

Testing the Rational Decision-Making Model Through an Outsourcing Task

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Abstract

Previous research on financial decision-making situations indicated that contextual aspects of financial information, such as framing, problem space and asset specificity influence the outcome. To assess the influence of these factors, an outsourcing task was used to survey the perceptions of accountants. The survey examined the effect of framing (positive/negative) with the inclusion of sunk and opportunity cost information across the decision task.

The respondents were also presented with information regarding asset specificity – the extent to which assets are inexorably tied to the specific project or outsourcing agreement. In making the decision to outsource, the sunk cost effect, framing and asset specificity were found to be significant factors in influencing the decision outcome.

The results however, were not fully consistent with the predictions of prospect theory in particular a reverse effect was found— in the negative frame, greater risk-avoidance was evident while in the positive frame, greater risk-taking was evident.

Keywords

**Outsourcing Task
Decision Making Contexts
Framing Effects
Asset Specificity
Prospect Theory
Risk-Avoidance**

Introduction

Outsourcing continues to have an important role in the business environment (Kremic, Tukul and Rom, 2006; Quinn, 2000). The decline in the global economy may have slowed the trend in outsourcing however, management continue to explore opportunities for outsourcing across a variety of alternative business operations (Park, Reddy and Sarkar, 2000). How management approach outsourcing decisions (McIvor, 2000; Vining and Gliberman, 1999) can have an important influence on the success or failure of organisations.

According to the economic theory of rational decision making, individuals are considered to be rational actors who engage in the process of optimising expected utility by selecting the highest payoff from available alternatives (March, 1988a; Majone, 1989; Rich and Oh, 2000). The assumption that decisions should be rational is implicit in the neo-classical economic theory of the “economic man” or the “rational man” (von Neumann and Morgenstern, 1944; Marsden, 1984; Provan, 1989; Boland, 1998). Rational actors do not necessarily examine all possible alternatives but may merely search until they find a solution that meets a certain acceptable level (satisficing) (March and Simon, 1958). This behaviour suggests that individuals try to be rational, but are bound by cognitive limitations. Simon (1979) distinguished between purely economic rational behaviour and functional behaviour, which he referred to as “bounded rationality”, which recognises the cognitive limitations. Bounded rationality assumes that information is essential in allowing individuals to compare alternatives (March and Simon, 1958).

According to March (1988b, 386), the main reason for using information in rational decision making is to reduce uncertainty in making a choice from among a number of alternative courses of action. In decision models that promote the maximization of the individual’s utility function, a lack of information is perceived as the reason for seemingly “irrational” decisions (Cook and Levi, 1990). Elster (1983) concluded that if decision makers have insufficient information, rationality requires them to abstain from

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considering alternative courses of action. Tversky and Shafir (1992) provided support for existence of satisficing behaviour by demonstrating empirically that decision makers end their search for alternatives once they find one that provides a ready justification for the choice. The decision making literature has identified a number of anomalies that highlight the subjective nature of decision making. Factors, such as the sunk cost effect (Arkes and Blumer, 1985) and escalation of commitment (Staw 1976, 1981; Mahring and Keil, 2008) have been shown to adversely influence decision making. As a result various behavioural models such as, Prospect theory (Kahneman and Tversky, 1979) and Image theory (Beach, 1990) have been developed to examine the cognitive biases that individuals encounter when forming judgmental heuristics for making decisions.

Outsourcing is an approach to the reduction of costs for non-key activities in a business by contracting for the service to be performed by an external provider (Horngren, Datar, Rajan, Wynder, Maguire and Tan, 2013; Mahnke, Overby and Vang, 2005; McIvor, 2000; Luevanos, 1997). In this respect the decision to outsource involves a process that is more commonly known in management accounting as a make or buy decision (Horngren, Datar, Rajan, Wynder, Maguire and Tan, 2013; Fill and Viser, 2000; Powell, 1997). The purpose of this research was to examine whether accountants would follow the rational decision-making model when making an outsourcing decision.

Rational Behaviour in Decision Making

Drawing on the notion of “rational behaviour”, the rational disposition of the decision maker becomes an important variable in assessing the overall decision (Heyne, 1997). A rational decision maker is expected to display behaviour that is consistent with risk-avoidance or risk-minimization. Intuitive decision making was considered as often leading to irrational choices (Bayoumi and Redelmeier, 2000).

