

# Persistence in capital budgeting reinvestment decisions – personal responsibility antecedent and information asymmetry moderator: A note

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## Abstract

In this study we examine the effects of personal responsibility and information asymmetry on managers' tendencies to escalate their commitment to poorly performing investment projects. Consistent with the recommendations by critics of the escalation literature (e.g. Bowen, 1987), we provided subjects with unequivocal negative project feedback. However, counter to other recent conflicting studies adopting Bowen's recommendations, we reverted back to Staw's (1976) original methodology and incorporated "free-choice" into our personal responsibility construct. Our results confirm Staw's (1976) original proposition of a positive relation between a manager's personal responsibility for a poorly performing project and his/her subsequent escalation of commitment to the project. Further, we proposed that information asymmetry moderates the relation between the level of personal responsibility and escalation of commitment. Our results did not confirm this proposition. As such, results from our study re-establish personal responsibility as an important antecedent variable to escalation of commitment.

*Key words:* Capital budgeting; Escalation of commitment; Personal responsibility; Self-justification theory; Information asymmetry; Management control systems.

*JEL classification:* M41

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## 1. Introduction

Capital budgeting is an important organisational resource allocation tool. Yet the effectiveness of the capital budgeting process is dependent on managers

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making economically rational decisions. Decision biases in project evaluations can pose significant economic concerns to organisations and a large number of studies have sought to understand why managers escalate their commitment to poorly performing projects (e.g. Chow *et al.*, 1997; Chenhall and Morris, 1991).

Three decades of empirical research in accounting and related disciplines have supported personal responsibility as an antecedent variable to escalation of commitment (e.g. Schoorman and Holahan, 1996; Schoorman, 1988; Staw, 1976). However, some recent influential accounting studies (e.g. Chow *et al.*, 1997, Harrison and Harrell, 1995) have voiced concerns about its relevance after failing to find strong empirical support when unequivocal project feedback was incorporated as part of the study. We concur with these studies as to the need for incorporating unequivocal feedback information to ensure the valid testing of escalation of commitment<sup>1</sup>. However, we propose that the lack of empirical support in these studies can be attributed to a weakening of the personal responsibility effect as opposed to the inclusion of unequivocal feedback.

In the absence of further empirical examination of our proposition and in response to previous research studies' concerns, there is a danger that personal responsibility may be incorrectly disregarded as an antecedent variable to escalation of commitment. This, in turn, may affect future effort by designers of organisational control systems investigating escalation-reduction strategies (e.g. Ghosh, 1997). Our first contribution in this study is, therefore, to extend prior accounting literature by re-examining the personal responsibility antecedent to escalation of commitment. We retain Staw's (1976) original responsibility construct (incorporating "free-choice") and include unequivocal negative feedback (as suggested by critics of Staw's methodology).

Our second contribution is to consider the moderating effect of information asymmetry on the relation between personal responsibility and escalation of commitment. Information asymmetry has been identified as an organisational level factor resulting in escalation of commitment where managers face extrinsic incentives to escalate (e.g. promotion and bonuses). However, it has received less attention in studies where goal incongruence is the product of an internal process triggered by the need to self-justify in general and personal responsibility in particular. It is, therefore, less clear whether designers of control systems in organisations need to be concerned about information asymmetry as a contributor to escalation of commitment where managers have personal responsibility for the poorly performing project.

We conducted a laboratory experiment to empirically investigate the personal responsibility antecedent and the moderating role of information asymmetry. Our main findings show a significant positive effect between high personal responsibility and managers' escalation tendency where unequivocal negative project feedback is provided. However, we found no evidence that information asymmetry moderates this relation.

<sup>1</sup> As opposed to a decision dilemma (Bowen, 1987).

