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Abstract
Success and failure of IT projects is a complex issue, due to the large number of projects that are undertaken, definitions of success and failure, high failure rates, substantial effects of projects on users and high responsibility. In this exploratory study we examine how project managers attribute IT project success and failure in large Australian organizations. 112 IT personnel completed an adapted version of the Attributional Styles questionnaire (Furnham et al. 1994) which asked them to attribute causes along a number of attribution dimensions, for IT projects which have either succeeded or failed. The results showed executive management support and users involvement had great impact on the IT project success or failure. In addition, most IT project managers attributed failure to others while attributed success to themselves. Results are discussed in terms of what sort of culture is maintained in the area in terms for how success and familiar of IT projects are attributed? And what are the potential ramifications for future motivations to engage in, complete, adjust or actively create new projects within the organisation?

Keywords
IT project success, attribution theory, IT project failure, IT project management

INTRODUCTION

Globally, Gartner has estimated that total spending on IT will rise from US$2.04 trillion in 2001 to $2.53 trillion in 2006 (De Souza et al., 2003). Total spending on IT by Australian government organizations during 1999-2000 was an estimated A$4.3 billion or 5% of total government operating expenditure (ABS 2003). Spending in IS/IT can be attributed to increases in labor productivity in Australia (0.4% out of 2.4% between 1964/1965-1999/2000) (ABS 2002). Despite the increasing sophistication of IT and the huge spending on IT, the IT project failure rate is high according to the literature (Poulymenakou and Holmes 1996). Poor planning, monitoring and communication seems to be the main reasons for IT project failure, and better communication and understanding from both IT and project teams can prevent failures and insure more successes (Latendresse and Chen 2003).

IT PROJECT FAILURES

There is no clear, accepted definition of IT projects failure, beyond subjective interpretation (Hilam and Edwards 2001). Lyytinen and Hirschheim (1987) defined the ultimate failure as the complete abandonment of all development, maintenance of the implemented IT and identified four major types of failures: (1) correspondence failure; (2) process failure; (3) interaction failure; and (4) expectation failure. According to Flowers (1996), most IT projects fail to deliver the expected benefits. However, the lack of openness to these failures prevent an open examination of the issues, and actively prevent organisational learning from the mistakes (Hilam and Edwards 2001).

The inability of many organizations to assimilate and apply IT both, inter-and-intra organizationally is resulting in missed opportunities and a lack of business value (van Grembergen and van Bruggen 1998). Inadequate payoff from IT investments is often one of the most commonly recognised complaints about IT (Lin and Pervan 2003, Love et al. 2005). For example, Dhillon and Backhouse (1996) have pointed out that, amid all these IS/IT expenditure increases, several research studies have suggested that at least 20% of the IS/IT expenditure is wasted, and that between 30-40% of IS/IT projects realise no net benefits. Studies into the benefits of IS/IT projects have regularly shown that, 60% of the time, IS/IT projects are either discontinued or provide benefits at levels well below those expected (Hochstrasser 1993).

Investigation by Sohal and Ng (1998) found that in large Australian organizations 45% of the them did not evaluate whether IT systems were still consistent with business objectives and 59% did not determine whether expected benefits were being achieved. Similarly, Ezingeard et al. (1998) and Lin and Standing (2005) reported that more than half of the large organizations did not formally identify expected benefits and justified the IT investment as an act of faith.

Moreover, Renkema (1998) revealed that around 70% of all IT investments are claimed to give no adequate return on investment. Other studies have reported that 75% of large-scale systems do not function as intended or are not used (McGunagle, 1995). Recent research on IT investments in electronic commerce initiatives by SMEs by Lin et al. (2005) and Marshall and McKay (2002) indicate that nearly half of the respondents had no measures of success and most did not carry out post-implementation reviews for their investments. Failure to plan for and, derive the benefits from an IT investment can have detrimental consequences on organizational performance.