Lee (1987) proposed that an appropriate means of describing “rational” behaviour when applied to an individual was by reference to a

continuum of rationality. Duchon, Dunegan and Barton (1989) devised a self-assessment item based on this continuum. Consistent with this approach, subjects were asked to make a self-assessment of themselves as either rational or intuitive decision makers by responding to a seven-point Likert scale incorporated in the survey. Duchon, Dunegan and Barton (1989, 26) argued that the term “intuitive” was a more appropriate antithesis to rational than “irrational” because of the strong pejorative connotation associated with the word irrational. The first null hypothesis in this study tested whether the choices made by rational decision makers differ from intuitive decision makers.

H₀₁: There will be no difference in the outsourcing decisions made between respondents who perceive themselves as rational decision makers and those who perceive themselves as intuitive decision makers as measured by a Likert scale self assessment.

Risk Perception and Framing Effects

There is an argument (Kahneman and Tversky, 1979, Tversky and Kahneman, 1981) that positive or negative (framing) of decision information may cause potential bias in the decision outcome (the framing effect). This proposition suggests that framing can alter the perception of risk and that negative framing invokes a strong tendency toward risk-seeking or risk-taking. Therefore, how decision makers respond to the positive or negative framing of a problem task may be due to the perception of their own level of rationality in making decision. In this dissertation all subjects were assumed to be of a “rational” disposition due to their education and experience and more importantly because this is the view espoused by normative theory.

Research has shown that individuals are influenced by the way in which information is presented (Kahneman, 2003; Kahneman and Tversky, 1979). A frame, according to Beach (1990, 23), is “a mental construct consisting of elements and the relationship between them that are associated with a situation of interest to a decision maker.” The frame may therefore be thought of in terms of a representation of a situation through which a decision maker gains understanding or makes sense of the alternative courses of action available.

Decision makers are predicted to be risk-averse in situations involving gains, but risk-seeking when the same situation is framed in terms of losses (Kahneman and Tversky, 1979). One explanation is that when a decision maker focuses on the negative, there is a greater urgency to engage in preventative behaviour rather than explore other options. March and Shapira (1992) suggested that individuals become more survival oriented when focusing on losses which threaten to deplete their resources and are more aspiration oriented when focused on gains.

The basis for considering the framing effect as an influence in decision making can be traced to Kahneman and Tversky (1979). Framing effects are reported in the literature of behavioural decision and negotiation fields (Mellers, Schwartz and Cooke, 1998; Neale and Bazerman, 1991; Camerer, 1995) and the attitude-change field (Cialindi, 1988; Eagly and Chaiken, 1993). The assumption that decision makers are likely to be influenced by the positive or negative framing of alternative choices suggested the following null hypothesis.

H_{02} : *The decision to outsource will not differ between responses due to framing of the outsourcing task.*

Issues of Relevant Costs in Decision Making

Relevant costs and relevant revenues are defined as: “*those expected future costs and expected future revenues that differ among the alternative courses of action being considered*” (Horngren, Foster and Datar, 2000, 378). There are two key elements worth noting in this definition of relevant costs and revenues. First, the costs and revenues must occur in the future.

The argument is consistent with normative model of rational decision making: that nothing can be done about the past and every decision deals with selecting a course of action for the future. Second, relevant costs and revenues must differ among the alternative courses of action.

The argument in this instance is that if the costs and revenues do not differ, then there is no rational economic basis for determining a difference between the alternative course of actions.

Opportunity Costs

Opportunity costs are considered relevant to make or buy decisions, also referred to as outsourcing decisions (Burch and Henry, 1970). The proposition that individuals act rationally and always select the optimal alternative implies that if an opportunity cost exists in the choice between alternatives, rational decision makers will include them in their analysis. Opportunity costs are defined generally as “*those benefits which could have been received had an alternative course of action been chosen*” (Thompson, 1973, 263) and in management accounting text books as the “*maximum available contribution to profit that is forgone (rejected) by using limited resources for a particular purpose*” (Horngren and Foster, 1991, 374). There is a further assumption that all opportunity costs are known to decision makers (perfect information).