## 2. Hypotheses development

### 2.1. Personal responsibility antecedent

Grounded in Festinger's (1957) theory of cognitive dissonance and Kiesler's (1971) theory of psychological commitment, Self-Justification Theory (SJT) posits that managers often discount negative feedback information, escalating their commitment to poorly performing projects, in order to self-justify their prior investment decisions (Staw and Fox, 1977). Extensions to the theory have seen the identification of two dimensions to self-justification. The original "psychological" dimension explains managers' need to justify their decisions to themselves while the "social" dimension explains their need to justify their decision to others (e.g. Keil *et al.*, 2000; Staw and Ross, 1987). Central to both dimensions is the notion that personal responsibility is an important antecedent to escalation of commitment (Staw, 1976). In his seminal paper Staw (1976) provided empirical support for escalation of commitment in general, and SJT in particular, by demonstrating that managers with a high personal responsibility for poorly performing investment projects will discount negative project feedback more readily and are more likely to allocate further funds to these projects than managers with low personal responsibility<sup>2</sup>.

Numerous studies have replicated Staw's (1976) findings (Bazerman *et al.*, 1984; Fox and Staw, 1979; Staw and Fox, 1977). However, in the late 1980's, Bowen (1987) and Conlon and Leatherwood (1989) questioned the validity of these earlier studies based on the equivocal nature of the negative project feedback<sup>3</sup> provided to managers. Bowen (1987) in particular argued that findings from the earlier studies might have been the result of managers responding to uncertainty and a decision dilemma rather than evidence to support the escalation of commitment phenomenon<sup>4</sup>.

In contrast, studies incorporating Bowen's (1987) recommendations have either not supported (Chow *et al.*, 1997) or only weakly supported (Harrison and Harrell, 1995) personal responsibility as an antecedent to escalation of commitment. These findings question the relevance of personal responsibility to the escalation of commitment phenomenon when decision-makers have unequivocal project feedback information.

<sup>2</sup> We would like to thank one of the anonymous reviewers for pointing out to us that the manipulation of personal responsibility in Staw's (1976) seminal study did not permit him to distinguish between psychological and social self-justification. As we follow Staw's (1976) operationalisation our study has the same limitation.

<sup>3</sup> Bowen (1987:56) defined equivocal feedback as "feedback for which multiple (positive or negative) interpretations could be constructed".

<sup>4</sup> This concern has resurfaced more recently in regard to studies that continue to provide equivocal feedback to decision-makers (Hantula and DeNicolis Bragger, 1999; Hantula and DeNicolis, 1997; DeNicolis and Hantula, 1995).

It is important to recognise, however, that recent studies incorporating unequivocal feedback, particularly in accounting, have also changed Staw's (1976) operationalisation of the high personal responsibility condition. By opting to tell subjects in that treatment condition that they had made the initial investment decisions rather than allowing subjects to make them, these studies have omitted the important element of *free-choice* from the personal responsibility construct (Aronson, 1995). As free-choice has long been recognised as an important element of decision commitment (Kiesler, 1971), we thus argue that these studies have inadvertently reduced the level of personal responsibility perceived by managers in the high personal responsibility treatments. We further postulate that where free-choice is incorporated, managers with high personal responsibility are more likely to escalate their commitment than managers with low personal responsibility. Stated more formally:

*H1: Managers with high personal responsibility for investment projects subsequently exhibit higher degrees of escalation of commitment than managers with low personal responsibility.*

## 2.2. Information asymmetry and personal responsibility

Managers making investment decisions in organisations often act as agents on behalf of principals (e.g. a supervisor, the board of directors or other stakeholders). In this context, the principals delegate decision-rights to the manager (i.e. the agent), whose private information about the investment project gives rise to information asymmetry between the former and the latter. The literature has recognised the importance of information asymmetry to the escalation of commitment phenomenon (e.g. Rutledge and Karim, 1999; Harrison and Harrell, 1993). However, the studies drawing on agency theory have been predominantly concerned with the interaction between information asymmetry and extrinsic organisational level factors (such as rewards and career opportunities) in explaining escalation of commitment. The importance of information asymmetry has received less attention in studies drawing on SJT explanations, where goal incongruence between managers and the organisation is the product of an internal process consisting of the manager's need to self-justify prior investment decisions.

