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How Loss Aversion Combines with Past Results or Convenience to Explain Choosing Fixed-Price Contracts: A Qualitative Comparative Analysis of Alberta Electricity Buyers

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How Loss Aversion Combines with Past Results or Convenience to Explain Choosing Fixed-Price Contracts: A Qualitative Comparative Analysis of Alberta Electricity Buyers

by

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ABSTRACT

This thesis explores the decision behavior of individuals representing commercial and industrial companies operating in Alberta that led to the choice of a fixed-price electricity supply contract. Survey responses were received from 74 individuals and Qualitative Comparative Analysis (QCA) was employed to determine the configurations (i.e. combinations of conditions) associated with the choice of the fixed-price contract. Two meaningful configurations, each containing four conditions, were identified. The first configuration contained the unfavorable financial impact of higher prices, an expectation of the future price of electricity, the known price for the contract term, and the negative previous financial results. The second configuration comprised three of the same conditions in the first configuration, the unfavorable financial impact of higher prices, an expectation of the future price of electricity, the known price for the contract term, with the addition of the ease of retention. The desire to avoid a potentially adverse financial outcome resulting from higher future electricity prices with the certainty afforded by the fixed-price contract is suggestive of loss aversion. The additional influences of the negative previous financial results and the ease of retention indicates that generalizations of loss aversion are not as definitive as in laboratory experiments. The results of this study suggest Retail Energy Providers should concentrate their marketing efforts on evoking loss aversion to increase the contracting for the substantially higher value fixed-price product. Marketing should emphasize the risk of higher future variable prices, promote cost certainty, and encourage the ease of fixed-price re-contracting.

PREFACE

This thesis is original, unpublished, independent work by Kenneth Bowen. The experiments reported in Chapters 4-6 were covered by Ethics Certificate number REB23-0360, issued by the University of Calgary Conjoint Facilities Research Ethics Board for the project “Decision Behaviour Under Uncertainty of Commercial and Industrial Companies in the Contracting for Supply in Alberta’s Electricity Market” on June 1, 2023.

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TABLE of CONTENTS

LIST of TABLES

LIST of FIGURES

EPIGRAPH

"A better understanding of these heuristics and of the biases
to which they lead could improve judgments and decisions
in situations of uncertainty."

Tversky & Kahneman, 1974, p.1131

CHAPTER 1 - INTRODUCTION

Commercial and industrial companies operating in Alberta have overwhelmingly moved from utility electricity supply since complete deregulation in 2001, with approximately 95% of the electricity purchased by commercial and industrial companies now sourced from Retail Energy Providers (MSA, 2024). Retail Energy Providers (REP) are independent companies that offer term contracts for the supply of electricity or natural gas in deregulated markets to end-use consumers. Contracting electricity supply with a REP provides the consumer access to fixed prices, terms up to five years, and the negation of certain regulatory costs.

Commercial and industrial companies are presented with a distinct choice in contracting for the supply of the electricity commodity from a REP. They can commit to a single fixed price that is constant for the defined term or a variable price that is evidenced over the period. The fixed-price product establishes a known supply cost for the chosen period, while the cost associated with the variable-price product changes monthly. The certainty afforded by the fixed-price product contrasts with the uncertain outcome of the variable-price product. The optimal outcome resulting from electricity cost minimization can only be assessed at the conclusion of a particular period as the variable-price product is based on prospective electricity prices. The decision between the fixed-price and variable-price alternatives is thus made with a view to the future. Determination of the lowest realized cost with the contracting for electricity supply at an illustrative fixed price of 9¢/ kilowatt hour (kWh) for a 5-year term can only be made at contract maturity upon the settlement of the variable price for every month over this 5-year period. The fixed-price product produces a lower cost when the variable

price averages higher, like 10¢/kWh, and, conversely, is more expensive at lower average variable prices, like 8¢/kWh.

The REP has a definite preference for the commercial and industrial company to select the fixed-price product as the profitability is substantially higher than for the variable-price alternative. The fixed price offered to the commercial and industrial company is based on an opaque market price, allowing for a higher margin than the competitively visible adder payable on top of the variable price. Based on evidence gained through my tenure leading two of the five largest Alberta electricity Retailers, the fixed-price product delivers a margin that ranges widely from two to ten times greater depending on the competitiveness of the situation and is generally higher for lower volume consuming commercial and industrial companies. The REP is financially motivated to encourage the consumer to contract the fixed-price product to avail of this meaningful comparative profit opportunity.

My study will investigate the drivers of the choice of a fixed-price contract rendered by the actual actors who have made this real-world electricity supply decision. Loss aversion, the concept that “losses loom larger than gains” (Kahneman & Tversky, 1979, p.279) has been stated to be “among the most widely accepted ideas in the social sciences" (Gal & Rucker, 2018, p.497). Therefore, I ask, is an aversion to losses the only behaviour influencing the choice of a fixed-price contract by the responsible individual at commercial and industrial companies in Alberta?

Loss aversion, one component within Kahneman & Tversky's Prospect Theory originally proposed in 1979, is “one of the most fundamental and well-documented biases” (Rozin &

Royzman, 2001, p.306). Encapsulating risky and uncertain choices, the concept that losses have a greater impact than gains with a similar magnitude is "considered the most robust and important finding of behavioural decision theory" (Gal, 2006, p.23). In making a choice where at least one alternative involves an element of risk or uncertainty, individuals have shown an overwhelming preference to avert losses when there is a high probability for a gain, even when the risky option yields a higher expected value (Tversky & Kahneman, 1992). As colloquially stated by Thaler (2000, p.137) in confirmation of Tversky & Kahneman's (1991) findings, "losses hurt about twice as much as gains make us feel good".