The extent to which decision makers are able to distinguish between implicit opportunity costs, as distinct from explicit opportunity costs was the subject of the research by Roodhooft and Warlop (1999). In the case of explicit opportunity costs, the information is provided in an unambiguous manner. That is, the details of the opportunity cost are stated as being relevant to one of the alternatives being considered. In contrast, when information is ambiguous, the opportunity cost is considered to be implied or implicit. Roodhooft and Warlop’s (1999) findings suggest that decision makers may miss or underweight the importance of implicit opportunity costs. This conclusion is consistent with the findings of Becker, Ronen and Sorter (1974), Friedman and Neumann (1980), Hoskin (1983), and Northcraft and Neale (1986) that individuals only include opportunity costs when explicit information is provided.

Sunk Costs

Sunk costs are by definition past costs that are unavoidable and are deemed irrelevant to decision making because they can not be changed (Horngren, Foster and Datar, 2000, 379). According to economic and accounting theory only incremental costs, not sunk costs, should influence decisions. In a make or buy analysis, past investments are deemed to be irrelevant. There is evidence that managers tend to include irrelevant costs, such as sunk

costs, into their decision making information; thus there exists what is known as the “sunk cost effect”. Research into the sunk cost effect demonstrated that individuals are inclined to be influenced by past costs (Arkes and Blumer, 1985). Even though sunk costs may be irrelevant from an accounting perspective, the decision maker (regardless of experience) is likely to be influenced by the knowledge that sunk costs exist. Staw (1976) and Whyte (1991) found that the sunk cost effect was more likely to occur when the decision maker felt personally responsible for any negative consequences resulting from the decision.

It was envisaged that the perception of negative consequences would be more significant in the negative frame than in the positive frame. This assumption, together with the prior research findings, led to the development of the following hypotheses to be tested in this study:

H₀₃: The decision to outsource will not be influenced by the presence of sunk cost information.

Asset Specificity

According to the theory of transaction cost economics, the degree of asset specificity is an important consideration in making outsourcing decisions (Chalos, 1995). Investments that can not be used for any other purposes and have no alternative value are asset specific to the particular option. Conversely, investments that can be used for other purposes are not asset specific. The requirement to invest in an asset that is specifically to be used for the duration of the outsourcing agreement was expected to have a negative impact upon the decision to outsource. Outsourcing is only desirable when expected governance and coordination costs, which result from asset specific investments, are lower than the production cost advantage of an external supplier (Chalos, 1995). Asset specificity may be interpreted as another form of sunk cost; that is a cost that will become sunk as a result of the present choice. Outsourcing of information technology has been recognised as an ideal way to empirically test theoretical predictions of transaction cost economics (Mahnke, Overby and Vang, 2005; Poppo and Zenger, 2002; Yost and Harmon, 2002; Yang and Huang, 2000) To test the affect of assets specificity on the outsourcing

decision the following hypothesis was proposed:

H₀₄: The decision to outsource will not differ when asset specificity is present in the task.

Methodology

Target Population and Sample Selection

The target population was selected from the category Accountants in the Australian Yellow Pages Telephone CD Rom. A number of stages were involved in developing the database for the sample population. As accountants in public practice are subject to the same standards across Australia, the issues raised in the survey were considered to be equally relevant to all accountants, no matter which state in Australia they were situated.

Therefore, the search was restricted to Queensland accountants; a total population of 2116 was identified. Where the actual population is known, the statistical method for determining an appropriate sample size can be employed (Leedy, 1997). In this case the appropriate sample size was determined to be 327 (N=2200 s= 327) (Leedy, 1997, 211). Second, a sample of 600 was randomly selected from this population. Third, a sample of 100 was randomly assigned to each of the six versions of survey instruments. The selection of the larger sample size of 600 allowed for an equal distribution over the six separate versions and better representation to address possible sampling bias.

Following the initial mail out of surveys, 14 were returned with the notification that the address was no longer correct. This reduced the sample population to 586. A total of 237 responses were received. The overall response rate of 39.5% was considered satisfactory for the size of the sample and population.

Nominal or categorical measurement was used to assign numbers to classify the independent variables (sunk cost and asset specificity) as well as the dependent variable (decision). For example, in the dependent variable the choice to continue with internal production “1” is different from the choice to outsource “2”. The method of statistical analysis most commonly recommended for nominal coded data is the

chi-square test (Isaac and Michael, 1990, 177; Sproull, 1995, 68).

Non-Response Bias

The likelihood of non-response bias was assessed using late responses as a proxy for non-response and compared with early responses. The early versus late responses were tested using two different methods due to the nature of the data. A chi-square test was conducted and the results were not significantly different $\chi^2 0.139$ ($\alpha = 0.710$, $df = 1$).