Using the "social" dimension of SJT we argue that information asymmetry moderates the relation between personal responsibility and escalation of commitment. Prior literature has already shown that social justification increases escalation of commitment, particularly where decision-makers feel the need to save face (e.g. Keil *et al.*, 2000; Brockner and Rubin, 1985; Fox and Staw, 1979). In this study we propose that information asymmetry provides these managers with an increased opportunity to escalate their commitment. In other words, agents are more likely to socially self-justify their prior investment decisions when principals are not fully informed of poorly performing projects. We,

therefore, postulate that greater escalation tendencies exhibited by managers with high personal responsibility for the initial investment decision will be further heightened where information asymmetry ensures that these managers will not lose face before their principals. Stated more formally:

*H2: Increased escalation of commitment in managers resulting from high personal responsibility compared to low personal responsibility will be relatively greater where information asymmetry exists than where information asymmetry is absent.*

### 3. Research methods

#### 3.1. Research design and experimental subjects

We utilized a  $2 \times 2$  fully crossed factorial experimental design to test our hypotheses. A total of 113 final-year management accounting students at a major Australian university provided useable responses<sup>5</sup>. The average age of subjects was 20.96 years<sup>6</sup>.

#### 3.2. Decision task

The experimental task that we used in our experiment was based on Staw's (1976) seminal study. We extended the study in several ways. First, we provided subjects with unequivocal project feedback. Second, we introduced information asymmetry as a moderating variable. The personal responsibility variable allows for free-choice.

<sup>5</sup> All subjects were volunteers. Movie tickets were provided as incentives for participating in the experiment but were not linked to any decisions made by subjects during the experiment.

<sup>6</sup> As pointed out by one of the anonymous reviewers, our use of undergraduate students as surrogate managers raises potential external validity concerns. However, as Brownell (1995) states, for surrogation to be a validity threat, 1) students need to be different to managers and 2) any difference needs to interact with other variables to affect the outcome. We reduced potential differences between students and managers in terms of technical knowledge for reaching the normative correct decision by selecting students that had been exposed to all relevant evaluation tools (e.g. Net Present Value (NPV) and Internal Rate of Return (IRR)) based on their prior courses taken (i.e. final year managerial accounting students). While undoubtedly other differences exist between students and managers we believe that these differences are unlikely to interact with our independent variables to affect the decision outcome. Further, if there is an interaction, it would most likely have resulted in a weakening of our personal responsibility and information asymmetry manipulations (for our less experienced student subjects) and hence reduced the likelihood of supporting our hypotheses. We are unaware of any particular study that has directly compared escalation of commitment between students and managers. However, some studies have reported consistent findings between their pilot study (using student as surrogate managers) and their main study (using managers – e.g. Booth and Schulz, 1998). We thus argue that using students as surrogate managers is appropriate for our study.

The task consisted of two parts (refer Figure 1 for a general overview of the experiment). The first part outlined an initial \$20 million investment project in a marketing campaign aimed to promote one of two similar products in the organisation. Depending on the treatment, subjects were required to decide which of the two products should be promoted and were informed prior to making that decision that they would be subsequently held personally responsible for their decision (i.e. high personal responsibility), or were told that their predecessor had made this decision and that they were not held personally responsible for the initial investment decision (i.e. low personal responsibility)<sup>7</sup>.