Loss aversion has been found to be moderated by experience (Erev et al., 2008) and consideration of recent results (Barron & Erev, 2003). Knowledge of the electricity market, familiarity with the product alternatives, or results of the previous supply contract could reduce, but not completely negate, the extent of the underweighting of the probable variable-price alternative and the influence of loss aversion on the decision.

When choosing an electricity supply contract, the fixed-price product provides a known price for the contract term. This is in contrast to the variable-price alternative, where the price paid for the electricity is only realized at the end of the contract term. With the fixed price representing the expectation of the future variable price, the choice can be denoted as the payment of 100% of a known cost versus the payment of 50% of a potential higher cost or 50% of a potential lower cost. An underweighting of the probability of lower variable prices could lead to a preference for the fixed-price contract with the certainty afforded by the fixed-price contract increasing the "aversiveness of losses" (Kahneman & Tversky, 1979, p.269).

I recognize that the choice of a fixed-price electricity supply contract may be a more complex, individualistic process that could be influenced by an assortment of considerations, either independently or in combination. These include rational thought, bounded rationality, or a host of systematic errors, including loss aversion.

Researchers have proffered an extensive list of biases that could enter the decision-making process, including status quo, gamblers fallacy, anchoring, undesirability of a negative event, certainty, and availability (Montibeller & von Winterfeldt, 2015). Retaining the previous contract or the desire for certainty could separately, jointly, or in combination with other factors, instigate the choice of a fixed-price contract in the absence of, or in combination with, loss aversion. As surmised by Conlisk (1996, p.672), individuals are "capable of a wide variety of substantial and systematic reasoning errors relevant to economic decisions".

Furthermore, bounds on the decision maker's rationality may limit the effort devoted to the choice of the fixed-price contract, producing a deemed satisfactory decision (Conlisk, 1996). Capacity limitations with information gathering and deliberation may lead to a choice that is easy or quick, minimizes evaluation, or is based on the views of others. Evidence of boundedness, multiple varying factors, or individual differences may show that decisions are "multi-criteria processes" (Nwogugu, 2006, p.451) that challenge the identification of a definitive motivating rationale and negate generalizations.

Examining this real-world choice is a departure from looking at hypothetical choice problems that is the most prevalent means of assessing decision behaviour amongst researchers (Kahneman & Tversky, 1979; Thaler et al., 1997; Gal, 2006; Erev et al., 2008; Ert &

Yechiam, 2010; McGraw at al., 2010; Abdellaoui et al., 2013; Walasek & Stewart, 2015; Erev et al., 2017; Mukherjee et al., 2017; and Levy & Levy, 2002). In combining a real-world decision in the choice of a fixed-price electricity supply contract with the real-world actors responsible for making this decision, I will investigate the generalization of the laboratory experiments and extend the research on decision behaviour with increased insight into the underlying drivers.

A better understanding of the behaviours driving the choice of a fixed-price electricity supply contract by the responsible individual at commercial and industrial companies in Alberta would support the marketing of the fixed-price product to this sizeable segment of commercial and industrial companies currently paying variable prices. In turn, it would provide the REP with additional prospects for contracting an increased proportion of the more lucrative fixed-price product.

The paper is organized into the following chapters. Chapter 2 sets the scene with a discussion on the market for competitive electricity supply in Alberta and the fixed-price electricity supply product. Chapter 3 reviews the academic literature on decision-making under uncertainty, emphasizing loss aversion bias. Chapter 4 describes the survey, the means of data collection, and the investigative techniques of factor analysis and qualitative comparative analysis. Chapter 5 substantiates the representativeness of the survey participants and presents the findings of the Qualitative Comparative Analysis. Finally, Chapter 6, discusses the findings in relation to the academic research on decision-making, addresses limitations to the study, draws conclusions on the conditions influencing the fixed-price electricity supply contract, examines managerial implications, and proposes future research opportunities.

CHAPTER 2 - CONTEXT

The market for full competitive electricity supply in Alberta opened in 2001, with end-use consumers conferred the choice to receive commodity supply from the default utility or a Retail Energy Provider (REP). REPs are private companies that offer term contracts for the supply of electricity or natural gas in deregulated markets to end-use consumers that emerged to compete with the incumbent utilities for customers for this commodity supply. The other functions in the provision of electricity, namely distribution and transmission, remain regulated and provided by local and provincial utilities.

According to Alberta's Market Surveillance Administrator (2024), as of December 2023, REPs supplied approximately 52% of the 1,951,607 total sites across the province, representing almost 90% of the total consumption of 4,196 GWh. Electricity consumers within Alberta are delineated by annual consumption, with sites utilizing less than 250 MW of electricity per year, comprising residential and small commercial businesses, afforded additional protections under the Province of Alberta's Consumer Protection Act, thereby creating a two-tier market where REPs can offer supply to one or both segments. The move from regulated utility supply has been most pronounced for large commercial and industrial consumers over the 20 years since deregulation, with more than 72% of the available sites and 95% of volume, representative of 69% of the total Alberta load, having transitioned electricity supply from utility service to one of the competing REPs.

REPs offer a fixed-price electricity contract that allows the consumer to lock in a specific price for up to five years instead of accepting the utility's monthly floating rate. Contracting the

fixed-price product establishes a single price for electricity supply, provides cost consistency, and negates the possibility of having to accept potentially higher future prices. The fixed price offered by the REP reflects the cost to procure the electricity in the open market for the requested term, the costs to service the contract, and the desired margin. REPs are required to post collateral with the Alberta power grid manager (Alberta Electricity System Operator or AESO) in the absence of offsetting generation and the distribution utilities in the absence of a deemed investment grade credit rating, with these costs incorporated into the fixed price. The margin encompasses the stated business return and any additional value the salesperson can garner. At a representative 9¢/kWh cost of supply evident in mid-2024, a collateral cost of 0.1¢/kWh, and a margin of 0.8¢/kWh, the consumer would be presented with a 9.9¢/kWh fixed price offer.