According to Krauth (1999), many IT project failures are due to one or more of the following reasons: (1) insufficient awareness of organizational issues; (2) insufficient involvement of users; (3) inadequate training of users; and (4) insufficient link of IT introduction to the business strategy. Latendresse and Chen (2003) have found that ineffective leadership and lack of a discipline, lack of support from the IT department, changed user requirements, and the project size are reasons for IT project failures. Failure curve turns upward as IT projects become larger and more complex (Latendresse and Chen 2003). During the 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). This also increases communications frequency and preference for face-to-face meetings (Muller 2003).

IT PROJECT SUCCESS

IT project success is a very difficult concept to define. Thong et al. (1999) have defined it as the extent to which an IT project actually contributes to achieving organizational goals. Ives and Olson (1984) have defined IS success as the total organizational benefit accruing from IT when compared with alternative investments.

There are several organizational factors which can influence the success of IT projects. According to Lucas (1975), social and behavioural factors such as user involvement and user perceptions can often play an important part in determining the success of the IT project. Studies conducted by Baroudi et al. (1986) and McKeen et al. (1994) indicate that user participation has a direct relationship with user satisfaction and system usage. Moreover, user participation has a positive influence on the successful outcome of IT project implementation (Lin and Shao 2000, Tait and Vessey 1988). This implies that getting users involved in the development process may improve their attitudes toward the system, and enhance the importance and relevance users perceive about the system (Lin and Shao, 2000). Similarly, Delone and McLean (1992, 2003) have reported that IS/IT success can be defined by six dimensions: systems quality, information quality, level of utilization, user satisfaction, individual impact and organizational impact. Moreover, Sherer et al. (2003) have also pointed out that the most successful projects stress the importance of overcoming resistance to change and effective communications to manage the change process. Factors such as top management support, user participation, external pressures to adopt, competitive pressure, degree of planning for IT implementation, perceived benefits, and rigour of the IT requirements analysis were all recognized as being important for successful IT project adoption (Fink 1998, Hilam and Edwards 2001).

Project managers also have a great influence on the success of IT projects, by performing a different role depending upon the project situation (Day and Bobeva 2003). From an IT project manager's perspective, meeting user requirements is an extremely important of IT project success (Briggs et al 2003, Wateridge 1998, White and Fortune 2002). 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.

Inhibitors within organizations such as lack of appropriate planning, lack of top management support, difficulty in assessing tangible contributions, lack of IT investment evaluation and benefits realization processes are all major inhibitors to the successful implementation of IT projects (King and Teo, 1994; Lin and Pervan, 2003; Love et al., 2005).

Furthermore, different types of IT projects contribute more or less directly to an organisation's core business and success, and one should consider how the benefits arise in the different segments of the application portfolio. According to Willcocks and Lester (1994), the matching IT projects can be categorised into five main types: (1) mandatory investments (for example, accounting systems to permit reporting within the organisation); (2) investments to improve performance (for example, laptop computers for sales people, partly with the aim of increasing sales); (3) competitive edge investment (for example, the American Airlines' airline reservation system); (4) infrastructure investment (this would give organisations several more degrees of freedom for manoeuvring in the future); and (5) research investments (for example, CASE tools). Hochstrasser (1990), on the other hand, provides different categories: (1) infrastructure; (2) cost replacement (for example, automating manual activities); (3) economy of scope (for example, a relational database performing an extended range of tasks); (4) customer support; (5) quality support; (6) information sharing and manipulation; and (7) new technology (for example, smart cards and home banking).

ATTRIBUTION THEORY

The IT context is a critical one in which to study explanations for success and failure by reason of several related factors: (a) this area contains a continuos flow of projects being undertaken; (b) there are many contingencies in developing good IT projects; (c) there are complex determinants for defining the success and failure of projects; (d) the IT environment (eg. funding of projects) is often unstable; (e) many projects do 'fail';(f) responsibility is high as projects are often substantial and their success of failure has an impact on many users; (g) there is a hierarchy of responsibility for IT project failures; (h) IT workers are therefore subject to continuos and often large motivational issues in reckoning 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 1990, 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, Guilfoyle 2000, Wortman 1976).

Though not regarded as universal (e.g., Guilfoyle 2000), 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 (Fincham 1983, Kelley, 1967; Vallins and Nisbett 1971).