Outsourcing Task

The task was based on outsourcing decisions (Roodhooft and Warlop, 1999), framing effects (Kahneman and Tversky, 1979) and self-evaluation questions (Northcraft and Neale, 1986; Duchon, Dunegan and Barton, 1989). The task was derived from a simple exercise presented in Langfield-Smith, Thorne and Hilton (1998, Exercise 16.35). This exercise was extended and developed to include aspects of sunk cost consistent with the outsourcing task. The task involved a choice between outsourcing or continuing the operations of the payroll function of an insurance company. The annual cost associated with operating the payroll department was \$133,000— all identified as avoidable costs— while the submission for external payroll services was \$134,000 annually fixed for three years. From this perspective, the outsourcing is not a rational choice.

Additional information provided details of an opportunity cost pertaining to the alternative use of floor space and a sunk cost with regard to office furniture and equipment. Under the rational decision-making model, the inclusion of the opportunity cost from the alternative use of the floor space— a saving of \$1,900 per year— should lead to the decision to outsource. The inclusion of the saving in the evaluation of the relevant costs reduces the annual cost of the outsourcing option to \$132,100 ($\$134,000 - \$1,900 = \$132,100$). With the identification of relevant costs, the outsourcing option should therefore be the rational choice.

A further opportunity cost was associated with the sale of office furniture and equipment, which was stated as costing \$30,000 to acquire and the wording was manipulated to produce a framing effect. The negative frame was presented as a loss (“*will result in a \$20,000 loss on disposal*”) while the positive frame was presented in terms that refer to the attainment of cash (“*will realise \$10,000 on disposal*”). In either case, the net result was the same— the office furniture and equipment on disposal would realise \$10,000 cash resulting in a \$20,000 loss.

To test the relevance of the sunk cost and the framing effect, all reference to sunk cost was deleted in the third and fourth versions of this task. In the fourth version, an investment was required for equipment to process the pay slips. The amount of \$500 was not enough to change the overall financial benefit in favour of outsourcing. This asset, however, could not be used by the firm nor by any other payroll provider and had no resale value. The investment was asset specific to the outsourcing option.

The subjects were asked to rate their attitude to the outsourcing of the payroll function on a seven point Likert scale anchored as 1 (Very Negative) and 7 (Very Positive). Having made this self-assessment, the subjects were then asked to make a choice to either outsource or continue the internal payroll function. The next question asked the subjects how sure they were of this decision, based on a seven point Likert scale anchored as 1 (Certain it should be Internal) and 7 (Certain it should be External). For additional insight into the cognitive perceptions which were likely to influence the decision making, subjects were asked whether they considered themselves (in general) to be a rational decision maker or an intuitive decision maker. A seven point Likert scale anchored as 1 (A Rational Decision Maker) and 7 (An Intuitive Decision Maker) was used. Duchon, Dunegan and Barton (1989, 26) argued that the term “intuitive” was a more appropriate antithesis to rational than irrational, because of the strong pejorative connotation associated with the word “irrational”.

Four versions of task were presented to subjects and were distinguished according to (1) the existence of a positive frame, (2) the existence of a negative frame, (3) the absence of sunk cost and no frame, and (4) the absence

of sunk cost, no frame and additional asset. The variables are summarised in Table 1 below:

The only differences in the versions of the task was the framing of the amount to be realised from the disposal of the asset (office furniture and equipment) specific to the payroll department. The task details are summarised in

Table 2. In each version, the total cost of outsourcing was less than the cost of internal production and as such the economic rational choice was to select the option with the minimum cost. The expected result was that respondents would select the option to outsource based purely on the relevant financial data presented.

<i>Variable Category</i>	<i>Number</i>	<i>Details</i>
Treatment Effect: (Treatment Variables)	Three	Framing (positive vs negative vs nil) Sunk cost vs no sunk cost, Asset specific investment.
Demographic Variables: (Independent Variables) [Predictors]	Three	Attitude to Outsourcing Decision. Certainty of Decision. Rational vs Intuitive Decision style.
Dependent Variables: (Criterion Variables)	Two	Choice A – Internal (Make) Choice B – Outsource (Buy)