Consumers also avoid certain regulatory costs when not on utility service, making a variable-price product, where the price fluctuates monthly like the utility rate, also a comparatively favorable REP offering. The electricity price paid by consumers with a variable-price contract is the average hourly electricity market price realized throughout that month as calculated by the AESO at the end of each month. The REP's variable-price contract offer is therefore based on the monthly AESO index price as supply does not need to be procured in advance by the REP and incorporates just the service costs and the margin. A typical offer presented to the consumer, comprised of a collateral cost of 0.1¢/kWh and a margin of 0.2¢/kWh, would be the realized monthly AESO index price + 0.3¢/kWh. With the fixed-price product representative of the sum of the expected monthly AESO index prices, the expected value of the two alternative products is equal.

Consequently, REPs offer a fixed-price product and a variable-price product to electricity consumers to entice them to move from utility service, renew an existing contract, or switch to a competing REP. However, as evidenced during my tenure as the executive lead of two of the five largest REPs serving the Alberta electricity consumer, the margin opportunity for the REP is much greater with the fixed-price product than for the variable-price alternative. While ranging widely, the fixed-price product delivers a comparatively larger value from two to ten times depending on the competitiveness of the situation and is generally higher for lower volume consuming commercial and industrial companies. The margin in a fixed-price product offering is contained within the fixed price presented to the customer and is based on an opaque forward market. Conversely, the margin in a variable-price product is visible to the consumer. The margin in a 9.9¢/kWh fixed-price offer is not discernable while obvious in the AESO + 0.3¢/kWh variable price. For a consumer like a hockey arena or a senior's housing complex, with annual utilization approximating 2 million kWh, every 0.1¢/kWh of margin represents $2,000 annually or $10,000 over a 5-year period.

REPs allow, and even encourage, consumers to switch from a variable-price contract to a fixed-price contract at any time upon payment of an administrative charge that is usually under $100 as REPs have a monetary preference for the fixed-price contract and the purchase of supply for variable-price contracts is on a just-in-time basis. For cancellation of a fixed-price contract, the REP imposes a liquidation cost, in addition to the administrative charge, as the REP is exposed to market prices having purchased supply to fulfill the fixed-price contract. The liquidation cost depends on the price received by the REP for the sale of the supply previously purchased to fulfill the consumer contract. For example, a consumer that has contracted at a

price of 6¢/kWh and desires to cancel after one year of a 5-year contract will have to pay a liquidation cost if the price available to the REP to sell this now unrequired volume is less than 6¢/kWh for the remaining four years. There is no liquidation cost when prices have moved higher than the contract price, as the REP gains on the sale of the previously contracted consumer volumes at this higher price. However, consumers tend to retain their fixed-price contract when prices subsequently increase, so contract cancellation usually results in a liquidation cost. This liquidation costs acts as a deterrent to the cancellation of a fixed-price contract as the REP wants to maintain the margin for the entire contract term.

In contracting for electricity supply, commercial and industrial companies can transact directly with a REP or employ the services of a broker. Brokers advise companies on procurement strategies for electricity supply for the company's Alberta operating facilities and then coordinate contracting this supply with a REP. The parties to the electricity supply contract are the customer and the REP, with the broker providing the customer access to multiple prospective REPs and assisting with securing the most desirable contract terms. The broker receives a fee for this service that is typically a set amount per unit of volume of electricity consumed, like 0.4¢/kWh. The fee can be incorporated into the customer's fixed-price offer thereby also providing the broker with an opportunity for higher margins that the alternative variable price product. The REP remits the service fee to the broker upon customer payment of the monthly electricity bill that is produced by the REP.

The electricity supply contract is executed by a company representative holding the requisite authorization. The position held by this representative varies greatly and is related to the company size. For smaller companies, representative individuals would include the owner,

President, CEO, or CFO. As the company increases in size, responsibility moves to lower levels within the organization, and the company representative can include the Treasurer, Commercial Manager, Energy Manager, and Analyst.

CHAPTER 3 - LITERATURE REVIEW

Loss Aversion

Daniel Kahneman and Amos Tversky, in multiple collaborations examining decision behaviour and the incongruities with expected utility theory, concluded that individuals, when confronted with a choice, assess gains and losses differently (Kahneman & Tversky, 1979; Tversky & Kahneman, 1991 & 1992). Individuals exhibited a propensity to avoid risk when evaluating gains of high probability and losses of low probability while seeking risk when confronted with high-probability losses and low-probability gains (Tversky & Kahneman, 1992). An overwhelming willingness to accept a 90% chance of receiving 3000 monetary units instead of a 45% chance of winning a larger amount of 6000 countered the strong preference for a 45% chance of losing 6000 to a 90% chance of losing 3000 (Kahneman & Tversky, 1979, p.268). Individuals favored the greatest opportunity to win some money, were reluctant to accept the risk of winning a larger monetary amount, and comfortable in accepting risk to reduce the possibility of losing any money. This behaviour was evident in both risky and uncertain choices, as differentiated by the presence and absence of set probabilistic outcomes (Tversky & Kahneman, 1992).