In the second part of the task, subjects received unequivocal negative feedback about the outcome of the initial investment at a point three years after the initial resource allocation decision. Unequivocal negative feedback was provided by informing subjects that the actual internal rate of return (IRR) obtained from the marketing campaign was substantially lower than expected at the initial investment point (14 per cent compared to the expected 20.25 per cent). In addition to receiving this retrospective feedback, subjects were also provided with unequivocal negative prospective feedback about reinvesting further money in the initial investment project by continuing with the original marketing campaign. This was achieved by informing subjects that a more profitable alternative investment opportunity (with a higher expected future IRR) was available in the form of a new marketing campaign<sup>8</sup>. Subsequent to receiving the feedback information, subjects had to decide how to allocate a further \$20 million between continuation of the original marketing campaign<sup>9</sup> (i.e. the initial investment project) and the new marketing campaign<sup>10</sup>. Depending on the treatment, subjects in the second part were told that they were the only person with access to both historic and prospective information (i.e. presence of

<sup>7</sup> Consistent with Staw's (1976) personal responsibility construct, subjects making the initial choice were also required to subsequently justify their decision in writing to the board of directors. This may be viewed as a reinforcement of the initial choice.

<sup>8</sup> While the two alternatives were expressed in terms of probability distributions rather than single point estimates, the alternative investment option stochastically dominated, such that it returned a higher IRR at each probability level, thus providing subjects with the normative correct decision to discontinue any further investment in the initial project.

<sup>9</sup> We would like to thank one of the anonymous reviewers for pointing out to us that by following Staw's (1976) methodology of not providing subjects with a reasonable third reinvestment alternative, such as bonds, in addition to the promotion of the original two products, our study is also subject to similar criticism that Staw's (1976) study has received in this regard over the years.

<sup>10</sup> Although the expected return for the alternative product (19 per cent) was only 3 per cent higher than the less profitable existing product (16 per cent), it is consistent with Harrison and Harrell's (1995) suggestion that future research should look at the effects of initial responsibility where differences between alternative investment options are less dramatic.