<i>Version</i>	<i>Make option</i>	<i>Outsource (buy) option</i>
A	Production cost: \$ 133,000 Sunk investment: \$ 30,000	Purchase price: \$ 134,000 Opportunity Costs: \$ 1,900 Rent saving p.a. \$10,000 Revenue from sale of asset (one-off framed as \$10,000 revenue on disposal)
B	Production cost: \$ 133,000 Sunk investment: \$ 30,000	Purchase price: \$ 134,000 Opportunity Costs: \$ 1,900 Rent saving p.a. \$10,000 Revenue from sale of asset (one-off framed as \$20,000 loss on disposal)
C	Production cost: \$ 133,000 Sunk investment: Nil	Purchase price: \$ 134,000 Opportunity Costs: \$ 1,900 Rent saving p.a.
D	Production cost: \$ 133,000 Sunk investment: Nil	Purchase price: \$ 134,000 Opportunity Costs: \$ 1,900 Rent saving p.a. Asset Specificity: \$ 500 pay slip machine.

Results

The results of the survey were consistent with the expectations gained from the literature and prior research. Table 3 presents the percentage of respondents who selected the option to outsource for each of the two survey instruments. In the negative-framed version, the majority of respondents rejected the outsourcing option (60.2%). For the positive-framed version, the majority of respondents

selected the outsourcing option (82.6%). In the version with no sunk cost and no framing manipulation, 80.0% of respondents selected the outsourcing option. In the version with an asset specific investment, no sunk cost and no framing manipulation, 57.6% of respondents selected the outsourcing option.

Version	Make	Outsource	Details
A (n=83)	60.2%	39.8%	Sunk Cost and Negative Frame
B (n=86)	17.4%	82.6%	Sunk Cost and Positive Frame
C (n=35)	20.0%	80.0%	No Sunk Cost and No Frame and NATC
D (n=33)	42.4%	57.6%	No Sunk Cost and No Frame + ATC

NATC = No Anticipated Transaction Cost ~ ATC = Anticipated Transaction Cost (Asset Specific)

Hypothesis Testing of Rational Decision Makers

In order to test for differences in the outsourcing decisions of subjects that perceive themselves as rational decision makers and those who perceive themselves as intuitive decision makers the responses were sorted into categories. First, respondents who had self-evaluated themselves as a 1 or 2 on the Likert scale were at the higher level of the rational scale and allocated to the category "rational". Conversely, respondents who had self-evaluated themselves as 6 or 7 on the Likert scale were at the higher level of the intuitive scale and allocated to the category "intuitive". This effectively removed those respondents who did not consider themselves as either strongly rational or strongly intuitive. The number of responses was reduced to 56 for "A" (49 rational and 7 intuitive), 51 for "B" (44 rational and 7 intuitive), 25 for "C" (20 rational and 5 intuitive) and 22 for "D" (17 rational and 5 intuitive). There was a high proportion of respondents who perceived themselves as rational. This was expected from a professional group such as accountants who are trained to be rational decision makers.

The findings are summarised below.

- There was a significant difference in the decision to outsource between rational and intuitive decision makers in version "A" of the survey. $\chi^2 = 8.711$, $df = 1$, which was significant at $\alpha = 0.003$.
- There was no significant difference in the decision to outsource between rational and intuitive decision makers in version "B" of the survey. $\chi^2 = 2.208$, $df = 1$, which was significant at $\alpha = 0.137$.
- There was a significant difference in the decision to outsource between rational and intuitive decision makers in version

"C" of the survey. $\chi^2 = 4.640$, $df = 1$, which was significant at $\alpha = 0.031$.

- There was a significant difference in the decision to outsource between rational and intuitive decision makers in version "D" of the survey. $\chi^2 = 3.891$, $df = 1$, which was significant at $\alpha = 0.051$.

Hypothesis Testing of Framing Effect

To test the framing effect, the versions A (negative frame) and B (positive frame) were compared using a 2 x 2 contingency table. The chi-square test result was $\chi^2 = 32.688$, $df = 1$, which was significant at $\alpha = 0.000$. The null hypothesis is rejected as the decision to outsource significantly differs between versions where the opportunity costs were framed either positively or negatively. This confirms that the framing effect did impact on the decision outcome.

Further tests were carried out to examine the difference between versions "A" and "B" compared to the version with no frame "C". Again a 2 x 2 contingency table was developed to test each of these.

The chisquare test comparing A against C resulted in $\chi^2 = 15.965$, $df = 1$, which was significant at $\alpha = 0.000$. The null hypothesis is rejected as the decision to outsource significantly differs between versions where the opportunity costs were framed either positively or negatively. There was a significant difference in the intention to outsource between the negative-framed version and the version with no frame.