Individuals deviate from risk aversion for gains and risk seeking for losses when a low probability is assessed to the outcome (Tversky & Kahneman, 1992). The decision to participate in a lottery differs from a gamble that presents a high probability of a gain. The very small chance of winning a desirable prize is illustrative of risk-seeking for gains. The prospect of winning is preferred to the expected value (Tversky & Kahneman, 1992). Additionally, when the probability is assessed as low, individuals deviate from seeking risk when confronted with losses. The willingness to pay insurance premiums reflects this risk aversion to losses. Individuals desire protection in the event the unlikely outcome transpires and are willing to pay for such assurance.

Loss aversion is characterized by an "asymmetry between gains and losses" (Tversky & Kahneman, 1992, p.298), with the displeasure associated with a loss greater than the pleasure resulting from an equivalent gain (Tversky & Kahneman, 1991; Rabin & Thaler, 2001). The dissatisfaction from the unknown costs associated with higher future prices as compared to the satisfaction of reduced costs on lower future prices could lead to a preference for the fixed-price product. Gambles of equal gain and loss magnitude and probabilities are "distinctly unattractive" as "losses loom larger than gains" (Kahneman & Tversky, 1979, p.279). A willingness for win-lose gambles with equivalent probabilities "will only be acceptable" when the gain more than doubles the loss. (Tversky & Kahneman, 1992, p.310). Gains require twice the attractiveness as corresponding losses (Tversky & Kahneman, 1991), with "aversiveness" increasing with size (Kahneman & Tversky, 1979, p.279). The unwillingness to accept a 50/50 chance to win or lose $100 is amplified with a value increase to $10,000.

The general principle that "bad is stronger than good" is "consistently supported" by evidence drawn from 14 topic areas ranging from relationships, learning, emotions, forming impressions, and feedback (Baumeister et al., 2001, p.354). The effect on the individual is greater for negative, as opposed to positive, "valenced events" deemed similar (Baumeister et al., 2001, p.323). In a review of the literature on negativity bias, Rozin and Royzman conclude that "negative events are more salient, potent…than positive events", with the concept of negative potency expressed as having broader application beyond the limitation of requiring "an objective metric of value" (2001, p.297). Employing a "greater weight" to negative, compared to positive, consequences is warranted (Tversky & Kahneman, 1991, p.1045; Rozin & Royzman, 2001, p.296). The prospect of higher future prices leading to increased electricity costs in the absence of contracting for a fixed price would represent a negative event. A preference for a fixed-price electricity contract would suggest a sensitivity to losses with the possibility of future variable prices resulting in increased costs representative of a loss.

The welfare emanating from a decision is expressed in terms of value (as opposed to utility) with the concepts of loss aversion and diminishing sensitivity defining the shape of the value function and the weightings assigned to each outcome (Tversky & Kahneman, 1992). The increasing sensitivity to losses and the decreasing sensitivity to gains, the reflection effect, leads to a S-shaped value function that is concave for gains and convex for losses as depicted in Figure 1 (Tversky & Kahneman, 1991). The slope is greater for losses compared to gains (Kahneman & Tversky, 1979) with marginal changes in gains or losses decreasing relative to size (Tversky & Kahneman, 1992). The value function is "steepest" at the reference point, indicative of a more pronounced sensitivity to changes closest to this assessment (Kahneman & Tversky,

1979, p.279). The asymmetry evident in the curve conveys loss aversion and the preference for gains over losses (Tversky & Kahneman, 1992). As stated by Tversky and Kahneman (1991, p.1057), "the value function appropriately reflects three basic facts: organisms habituate to steady states, the marginal response to changes is diminishing, and pain is more urgent than pleasure."

See Figure 1 about here

The outcomes are evaluated relative to a reference point as opposed to absolute values and are often equated to the current asset position or the status quo (Kahneman & Tversky, 1979). A decrease in take-home pay due to an unexpected tax would be viewed as a loss instead of a reduced gain (Kahneman & Tversky, 1979). The reference point can also be determined by expectations, goals, or social comparisons (Koszegi & Rabin, 2006). A prospective employee expecting a $60,000 salary will view a $50,000 offer as a loss of $10,000 (Koszegi & Rabin, 2006). In choosing a fixed-price electricity contract, individuals may define the reference point as the previous contract price, the current REP provided fixed price, the current variable price, or some other value like a budget price, with the assessment of the potential impact based on this chosen reference.

The value function will vary depending on the application of subjective decision weights as opposed to objective probabilities that exhibit differential weighting for gains and for losses (Tversky & Kahneman, 1992). A high probability assessed to higher future prices or a low probability assessed to lower future prices could lead to contracting the fixed-price alternative

as the fixed-price product would be judged to cost less over the specified term. The increased sensitivity to changes as the probabilities tend towards 0 or 1 leads to a non-linear inverse s-shaped weighting function that is "steepest near the endpoints and shallower in the middle" (Tversky & Kahneman, 1992, p.305), as shown in Figure 2.

See Figure 2 about here

At the upper extreme, the decision weight equates to the expected probability, explaining the desire for certainty (Tversky & Kahneman, 1992). The presence of a certain outcome “increases the aversiveness of losses as well as the desirability of gains” (Kahneman & Tversky, 1979, p.269). Individuals greatly prefer a guaranteed gain of 3000 monetary units to an 80% chance of receiving 4000 and a 20% chance of receiving 0 but willingly accept a 20% chance for 4000 against a 25% chance for 3000 (Kahneman & Tversky, 1979, p.266). Contrastingly, individuals are more willing to accept the probability of a larger loss than incur a certain loss (Kahneman & Tversky, 1979). A certain outcome is desired for gains but not losses as risk-seeking is preferred (Tversky & Kahneman, 1992). The assured cost afforded by the fixed-price product could increase the aversion to a potential loss resulting from higher future prices and lead to contracting the fixed-price product.