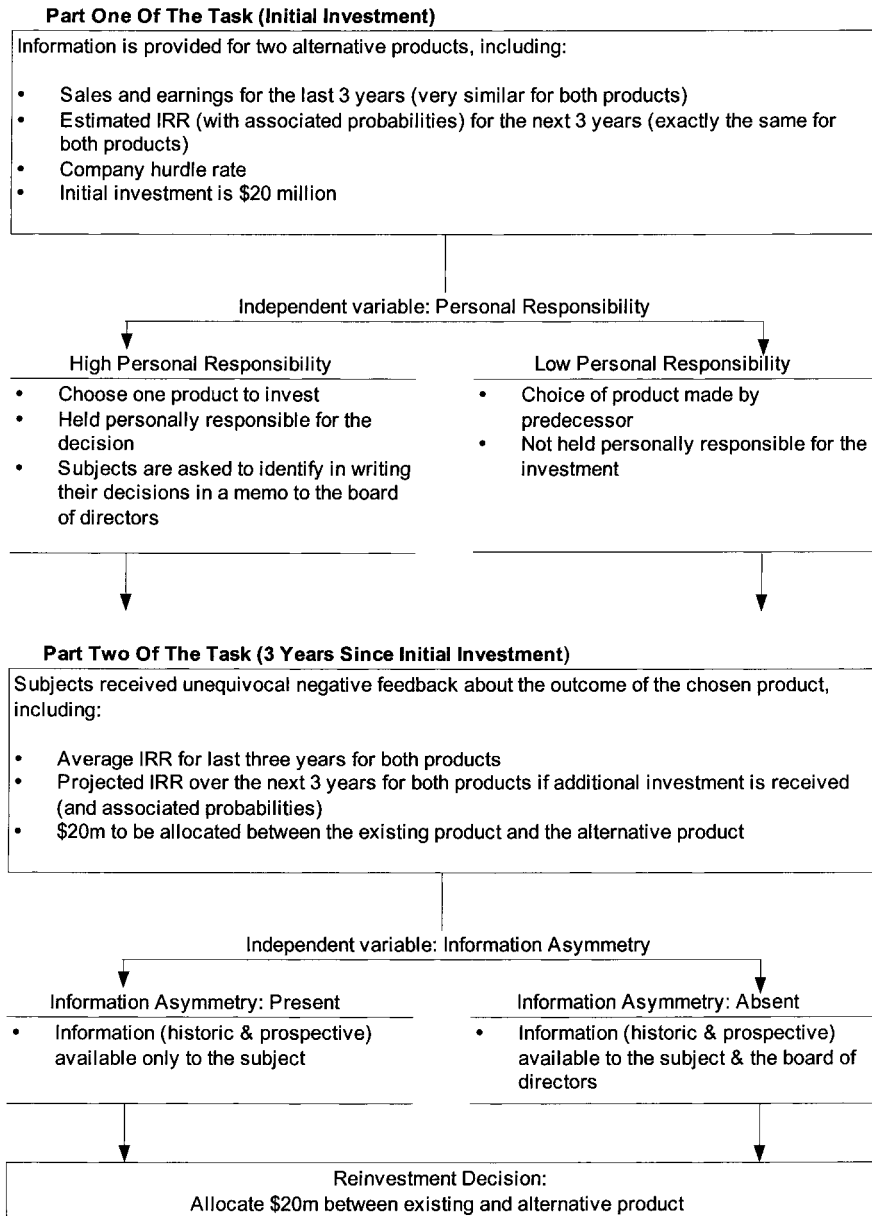


Figure 1 Experiment overview.

information asymmetry) or were told that the information was also available to the board of directors (i.e. absence of information asymmetry).

For the dependent variable, we measured subjects' escalation tendencies by the amount of money they allocated to the existing project in their reinvestment decision (the range being \$0m to \$20m). Selected passages from the instructions given to the experimental group (high personal responsibility/information asymmetry present) are reported in Appendix A<sup>11</sup>.

### 3.3. Manipulation checks

We included two sets of manipulation check questions in our post-test questionnaire. The first set consisted of two individual questions testing for subjects' understanding of the personal responsibility and information asymmetry manipulations respectively. Those answering questions incorrectly were eliminated from the analysis (21 subjects)<sup>12</sup>. The second set consisted of two related questions examining the relative level of perceived personal responsibility experienced by the subjects during the experiment. The Cronbach alpha coefficient (0.78) indicates that the two items measure the same construct (Nunnally and Bernstein, 1994). Analysis of responses across the four treatment groups confirmed that subjects in the high personal responsibility treatments perceived a significantly higher level of personal responsibility compared to subjects in the low personal responsibility treatments ( $F = 4.821$ ;  $p = 0.03$ ). No significant difference was found for either the information asymmetry treatment or the interaction between the personal responsibility and information asymmetry treatments. These results provided further support for the successful manipulation of personal responsibility in this experiment.

Demographic data were also obtained in the post-test questionnaire. No significant differences were found in the distribution of age and work experience across treatments. There are, however, significantly more females in the "no information asymmetry" treatments. Subsequently analysis indicated that the inclusion of "gender" as a covariate had no effect on results reported in this study.

## 4. Results

We conducted an overall  $2 \times 2$  Analysis of Variance (ANOVA) to test the proposed hypotheses<sup>13</sup> using SYSTAT 10. In Hypothesis 1 we predicted that

<sup>11</sup> We have only reported passages containing information that varied across treatments due to the length of the complete instrument (17 pages including post-test questionnaire). A copy of all instruments used in this study is available from the authors on request.

<sup>12</sup> We had a total of 135 responses of which 21 were eliminated due to the subject's failure to answer the manipulation check questions correctly and one was eliminated due to the subject's failure to provide useable information about the reinvestment decision, resulting in the 113 useable responses reported earlier.

<sup>13</sup> All tests were conducted at an alpha level of 0.05.