The chisquare test comparing B against C resulted in $\chi^2 = 0.109$, $df = 1$, which was not significant at $\alpha = 0.741$. The null hypothesis in this case cannot be rejected. This result is however consistent with the prediction of prospect theory, in particular that positive and

negative framing produces different responses to tasks that whilst identical in nature are only different in their framing.

Hypothesis Testing of Sunk Cost

To test null hypothesis H_{03} the responses to versions “A” and “B”, sunk cost present, were compared against those of version “C”, which had no sunk cost. The result was a $\chi^2 = 4.327$, $df = 1$, which was significant at $\alpha = 0.038$. The null hypothesis was therefore rejected. This is consistent with the existence of the sunk cost effect having influenced the decision to outsource.

Hypothesis Testing of Asset Specificity

To test the null hypothesis H_{04} version C was compared to D. The subsequent result was a $\chi^2 = 4.001$, $df = 1$, which was significant at $\alpha = 0.045$. Therefore, the null hypothesis was rejected. This result is consistent with the theory of transaction cost economics that asset specificity had a negative influence over the decision to outsource.

Conclusions

There are four key points arising from the results of the outsourcing decision. First, rational decision makers did differ from intuitive decision makers in their decision to outsource. For the combined versions, the results were inconclusive. When the four versions were analysed individually, “A” and “C” were significantly different, “D” was considered significantly different at $\alpha = 0.051$, however, “B” was not significantly different. A possible explanation may lie with the framing effect of version “B”. The positive frame may have negated differences between rational and intuitive decision making styles. The results suggest that the decisions of the rational decision makers were more closely associated with those of intuitive decision makers under the positive frame rather than under the negative frame.

Second, the decision to outsource was significantly different between positive- and negative-framed versions of the task. For versions “A” against “B”, the results were inconclusive. When the framed versions were

compared to the neutral version, “A” against “C” was significantly different, however, “B” against “C” was not significantly different. A possible explanation may be the sunk cost effect. Version “C” had no frame and no sunk cost while version “B” had a positive frame and a sunk cost. Under prospect theory, a positive frame was expected to induce risk-averse behaviour— this was not observed. The results clearly indicated that the decision to outsource was significantly higher in the positive frame with a sunk cost than in the negative frame with a sunk cost. This finding is contrary to the risk-taking behaviour predicted to occur by prospect theory in tasks with a negative frame. In addition, the difference between versions “B” and “C”, which contained no frame and no sunk cost, was not significant.

Third, in accordance with transaction cost theory, the decision to outsource was found to be influenced by the presence of an asset specific investment. Inclusion of an asset specific investment was not expected to have any significant influence on the decision by accountants. However, the results confirm that there was a distinct impact upon the outsourcing decision— this suggests that accountants are not immune from the effects of asset specificity.

Fourth, the decision to outsource was significantly different between versions with sunk cost and the version with no sunk cost. This provides confirmation of the sunk cost effect. The negative-framed version “A” was significantly different from version “C”. However, when version “B”, which had a sunk cost and a positive frame, was compared to version “C”, with no sunk cost and no frame, the difference was not significant.

The sunk cost effect was found to be significant in both the outsourcing decision task and in the negative frame of the investment decision task but not in the positive frame of the investment decision task. One possible explanation for this anomaly — that the difference between the amount of sunk cost was not large enough — was discounted since the differences in sunk cost were the same in the negative-frame versions. The only difference was the framing, suggesting that the framing effect may be responsible for this anomaly.

Although framing was found to be significant, the direction of the results was not consistent with prospect theory. The tests of the framing effect were contradictory to the direction of risk behaviour predicted by prospect theory. Negative framing, which should have produced risk-taking behaviour resulted in risk-avoidance behaviour. Positive framing, which should have elicited risk-avoidance behaviour resulted in risk-taking behaviour. Prospect theory predicts that a higher percentage of respondents should have chosen the outsourcing option in the negative frame than in the positive frame.