As a descriptive model of choice, Kahneman and Tversky’s (1979) prospect theory, incorporating loss aversion, predicts what an individual will do when faced with a decision under risk or uncertainty. Professional golfers are significantly more likely to putt for par (Pope & Schweitzer, 2011) as loss aversion is viewed relative to changes to a reference point with a

par representative of the golfers' reference point. Taxi drivers are more likely to stop work sooner on days when the target daily earnings are reached (Camerer et al., 1997) as earning less than the target is more painful than earning more than the target is pleasurable, with the reference point being the driver's expectations (Koszegi & Rabin, 2006). Homeowners previously purchased internal telephone wiring protection (Cicchetti & Dubin, 1994), overweighting outcomes that are unlikely to transpire.

The choice of an electricity supply contract has a financial consequence, and support for loss aversion in this decision is evident from research in the field of finance. Individuals have been shown to prefer insurance products with a lower deductible and higher premium despite the limited chance of paying any deductible (Sydnor, 2010); investors have displayed a preference to hold out-of-the-money stocks and sell in-the-money stocks (Odean, 1998; Frazzini, 2006); investors with shorter evaluation periods have tended to allocate an increased proportion to lower risk, lower return, investments and earned an overall lower return (Thaler et al., 1997); individuals have been considered reluctant to evade taxes despite the low probability of an audit (Dhami & al-Nowaihi, 2007); and the premium attributed to equities to attract monies from lower risk alternatives with an overweighting of adverse market events (Benartzi & Thaler, 1995). Finance professionals with training in risk diversification and asset valuation who receive continual evaluation of investment performance still evidenced loss aversion, albeit playing a lesser "role in explaining financial decisions" (Abdellaoui et al., 2013, p.426). However, considerable individual-level variation indicated contrary risk-seeking behaviour for many respondents (Abdellaoui et al., 2013).

Moderation of Loss Aversion

As a driver of individual choice, loss aversion may be evident in specific contexts, as opposed to universal application, as "losses appear to loom larger than gains in some settings, but not in others" (Ert & Erev, 2013, p.214). For decisions involving low stakes, individuals do not assess losses greater than gains, with loss aversion evident only when the value or the consequences attributed to the decision are deemed sufficient to warrant consideration (Harinck et al., 2007; Abdellaoui et al., 2013; Ert & Erev, 2013; Mukherjee et al., 2017). Individuals are more familiar with judging decision alternatives involving small amounts and are more comfortable with the potential impact (Harinck et al., 2007). This reduces the weighting attributed to the negative outcomes and alters choice behaviour towards an increased willingness to accept the possibility of these unfavorable outcomes at low magnitudes. The choice could even result in reverse loss aversion for small monetary amounts where gains emerge larger than losses (Harinck et al., 2007). In choosing a fixed-price electricity supply contract, the decreased weighting attributed to higher future prices where the cost or the impact is deemed insignificant would suggest a diminished sensitivity to losses.

Experience has also been found to moderate the effect of loss aversion on decision-making as gains and losses can be more equally weighted with experience (Erev et al., 2008). Individuals drawing from experience can exhibit risk seeking for losses due to diminished sensitivity, especially for larger payoff amounts (Erev et al., 2008), and may tend to underweight low probability outcomes as they are comparatively comfortable that such an outcome will not happen to them (Hertwig et al., 2004; Erev et al., 2008). Experience has been shown to "mitigate deviations from rationality" in the canvassing of "real financial actors" with

trading experience (Abdellaoui et al., 2013, p.412) and disregard “market anomalies” in comparing actions of both professional sports card dealers and everyday consumers (List, 2003, p.71). Loss aversion, albeit lessened, still evident as individuals may still employ inaccurate decision weights despite experience (Tversky & Kahneman, 1992).

With decisions “rely on recent outcomes” (Barron & Erev, 2003, p.217) and impacted by previous gains and losses (Ritov & Barron, 1992), experience with the performance of the most recent contract may be the driving factor in the new contract choice. Holders of a fixed-price contract may be more inclined to transact another one if the current fixed-price contract was resulting in lower costs. Such comparatively higher historical variable prices could also instigate a move to a fixed-price contract by variable-price contract holders.

Differing Influences

Decisions are complex and “multi-criteria processes” (Nwogugu, 2006, p.451) with the evaluation incorporating any number factors that challenge the identification of a consistent motivation. The most prominent behaviours exhibited in a specific decision may differ by the decision maker, and the factors contributing to a particular decision may even change when the decision maker is subsequently faced with the same decision at a future time (Levy & Levy, 2002).

Rationality would comprise one of the multiple, differing factors that drive decision behaviour when the choice is “influenced by reason” (American Psychological Association, n.d.). For instance, locking in a fixed price following an analysis of the historical price paid for

electricity and its impact on the company's financial performance would suggest a decision guided by reason.

Decisions can be influenced by a "wide variety of substantial and systematic reasoning errors" (Conlisk, 1996, p.672), with loss aversion being just but one such bias (Montibeller & von Winterfeldt, 2015). A bias can be considered a "predisposition toward making a judgemental error" (Shefrin, 2009, p.11) that causes individuals to "draw inferences or adopt beliefs where the evidence…is either insufficient or absent" (Haselton et al., 2015, p.725). Biases are "substantial and important behavioral regularities" in decision-making that are not easily negated (Conlisk, 1996, p.671). As "an ever-present ingredient of strategic decision making" (Das & Teng, 1999, p.757), biases are evident in all four phases of the decision process as delineated by Fredrickson (1984). Any number of biases could be evident in the choice of a fixed-price contract, including the continuance with the fixed-price product based on previous financial results, a desire for certainty afforded by the fixed-price product, a preference for the fixed-price product, or an avoidance of regret.