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 a 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

[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.

outcomes. This can spiral into a downward trend whereby the individual feels helpless to act for fear of implicating self further in failure (Halpin and Guilfoyle 2004, Storms and McCaul 1976).

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 individuals tendency towards certain attributions become styled or 'habituated' over some time and are 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) (Anderson et al. 1988, Curtona et al. 1985, Peterson and Seligman 1984) 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 organisational culture.

Our primary aim in this preliminary paper is therefore exploratory to determine what sort of attribution culture is maintained in a sample of Australian IT workers generally in terms of how success and failure of IT projects are attributed? That is, what are the common patterns of attribution? 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 is authoritative here. It extends the classic attribution work of Heider (1954) 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 (1954) and *interna*l 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) (see also 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, thought to be controllable rather than a fixed ability and relates to feelings of shame and guilt (Halpin and Guilfoyle, 2004; Higgins & 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. Our specific aims were to answer the following questions:

- What are the major causes for IT project failure and success?
- Do IS professionals involved in IT projects internalise/externalise failure more than success?
- Will the same cause of failure/success influence other IT projects in the future?
- Has the cause of failure/success influenced these IS professionals' involvement in IT projects?
- To what extent was the cause of failure/success controllable by these IS professionals?

RESEARCH METHODOLOGIES AND DESIGN

Sample

Questionnaire was sent to IS/IT project managers/CIOs of 500 Australian organisations randomly selected from top 2000 Australian organisations (Dun and Bradstreet mailing list). Two follow-up mailings were carried out to increase the response rate. Late returns were compared with other response received earlier in order to check for non-response bias. No significant differences were detected between two samples. In total, 112 responses were received, representing a response rate of 22.4%.This low response rate did not come as a surprise, given that a postal survey has often been plagued by low response rates (eg. 15.6% by Sohal and Ng (1998) in their study of the role of impact of IT in Australian business). Moreover, the IS/IT project managers and CIOs of these large Australian companies are some of the busiest people around and, therefore, they simply had insufficient time or interest to complete and return the questionnaire. Furthermore, many organizations sent back their questionnaires and indicated that their corporate policy did not allow them to participate in this survey.

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 models with a mix of seven-point Likert scale, nominal scale and open-ended questions. The questionnaire is based on an previously validated attributional styles survey conducted by Furnham et al. (1994) in US. 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).

Procedures

This survey, undertaken from July 2004 to December 2004, targeted large Australian organizations. The adapted questionnaire, accompanied by a covering letter to explain briefly the purpose and aim of the survey and a reply-paid return envelope was then be sent to IS/IT managers/CIOs of 500 Australian organisations randomly selected from top 2000 Australian organisations (Dun and Bradstreet mailing list).

Prior to determining the sample size for the survey, a pilot survey of ten IT project managers was conducted. The comments about the questionnaire were very positive. Therefore, the questionnaire was not significantly altered for the main survey.

RESEARCH FINDINGS AND DISCUSSION

Most of the information presented below is based on descriptive statistics but some comparisons between groups were made using crosstabs, ANOVA, and correlation statistics. In the following discussion of results the percentages referred to normally represented the proportion of valid (answered) cases only and did not indicate missing values. A statistical software package, SPSS, was deployed to analyse the quantitative data collected through the survey.

A wide range of industry sectors was represented by those that responded. Table 1 above shows most were from education, government and utilities, manufacturing, health, construction, mining and engineering, retailing and wholesale distribution, IT and communication, banking and finance services, and transportation and they were large in annual turnover and number of employees, by Australian standards. Most responses were from CIOs and other senior IT managers (40.5%), with the remaining from operational/line managers (36%) and IT operations/support staff (23.4%).