Limitations and Future Research

There are generally acknowledged limitations that can adversely impact upon the generalizability, validity and reliability of the results of survey research and postal questionnaires. However, procedures were adopted in this study to ameliorate these limitations (Frazer and Lawley, 2000). In regards to the generalizability of the sample to the population the approach used to address this aspect was the specific selection of the sample from the particular group concerned with the type of decision being examined, that is accountants in public practice. A second limitation is identified as response bias which relates to the response rate. To address this limitation, appropriate response bias tests were performed with satisfactory results being obtained. A third limitation concerns the design of the survey instrument and the wording of the actual questions. In essence the quality of data obtained depends on how well respondents understand the survey items or questions. To address this the survey questions were initially based upon instruments used by prior research and were subjected to a pre-test to ensure that comprehension was consistent.

Finally, given the interesting findings in this study, future research could investigate the generalizability to other professional disciplines, and the relative predictive efficacies of the sunk cost phenomena in outsourcing decisions made in organisations. Future research could also contribute to a better understanding of the phenomena by examining decisions other than the outsourcing of information technology requirements.

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APPENDIX Survey Instruments

Survey A

This research is concerned with decision-making all details are strictly confidential and only grouped data will be used for reporting purposes.

Please read the following scenario and then complete the requirements.

Trusty Insurance Company is considering the elimination of its payroll department. Management has received an offer from an outside firm to process all of Trusty's payroll. The cost of running the payroll department includes \$9,100 for rent per annum for floor space. If the payroll department is eliminated, the freed space will be used to store insurance files, currently in storage at a nearby warehouse costing \$11,000 per year.

The cost of operating the payroll department is \$120,000 wages and \$13,000 for overheads all of these are avoidable costs. The office furniture and equipment, in this department, has a book value of \$30,000. Offers, to buy, have been received from three firms and the best valuation will realise \$10,000 cash on disposal.

The external payroll firm has made a submission to provide the payroll services for the next three years at a fixed price of \$134,000 per annum.

REQUIRED:

Please rate your attitude to outsourcing the payroll function:

Very Negative 1	2	3	4	5	6	Very Positive 7
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Please indicate your recommendation:

Option A **Trusty Insurance Company should continue to operate the payroll department.**

Option B **Accept the offer and outsource the payroll function.**

Please indicate how sure you are of your decision to outsource or not to outsource the payroll function:

Certain it should be Internal 1	2	3	4	5	6	Certain it should be External 7
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In general do you consider yourself to be:

A rational Decision Maker 1	2	3	4	5	6	An Intuitive Decision Maker 7
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Please briefly list any other factors which influenced you in this decision?

**END OF QUESTIONNAIRE
THANK YOU FOR YOUR TIME AND CO-OPERATION**

Survey B

This research is concerned with decision-making all details are strictly confidential and only grouped data will be used for reporting purposes.

Please read the following scenario and then complete the requirements.

Trusty Insurance Company is considering the elimination of its payroll department. Management has received an offer from an outside firm to process all of Trusty's payroll. The cost of running the payroll department includes \$9,100 for rent per annum for floor space. If the payroll department is eliminated, the freed space will be used to store insurance files, currently in storage at a nearby warehouse costing \$11,000 per year.

The cost of operating the payroll department is \$120,000 wages and \$13,000 for overheads all of these are avoidable costs. The office furniture and equipment, in this department, has a book value of \$30,000. Offers, to buy, have been received from three firms and the best valuation will result in a \$20,000 loss on disposal.

The external payroll firm has made a submission to provide the payroll services for the next three years at a fixed price of \$134,000 per annum.

REQUIRED:

Please rate your attitude to outsourcing the payroll function:

Very Negative							Very Positive
1	2	3	4	5	6		7

Please indicate your recommendation:

Option A **Trusty Insurance Company should continue to operate the payroll department.**

Option B **Accept the offer and outsource the payroll function.**

Please indicate how sure you are of your decision to outsource or not to outsource the payroll function:

Certain it should be Internal							Certain it should be External
1	2	3	4	5	6		7

In general do you consider yourself to be:

A rational Decision Maker							An Intuitive Decision Maker
1	2	3	4	5	6		7

Please briefly list any other factors which influenced you in this decision?

**END OF QUESTIONNAIRE
THANK YOU FOR YOUR TIME AND CO-OPERATION**

Survey C

This research is concerned with decision-making all details are strictly confidential and only grouped data will be used for reporting purposes.

Please read the following scenario and then complete the requirements.

Trusty Insurance Company is considering the elimination of its payroll department. Management has received an offer from an outside firm to process all of Trusty's payroll. The cost of running the payroll department includes \$9,100 for rent per annum for floor space. If the payroll department is eliminated, the freed space will be used to store insurance files, currently in storage at a nearby warehouse costing \$11,000 per year.