Continuing with the existing product is possible for those commercial and industrial companies that have previously contracted with a REP. Individuals exhibit a propensity to retain the status quo with a greater than expected frequency reflecting "cognitive misperceptions" or "psychological commitment" that can, for the individual, show consistency, decisiveness, control, avoid regret, or consider sunk costs (Samuelson & Zeckhauser, 1988, p.33). In two field studies, Samuelson and Zeckhauser (1988) found that more tenured employees preferred to remain with an existing health plan despite minimal cost opportunities to change, and retirement plan participants kept their initial allocation between bond and equity funds despite

the rate of return variations. As "preferences tend to be fuzzy and ill-defined," individuals are challenged in evaluating choice alternatives, resulting in an inclination to resist change and maintain the status quo (Gal, 2006, p.26). Any movement from the status quo would necessitate a "psychological motive to do so" (Gal, 2006, p.25), lending to the continuation of the existing product choice. Loss aversion can justify retaining the status quo when "the disadvantages of a change loom larger than its advantages" (Kahneman et al., 1991, p.196). Loss aversion is potentially contributory; however, status quo bias is not predicated on loss aversion (Samuelson & Zeckhauser, 1988).

Bounded Rationality

Limitations of the decision maker's knowledge and capacity can lead to the choice of an alternative that is deemed reasonable (Simon, 1972). As individuals have "neither the senses nor the wits to discover an optimal path" (Simon, 1957, p.270), constraints on the evaluation of the alternatives, recognition of the potential consequences, and projections for the future can result in individuals opting for the satisfactory alternative (Simon, 1972). The rationality of the individual is bounded by the comparatively much smaller capacity in "formulating and solving" a choice problem than the magnitude of the problem (Simon, 1957, p.198). In a very relatable conclusion from Simon (1990, 6), "If the game of chess, limited to its 64 squares and six kinds of pieces, is beyond exact computation, then we may expect the same of almost any real-world problem".

Bounded rationality is a "needed extension" of "economic reasoning" that produces a decision "cheaply whereas more elaborate approaches would be unduly expensive" (Conlisk, 1996, p.671-2). Individuals with "limited experience or training" in the purchase of a large appliance may limit their evaluation as the costs to acquire the necessary knowledge may be considered "large relative to the potential benefits" (Conlisk, 1996, p.672). With the decision requiring a greater capacity to assess than can be accorded by the individual, bounded rationality can lead to the assumption of heuristics, or rules of thumb, to reach an "adequate solution" (Conlisk, 1996, p.671). The decision assessment is “mediated” by heuristics with the substitution of immediately available and related attributes (Kahneman & Frederick, 2002, p.53). Indeed, some choice decisions may be "more naturally explained as a reflection of simple heuristics" (Erev et al., 2017, p.371) emanating from "deliberation cost, incentives, and experience" (Conlisk, 1996, p.672).

Reliance on decision heuristics can lead individuals to make systematic errors when presented with a choice problem (Tversky & Kahneman, 1974; Conlisk, 1996; Gilovich & Griffin, 2002). As "strategies that people use deliberately in order to simplify judgemental tasks" (Gilovich & Griffin, 2002, p.4), heuristics are "sensible estimation procedures" (Gilovich & Griffin, 2002, p.3) and "natural assessments" (Tversky & Kahneman, 1983, p.294) that that are "critical to problem solving" (Conlisk, 1996, p.671). Heuristics can lead to "highly economical" decisions (Tversky & Kahneman, 1974, p.1124) but can also introduce cognitive biases (Kahneman & Tversky, 1974; Bazerman & Moore, 2012; Conlisk, 1996; Das & Teng, 1999). As "simplifications…for purposes of choice introduce discrepancies" (Simon, 1957, p.256), there is

a relationship between bounded rationality, biases, and the decision (Hirshleifer, 2008 as cited in Acciarini et al., 2021).

Limitations with the decision maker's processing capacity or knowledge in the choice of a fixed-price contract could lead to a reliance on select pieces of imperfect information where the most favorable outcome is conditional on unknown future prices. Advice from a colleague, challenges in evaluating the two alternatives, the ease of retaining the current product, or the desire to make a quick decision could all lead to the rendering of an acceptable choice.

As individuals “cope with an often complex decision environment” (Starmer, 2000, p.350), the formation of “generalizations about risk-taking preferences is difficult” (Thaler & Johnson, 1990, p.660). The factors or combination of factors driving the selection of a fixed-price contract may vary by individual and circumstance challenging the isolation of a consistent single factor or group of factors. Utility maximization, the effect of boundedness, the mediation of heuristic(s), or the presence of bias(es) could all contemporaneously weigh on the choice decision. A “contextualized perspective” is necessary when evaluating choice decisions (Gal & Rucker, 2018, p.498) as the varied and complex decision process “cannot be defined accurately” (Nwogugu, 2006, p.451).

Empirical Research

Hypothetical choice problems presented to university students, university faculty, and, more recently, crowdsourced participants, have been the most common means employed by researchers in assessing individual decision behaviour. Such hypothetical choices offer the

"simplest procedure" to investigate a "large number of theoretical questions" under the "assumption that people often know how they would behave in actual situations of choice" (Kahneman & Tversky, 1979, p.265). In my review of 23 studies covering loss aversion and decisions under various conditions, including risk, experience, and feedback, all of the studies posed hypothetical choice problems with university students the chosen participants in more than 80% of these studies (Table 1 – Empirical Research Review). This is evident in the work on prospect theory by Kahneman and Tversky (1979) and Tversky and Kahneman (1992), Novemsky and Kahneman (2005) on loss aversion boundaries, Thaler et al.'s (1990) investigation of decision framing, the various collaborations on decision making involving Erev, Ert and Yechim (Erev at al., 2008; Ert & Yechim, 2010; Erev at al., 2017), Mukherjee et al. (2017) on the effects of magnitude on loss aversion, and Harinck et al. (2007) on judged feelings of loss aversion.