Range	Percentage (%)
(a) Industry sectors	
Education	17.0
Government and utilities	16.1
Manufacturing	13.4
Health	9.8
Construction, Mining & Engineering	9.8
Retailing or Wholesale Distribution	8.1
IT and Communication	7.1
Banking & 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

Table 1: Profile of the responding organisations

Table 2 below shows the percentages of respondents in each job responsibility attributing to success and failure for each of the five dimensions (internality, stability, globality, externality, and controllability). The results shows that few respondents had attributed failure towards themselves. Similarly, the respondents indicated that the failure was not controllable by themselves. However, most respondents indicated that the success was largely controllable by themselves. In addition, the respondents indicated that the cause for success was likely to have influenced to other areas of their work as well as other IT projects they were involved in. Furthermore, it also appears that IT support officers were more likely to attribute success (73.1%) towards themselves than line managers (55.0%) and executives (55.6%). On the other hand, executives are more likely to attribute success (65.6%) towards others than IT support officers (46.1%) and line managers (31.6%).

Dimension	Project Outcome	Support %	Manager %	Executive %
Internal	Failure	3.9	12.5	4.4
	Success	73.1	55.0	55.6
Stability	Failure	42.3	62.5	51.1
	Success	69.2	77.5	82.2
Global	Failure	46.2	55.0	44.4
	Success	76.9	70.0	68.9
External	Failure	52.0	63.1	71.4
	Success	46.1	31.6	65.9
Controllable	Failure	7.7	10.0	13.3
	Success	69.2	70.0	75.6

Table 2: Percents of workers in each Job Responsibility attributing to Success and Failure per dimension

(Note: Percents refer to the number of respondents who scored 5, 6, or 7 on the scale)

Project failure

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 leader. This is largely consistent with findings by Whyte and Bytheway (1996) in which their top five reasons for IT project failure were: over-optimistic estimates of project time and budget, imprecise defined project objectives, business needs uncertainty, poor communications between users and the development staff, and lack of user support and involvement. Most of the failed IT projects mentioned by the respondents were medium in size (68.8%) and 68.9% of the respondents strongly denied (respondents choosing 1 or 2 on a 7-point Likert scale) the cause of the project's failure had something to do with them (internality). IT operations and support people were most likely to strongly deny (respondents choosing 1 or 2 on a 7-point Likert scale) the responsibility for IT project failure (80%) than other two groups (CIOs – 64.3% and operational/line management – 65.8%).

Just over half of the respondents (53.6%) believe that the same cause would influence what happens to IT projects that they are involved in (stability). In particularly, respondents who were in operational/line management role (64%) were more likely to agree (respondents choosing 5, 6 or 7 on a 7-point Likert scale) to the fact that the same cause would influence other IT projects than the respondents who were in CIO/executive management/director role (42.9%) and in IT operations/support role (50.1%).

Half of the respondents (52.4%) 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% of the respondents believed that the cause of the project failing had something to do with other people or circumstances (externality). Only 16% of the respondents indicated that the cause of the project failing had nothing to do with others. Moreover, 70.8% of the respondents agreed that the cause of the project failing was not something that was controllable by them and only 11.3% disagreed (controllability). Furthermore, 70.8% of the respondents considered the failed IT project to be important (degree of importance). Interestingly, 60% of the respondents would still like to be involved in a similar IT project in the future.

Project Success

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), Lucas (1975), and Whyte and Bytheway (1996) 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.

Most respondents indicated that they were highly involved with the successful projects (66.1%). Additionally, most of the successful IT projects mentioned by the respondents were medium in size (57.8%). Most respondents (60.5%) indicated the cause of the project's success had something to do with themselves. A large majority of the respondents (79.9%) believe that the same cause would influence what happens to IT projects that they are involved in. Most respondents (74.8%) 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%) believed that the cause of the project success had something to do with other people or circumstances. Surprisingly, 24.7% of the respondents strongly believed that the cause of the project success had something to do with other people or circumstances. Only 15.6% of the respondents strongly disagreed. Respondents who were in CIO/executive management/director role (65.9%) were much more likely to attributed the project success to others and/or circumstances than the respondents who were in IT operations/support role (31.6%) and in operational/line management role (46.1%). Moreover, 74.3% of the respondents agreed that the cause of the project success was something that was controllable by them and only 11.9% disagreed. Almost every respondent 93.6% 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). Not surprisingly, almost every respondent (95.5%) 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).