Table 1  
Descriptive statistics

		Personal Responsibility		
		Low	High	Total
Information Asymmetry	Absent	7.89	11.12	9.59
		(4.74)	(4.52)	(4.86)
		n = 26	n = 29	n = 55
	Present	6.80	11.96	9.29
		(4.60)	(4.93)	(5.39)
		n = 30	n = 28	n = 58
	Total	7.30	11.54	9.43
		(4.65)	(4.70)	(5.12)
		n = 56	n = 57	n = 113

Note: Higher values indicate greater amounts reinvested in the original project (i.e. higher levels of escalation of commitment)

Table 2  
Analysis of variance (ANOVA)

Analysis of Variance					
Source	Sum-of Squares	df	Mean-Square	F	p
Initial Responsibility	496.82	1	496.82	22.55	0.00
Information Asymmetry	0.41	1	0.41	0.02	0.89
Initial Responsibility × Information Asymmetry	26.15	1	26.15	1.19	0.28
Error	2,401.22	109	22.03		

managers with high personal responsibility for investment projects exhibit higher degrees of escalation of commitment than managers with low personal responsibility. Results from Table 1 shows that subjects in the high responsibility group allocated more than half of their resources (11.54 million) to the existing project. Further, the amounts invested were significantly higher ( $F = 22.55$ ,  $p = 0.00$ ; refer Table 2) than those allocated by low-responsibility subjects (7.30 million). Hence Hypothesis 1 was supported.

In Hypothesis 2 we predicted that increased escalation of commitment in managers resulting from high personal responsibility compared to low personal responsibility will be relatively greater where information asymmetry exists than where information asymmetry is absent. There was no support for this prediction (see Table 2). It would appear that the presence of information asymmetry neither significantly accentuated nor mitigated the relation between personal responsibility and escalation of commitment in this study.

## 5. Discussion and conclusion

In this study we firstly set out to re-examine the personal responsibility antecedent to escalation of commitment first introduced into the capital budgeting context by Staw (1976). Our aim was to establish whether recent conflicting results in the accounting literature can be attributed to the weakening of high personal responsibility treatment as opposed to the inclusion of unequivocal feedback in these studies. In order to accomplish this aim we incorporated an element of personal responsibility that has been omitted from these recent studies, that is in free choice, as well as unequivocal negative project feedback. Our findings are consistent with Staw (1976) and thus support both the importance of the personal responsibility antecedent to escalation of commitment, and our proposition that recent conflicting findings can be attributed to the way in which these studies have operationalised the personal responsibility construct. Our second aim was to extend prior literature by including information asymmetry as a moderating variable. While we postulated a moderating role for information asymmetry, based on the social self-justification dimension of SJT, our empirical results do not provide support for such a role.

The important implications of these findings are twofold. First, they provide further (and more conclusive) empirical evidence for the importance of the personal responsibility antecedent to escalation of commitment, as well as reconciliation of some recent inconsistent findings in the accounting literature. Second, our findings suggest that information asymmetry does not have the same moderating effect for personal responsibility that it has for other antecedent variables (such as extrinsic personal rewards), and thus current de-escalation strategies based on reducing information asymmetry are less likely to be effective where escalation of commitment is the result of managers' high personal responsibility for projects. Instead, solutions need to be developed that mitigate the effect of personal responsibility or provide incentives that counteract the motivation of these managers to escalate their commitment.

The interpretations of these results are subject to several limitations. Some of the limitations have already been acknowledged in prior footnotes. In addition, as this study is based on a laboratory experiment, the task represented a simplified capital budgeting task. Hence the description of the task did not include all information potentially considered by managers in this type of resource allocation decision. However, the task was constructed to capture the essential elements of project escalation in capital budgeting. Finally, while there may be concerns with the use of students as surrogate managers, this would bias against finding support for our hypotheses (see footnote 6). It is, therefore, possible that this affected the results relating to information asymmetry. Students may not fully appreciate the significance of information asymmetry in organisations.