See Table 1 about here

The hypothetical questions mostly take the form evident in the seminal Kahneman and Tversky (1979) study, where the respondent is charged with choosing one of two available alternatives where at least one comprises a risky or uncertain outcome. A representative monetary example would offer the receipt of a guaranteed 450 units versus a 50% opportunity to win 1,000 units with an equal 50% chance of receiving nothing (Kahneman & Tversky, 1979, p.264). A non-monetary equivalent presents the choice between the guaranteed receipt of a 1-week England tour or a 50% chance for a 3-week European tour (Kahneman & Tversky, 1979, p.267). A comparable form is evident when framing the choice as an investment opportunity

with the allocation of funds amongst two portfolios to reflect representative decisions of a financial-oriented audience (Thaler et al., 1997; Gal, 2006).

Sourcing subjects with a particular background or expertise has been deemed central to furthering inquiry into Prospect Theory, and some efforts have been made in this regard. Abdellaoui et al. (2013) found support for prospect theory among private bankers and fund managers, albeit with reduced loss aversion. Levy and Levy (2002) engaged financial analysts and fund managers in addition to university students and faculty and concluded that loss aversion may be restricted to positive or negative domains. Chesson and Viscusi (2003) deduced that timing uncertainty may be processed similarly to probability uncertainty from inquiries on lotteries and storm timing posed to North Carolina business owners and managers. Moreover, List questioned "professional dealers" in addition to "ordinary consumers" and inferred that experience could negate loss aversion (2003, p.42). While examining real-world actors, these studies remain representative of a laboratory experiment as the respondents were presented with hypothetical choice alternatives.

CHAPTER 4 - METHODOLOGY

Survey Research

The objective of this study was to investigate the influences on the choice of a fixed-rate electricity supply contract by individuals who had made this business decision for a commercial and industrial company operating in Alberta. To achieve this, a survey was employed on those individuals charged with making this decision. Survey participants were drawn from the

commercial and industrial customers of two Alberta operating brokers who wished to remain anonymous. Sales agents employed by these brokers contacted their respective customer representatives at Alberta operating commercial and industrial companies between September 2023 and February 2024, requesting survey participation. The customer representative was responsible for executing the most recent electricity supply contract. This request was made immediately upon the successful conclusion of an electricity supply contract or as a follow-up call to a previously executed contract. Utilizing the prescribed scripts outlined in Appendix A, the sales agent introduced the study, apprised of the consent requirement, advised of the anonymity of responses, and requested participation. Upon agreement from the customer representative to partake in the survey, an email containing a brief introduction and a link to the survey was sent by the sales agent to the customer representative. The survey software provider, Qualtrics, assured the protection of the identity of the participants and follow-up calls were not made as individual identities were not tracked.

Participants were presented with 15 questions that characterized a possible behaviour that could have influenced the electricity supply decision. A sample of one of the questions was: Looking at your current electricity supply product choice (fixed-price or floating price), to what degree was the unfavorable financial impact of higher prices important in your choice? All questions seeking to identify the drivers of the most recent product selection and a unique identifier for each question to facilitate analysis and display are listed in Table 2.

The behaviours represent three constructs supportive in interpreting the findings: rational behaviour, bias, and boundedness. Results demonstrating a significant influence of the unfavorable financial impact of higher prices and an expectation of the future price of

electricity would reflect a loss aversion bias. An additional presence of experience would reveal that loss aversion may be moderated under certain circumstances. An outcome revealing an ease of retaining the previous product choice due to difficulty in evaluation would indicate boundedness leading to bias. The constructs associated with the respective survey questions are also shown in Table 2.

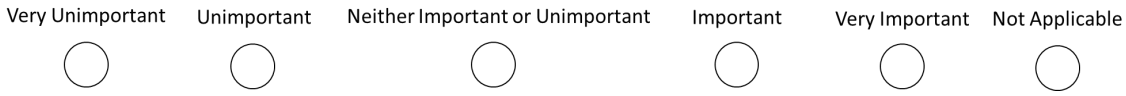
See Table 2 about here

The questions were adapted from the behaviours and constructs reflected in the academic literature and represented a balance between addressing a sufficient number of plausible variables for the desired constructs without being overly demanding of the participants. Only the questions, not the constructs, were shown to the participants, and there was no expectation that the participants would distinguish the constructs from the questions posed.

To signify the ordinal importance of each of these behaviours, participants were presented with five possible responses on a Likert rating scale and the option to state that the factor was not applicable. The Likert rating scale, as defined by the American Psychological Association (n.d.), is a "direct attitude measure that consists of statements reflecting strong positive or negative evaluations of an object". This scale allowed respondents to indicate the degree of importance as very important, important, unimportant, very unimportant, or neither important nor unimportant. A sample question is presented below. The entire survey can be viewed in Appendix B.

Looking at your current electricity supply product choice (fixed-price or floating-price), to what degree was the following important in your choice:

The unfavorable financial impact of higher prices



To gauge representativeness, participants were asked to supply company classification details (industry, revenues, and main location), electricity data (annual electricity cost and business impact), and demographic information (corporate title, age, gender). Participants were also requested to indicate their most recent product choice, the contract term, their prior product choice, the time since this most recent decision was made, and the financial performance of the current and previous product choice to provide context for the responses on the factors influencing the choice of the electricity supply product.