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). For both, two parallel factors were identified. For Success the rotation converged in three iterations, accounting for 68.9% of the variance in scores. The factor (36.5% of variance) for IT project Success was characterised by Internal (0.845) attribution. This

corresponds to the core 'Internality' attribution dimension identified by Weiner and, high scores on this factor identifies a worker who attributes success to themselves as under their control and, does not caused by others.

In order to include loadings from each of the underlying theoretical attribution dimension (Internal), we calculated (regression based, mean = 0, SD =1) factor scores for 'Internality'. The primary focus was to what extent different job responsibilities engender attribution patterns for Success and Failure as measured by the 'Internality' factor. We performed one repeated measure Analyses of Variance, contrasting 'Internality' attributions for Success and Failure (see Table 3 below).

	Internality			
	Failure		Success	
IT Support	-0.34	*0.19*	0.33	*0.18*
Line Manager	0.22	*0.17*	0.05	*0.17*
Executive Manager	0.09	*0.16*	-0.24	*0.16*

Table 3: Table of (Factor score) means and standard deviations for the 'Internality' factor across project Success and Failure.

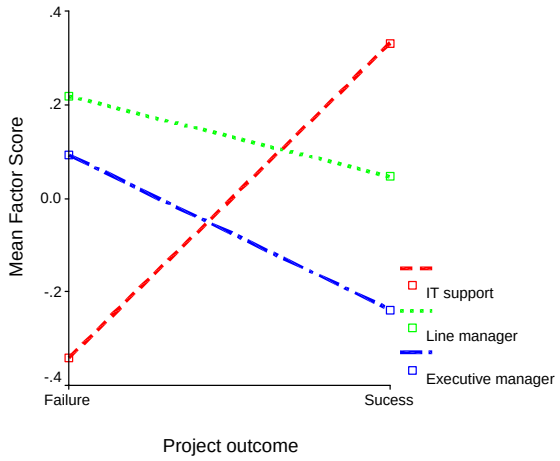

Figure 1: Interaction between Job responsibility and internal attributions for Failure and Success of IT projects.

Repeated measures ANOVA using Project Outcome (Success and Failure) as the repeated measure and Job Responsibility (IT support, Line Manager, Executive Manager) as the independent factor, identified no main effects however a significant interaction effect for Outcome by Responsibility, $F(2, 102) = 4.45$, $p < .05$, as illustrated in Figure 1 below.

Post hoc analysis (Tukeys HSD and single degree of freedom F ANOVA) showed IT support workers attributed their self significantly more to IT project success (mean = 0.33) than to IT project failure(mean = -0.34), $F(1,28) = 5.10$, $p < .05$). Line managers attributed to their own self more so than other workers, however attributed their role equally for Failure and Success and, the reverse was true for Executive managers, who took more responsibility for their project Failure than their project successes, however this trend approached significance, $p = .08$)

CONCLUSION

In this exploratory study we examine how project managers attribute IT project success and failure in large Australian organizations. 112 IT personnel completed an adapted version of the Attributional Styles questionnaire (Furnham et al. 1994) which asked them to attribute causes along a number of attribution dimensions, for IT projects which have either succeeded or failed.

The results showed that factors such as executive management support and users involvement had great impact on the IT project success or failure. However the results also indicated IT workers attribute success and failure differently. For example, most IT workers attributed success to internal, stable and global and controllable factors thus assuming responsibility for success, but discounted their own role in failure. These findings have ramifications for how failure is evaluated within the organisation. On the one hand there is potential discounting of the personal factors and responsibility in the failed operation. Second the results show a need to more

carefully assess what external factors take the place of personal factors in accounting for failure and how these can be alleviated. In particular, IT workers in different jobs levels attribute success and failure differently. IT support workers in particular discounted their own role in failure particularly when compared to managers. In addition, IT support workers tended to attribute success to themselves whereas executive managers appeared to attribute success not to themselves but to global factors. These findings need more careful analysis to understand motivations for workers to engage successfully in future projects.

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.

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