In the process of drawing our conclusions for this study, several new avenues for future research have presented themselves. First, as we acknowledged previously, our study was not designed to examine the two dimensions of SJT

(psychological and social) separately. Future research could continue the recent efforts by Keil *et al.*, (2000) to empirically examine each dimension separately. Second, future research could examine the relative magnitude to which each of the factors examined in our study affect escalation of commitment. However, this type of examination is probably more suited to studies outside the laboratory. Third, it would be of interest to examine the relation between the magnitude of the initial investment that individual managers are willing to commit to a particular project and subsequent escalation of commitment tendencies. This avenue for future research would require a broader delegation of decision rights to managers which includes not only discretion in terms of which project to allocate funds to, but also how much to invest in each project at the initial investment point<sup>14</sup>. Fourth, a direct testing of the interaction between extrinsic incentives to escalate (e.g. monetary bonuses and promotions) and internal needs, studied in this study, would be of interest for future research. Finally, future research could also examine more directly the control mechanisms necessary for reducing the level of perceived personal responsibility or counteract the motivational effect of personal responsibility.

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<sup>14</sup> We would like to thank one of the anonymous reviewers for making us aware of this potential future research avenue.

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## Appendix A – Instructions Given to the Experimental Group (High Personal Responsibility/Information Asymmetry Present)

### Part 1 – Initial investment decision

You are the Australian Divisional Manager of Magik, an international fast food chain selling predominantly gourmet sandwiches. You are in charge of stores all over Australia (including Sydney, Melbourne, Brisbane and Adelaide).

As the Divisional Manager in Australia, you are faced with the decision to choose one of the two products (*Riceburger* or *Prawns Burrito*) to receive the \$20m funding for *Project Strike*.

As you are the Divisional Manager, you will be personally responsible for the implementation and the subsequent success or failure of *Project Strike*. Thus you must think very carefully before making your recommendation.

Based on the information provided which product would you recommend the \$20m funding for *Project Strike*?

Please write a short memo to explain to your superior Alex Shorts, the CEO of Magik, the reasons for your recommendation. As your superior is a hard person to convince, you need to state clearly (and convincingly) the reasons why you chose the above product as well as the reasons why you rejected the alternative. For example, if you recommended *Riceburger*, you must explain the reasons why you chose *Riceburger* as well as the reasons why you rejected *Prawns Burrito*. Similarly, if you recommended *Prawns Burrito*, you must explain the reasons why you chose *Prawns Burrito* as well as the reasons why you did not choose *Riceburger*.

### Part 2 – Reinvestment Decision

Two years have now passed since your have initiated *Project Strike*, and you are now reviewing the success of your project.

Recently, you have obtained further \$20m from the Board towards market support for either *Riceburger* [*Prawns Burrito*] (the original focus of *Project Strike*) or *Prawns Burrito* [*Riceburger*]. As the Australian Divisional Manager, it is your responsibility to determine how much of the additional \$20m should be allocated to continue to promote *Riceburger* [*Prawns Burrito*] and how much should be allocated to *Prawns Burritos* [*Riceburger*].

To help you in your decision-making, you have collected all relevant information regarding customer satisfaction and market competition about the two products. This information has been summarised in two confidential reports (partially reproduced on the following pages). Only YOU and NOT the Board have access to this information. The Board will NEVER receive this information.

Incorporating ALL the information available to you (both financial and non-financial information), you have prepared an IRR forecast for *Riceburger* [*Prawns Burrito*] for the next two years. The following confidential information

is ONLY available to you and NOT the Board. The Board will never receive this information.

In addition to reviewing the above information, you have also reopened the file, which included your original memo sent to the Board of Directors recommending *Project Strike*. (Please refer to your original memo to Alex Shorts)

Discontinuation of *Project Strike*, however, will communicate to others in the company that *Project Strike*, for which YOU were responsible, was a failure.

Remember that the information regarding customer satisfaction, market condition and the expected IRR for both products were known ONLY to you and not to the Board of Directors in the company.