The cost of operating the payroll department is \$120,000 wages and \$13,000 for overheads all of these are avoidable costs.

The external payroll firm has made a submission to provide the payroll services for the next three years at a fixed price of \$134,000 per annum. There are no additional costs or investments required.

REQUIRED:

Please rate your attitude to outsourcing the payroll function:

Very Negative							Very Positive
1	2	3	4	5	6		7

Please indicate your recommendation:

Option A **Trusty Insurance Company should continue to operate the payroll department.**

Option B **Accept the offer and outsource the payroll function.**

Please indicate how sure you are of your decision to outsource or not to outsource the payroll function:

Certain it should be Internal							Certain it should be External
1	2	3	4	5	6		7

In general do you consider yourself to be:

A rational Decision Maker							An Intuitive Decision Maker
1	2	3	4	5	6		7

Please briefly list any other factors which influenced you in this decision?

**END OF QUESTIONNAIRE
THANK YOU FOR YOUR TIME AND CO-OPERATION**

Survey D

This research is concerned with decision-making all details are strictly confidential and only grouped data will be used for reporting purposes.

Please read the following scenario and then complete the requirements.

Trusty Insurance Company is considering the elimination of its payroll department. Management has received an offer from an outside firm to process all of Trusty's payroll. The cost of running the payroll department includes \$9,100 for rent per annum for floor space. If the payroll department is eliminated, the freed space will be used to store insurance files, currently in storage at a nearby warehouse costing \$11,000 per year.

The cost of operating the payroll department is \$120,000 wages and \$13,000 for overheads all of these are avoidable costs.

The external payroll firm has made a submission to provide the payroll services for the next three years at a fixed price of \$134,000 per annum. To produce the payroll slips would require the purchase of a special machine for \$500. However, this equipment could not be used if the company changes to another external provider and would have no resale value.

REQUIRED:

Please rate your attitude to outsourcing the payroll function:

Very Negative							Very Positive
1	2	3	4	5	6		7

Please indicate your recommendation:

Option A **Trusty Insurance Company should continue to operate the payroll department.**

Option B **Accept the offer and outsource the payroll function.**

Please indicate how sure you are of your decision to outsource or not to outsource the payroll function:

Certain it should be Internal							Certain it should be External
1	2	3	4	5	6		7

In general do you consider yourself to be:

A rational Decision Maker							An Intuitive Decision Maker
1	2	3	4	5	6		7

Please briefly list any other factors which influenced you in this decision?

**END OF QUESTIONNAIRE
THANK YOU FOR YOUR TIME AND CO-OPERATION**

APPENDIX Calculations

Step 1. Calculation of the “production cost” which is the “make option”:

Payroll department wages	\$120,000
Add: Overheads	<u>\$ 13,000</u>
Production costs	<u>\$133,000</u>

Step 2. Calculation of the “Opportunity cost”:

Warehouse costing per year	\$ 11,000
Less: Rent per annum for floor space	<u>\$ 9,100</u>
Rent savings	<u>\$ 1,900</u>

Step 3. Calculation to compare the costs:

“internal production option”		versus	“outsource option”	
Production costs	\$133,000		Fixed price	\$134,000
			Less: rent savings	<u>\$ 1,900</u>
			Cost of Outsourcing	<u>\$132,100</u>

Note: The outsourcing option is therefore \$900 less than the internal production option.

Step 4. Calculation of “sunk cost”:

Book value of the office furniture and equipment	<u>\$ 30,000</u>
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Step 5. Calculation of the “Framing”:

The issue here is that the firm will receive \$10,000 dollars for the disposal of the assets that have a book value of \$30,000.

The positive frame is worded simply that the sale will realise \$10,000 cash.

The negative frame is worded that the sale will result in a \$20,000 loss on disposal.

In effect they both are referring to the same outcome for the transaction since –

Book value of assets	\$30,000
Cash on sale	<u>\$10,000</u>
Loss on disposal of assets	<u>(\$20,000)</u>

Step 6. Calculation of “Asset specificity”:

This relates to the purchase of an item of equipment that is required for this particular scenario and importantly would not be useable for any other activities nor would it have any resale value. Thus making the purchase a specific requirement for consideration in regards to this decision.

Purchase of a special machine	\$ 500
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