrast to support workers, are increasingly aware that project failure is not based solely around project management failure, but also around product failure which has wider strategic implications that will continue to persist in subsequent projects (i.e. global consequences); and

Complexity of Social and Technical Challenges at the Macro Level – based on the focus groups, line and executive managers, in contrast to support workers, are increasingly involved at the macro level. This shift from the micro level (e.g. skills and competencies, performance measurement systems) to macro level (e.g. organisational structures, supporting management practices) is accompanied by increasingly complex social and technical challenges (Kendra & Taplin, 2004, p. 33). The increased complexity of these social and technical challenges typically require significant time frames to change and therefore likely to impact multiple projects (i.e. global consequences). This is in contrast to challenges at the micro level that are typically limited to a specific project.

In addition to these reasons based around globality in which the causal dimensions varied, the following broader reasons also emerged from the research:

- **Ineffective Knowledge Retention Initiatives** – based on the focus groups, line and executive managers, in contrast to support workers, are increasingly likely to recognise that knowledge retention initiatives within the organisation are ineffective. The failure to retain knowledge capable of having an adverse impact on the likelihood of subsequent project successes (Reich & Wee, 2006, pp. 11-12). This issue compounded, particularly with contracted staff leaving the organisation after project termination. Indeed, research suggests the transfer of knowledge is a critical component of project management success (Kezsbom, 1988, p. 1.2.3);
- **Increased Situational Awareness** – based on the focus groups, line and executive managers, in contrast to support workers, have greater situational awareness potentially due to their involvement at the macro level. Whilst increased situational awareness has the potential to avoid issues (e.g. visibility of looming issues), it also has the potential to translate into increased cautiousness in decision-making. This increased cautiousness in decision making is capable of increasing pessimism (Krizan & Windschitl, 2007, p. 332). Whilst increased pessimism is evident, it appears unavoidable as increased job responsibility levels are based around increased awareness (e.g. competitors, strategic planning);
- **Increased Experience** – based on the focus groups, line and executive managers, in contrast to support workers are likely to be more experienced. The increased experience is reflected in their recognition that causes of failed projects are likely to persist in the organisation;
- **Increased Duration of Employment** – based on the focus groups, line and executive managers, in contrast to support works are likely to be impacted by increased exposure to projects. The increased exposure to projects is likely to lead to increased pessimism prior to burn out and departure from the profession; and
- **Increasing Dependence on Individuals –** based on the focus groups, line and executive managers, in contrast to support workers, are increasingly dependent on individuals to successfully complete projects. Due to the increased dependence on individuals, they are more likely to attribute success to external causes (e.g. project team, stakeholders). As a consequence of these external attributions for success, pessimism is likely to increase. Based on the overall optimistic attributional style evident in this research, it is likely that IT professionals involved with projects will regain from hopelessness and recover from depression when positive events occur (Needles & Abramson, 1990, p. 156). In particular, achieve subsequent project successes.

4. DISCUSSION

Attribution theory impacts on the project management process in a number of ways. The literature and our two studies highlight several key learning points for theory and practice. Attribution of success and failure to the individual or environment can be problematic when it is not balanced. So, over attribution of failure to the self, for example, can lead to pessimism and depression. Likewise, over attribution of success can lead to distorted assumptions about the ability of individuals and the necessary facilitating conditions for project success.

It appears from the two studies that employees at different levels attribute differently. For example junior staff or support working tend to attribute success more internally than externally whilst more senior staff recognize the contribution of environmental factors more. It could be assumed that the more experience a person has the more balanced they are in their attribution. However, as the second study pointed out there is a danger in becoming too pessimistic in attributing success to external factors and that this can have a damaging effect on morale. The line managers and executives recognize that many of the external conditions negatively impacting on projects are stable and therefore persistent. Continued high levels of exposure to projects can therefore lead to burn out or departure from the profession for these people. Some recognition of this could be given by varying the job roles of senior project managers to give them a sabbatical or time off from projects occasionally. 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.

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).

As projects are usually delivered by teams, consideration needs to be given to how collective attribution may work in practice. Several research articles have examined how “success” and “failure” can be viewed as socially constructed phenomena. So, a team may collectively believe a project to be a success and attribute that success to the team as a whole but an individual may perceive elements of the project to be a failure and attribute those failures internally. The question is at what point does a collective attribution of success or failure override an individual’s internal attribution? Just as the syndrome of “learned helplessness” can be applied to an individual when they over attribute problems and failure internally, so to can it be applied to the organization or sub-group that over attributes every failure internally. This can have a negative impact on individuals who’s self-esteem is lowered and prevent proper organizational learning to take place.

5. CONCLUSIONS

The task of project management is important in industry and commerce yet little research has been conducted on how and why people attribute success and failure in projects. This paper has examined where attribution theory impacts on project management and has highlighted the need for increasing its awareness in the practitioner community.

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