Factor Analysis

With 15 variables, factor analysis was employed to "summarize the interrelationship among variables" (Gorsuch, 1983, p.2) and reduce "the number of variables to a more reasonable subset" (Gorsuch, 1983, p.90) for the application of Qualitative Comparative Analysis. Factor analysis infers a relationship between the observed variables (Watkins, 2018) that "contain as much of the information in the initial set of the variables as possible" (Gorsuch, 1983, p.90). The results from the factor analysis can establish the constructs in the choice of a fixed-price electricity supply contract and “can be used as variables in subsequent analyses” (Henson & Roberts, 2006, p.394).

Factor Analysis – Date Adequacy

Utilizing the Stata statistical software, three independent tests confirmed the suitability of the respondent data for factor analysis. Bartlett's Test of Sphericity indicated a relationship amongst variables (p-value=0), and the Kaiser-Meyer-Olkon (KMO) Measure of Sampling Adequacy revealed the presence of latent factors with a reading of 0.64 above the recommended metric of 0.50 as suggested by Hair et al. (1995). Additionally, the Squared Multiple Correlation showed that all fifteen variables could be retained for the initial analysis given an absence of singularity (not tending towards 0) and multicollinearity (not tending towards 1) (Tabachnick & Fidell, 2007, as cited in Yong & Pearce, 2013). All three test results are displayed in Appendix C.

The readily available measures of the number of cases and the ratio of cases to variables were within the wide-ranging rules of thumb for the performance of factor analysis, as noted by Williams et al. (2010). The sample of 74 survey respondents is sufficient as the ratio of cases to variables at 5:1 is within the acceptable range of 3:1 to 20:1 (Williams et al., 2010), and cases as low as 50 adequate for factor analysis (Sapnas & Zeller, 2002).

Factor Analysis - Application

For the identification of the most suitable number of factors to retain, Horn's (1965) parallel analysis, Velicer's (1976) minimum average partial method (MAP), and Cattell's (1966) scree test were employed, as recommended by Velicer et al. (2000). Recognizing that "no method…found to be correct in all situations", numerous researchers recommend employing

multiple methods (Watkins, 2018, p.230). Among these, parallel analysis and MAP are considered to be the most accurate approaches for determining the number of factors to retain (Zwick & Velicer, 1986; Eaton et al., 1999, as cited in Hayton et al., 2004) with the scree test providing a visual confirmation (Velicer et al., 2000) despite its tendency to overestimate (Zwick & Velicer, 1986).

An initial screen utilizing the conveniently available and widely adopted Kaiser criteria, expressed as eigenvalues that are >1, was dismissed and not considered in the factor retention determination. The eigenvalues account for the variance in each factor, with the most variance extracted by the first factor and successively smaller quantities of variance by subsequent factors (Watkins, 2018). Factors with eigenvalues above one are customarily retained as deemed explanatory of a sufficient degree of the variance. As an upper bound on the number of factors to retain (Hayton et al., 2004), the Kaiser criteria tends to overestimate the number of factors (Horn, 1965) and produces inaccurate results (Fabrigar et al., 1999). Indeed, Fabrigar et al. (1999) found no study where the Kaiser criteria worked well.

As a counter to the Kaiser limitation of overestimation, the parallel analysis compared simulated eigenvalues to the original eigenvalues by applying the same parameters of sample size and variables (Hayton et al., 2004) with the retention of adjusted eigenvalues that are greater than one. As stated by Hayton et al. (2004, p.194), “meaningful components extracted from actual data should have larger eigenvalues that parallel eigenvalues obtained from random data.” MAP retained the number of factors that resulted from the lowest average squared correlation realized through the iterative removal of the variance of each factor (Howard, 2016). The scree test examined the plot of the eigenvalues in descending order for

"breaks or discontinuities" (Hayton et al., 2004, p.193). The factors before the break accounted for the most variance and are considered more representative of the number of factors to retain than those factors comprising the scree or rubble.

Application of Horn's (1965) parallel analysis and Velicer's (1976) minimum average partial method (MAP) to determine the appropriate number of factors to retain resulted in the recommended retention of two factors. Specifically, with the parallel analysis, the first two adjusted Eigenvalue values, 2.73 and 1.43, were significantly above the 1.0 threshold, with the third factor, 0.83, significantly below, negating the deliberation of including a third factor and lending confidence to a two-factor solution. The results of both tests are contained in Appendix D. Cattell's (1966) scree test, evident in Figure 3, provided a visual confirmation with the rubble commencing at the third factor.

See Figure 3 about here

Factor extraction was conducted utilizing principal components analysis as the objective is data reduction (Fabrigar et al., 1999). An orthogonal varimax rotation of the factor solution was employed to resolve the misrepresentation of the true nature of the factors evident from the unrotated solution (Thompson, 1984, as cited in Kieffer, 1999). An orthogonal rotation produces a parsimonious and readily interpretable result. Varimax "minimizes the number of variables that have high loadings on each factor and works to make small loadings even smaller" (Yong & Pearce, 2013, p.84).

An oblique oblimin rotation was also performed as an orthogonal varimax rotation may "not always accurately represent" a relationship between variables and factors if the variables are correlated (Kieffer, 1999, p.80). The oblique oblimin rotation produced similar results, thereby providing confidence in selecting the more straightforward orthogonal varimax rotation.

The variables comprising the retained factors produced from the orthogonal varimax rotation were then assessed. To be considered representative of the solution, each variable should "(a) load onto their primary factor above 0.40, (b) load onto alternative factors below 0.30, and (c) demonstrate a difference of 0.20 between their primary and alternative factor loadings" (Howard, 2016, p.59). The dropping of cross-loading variables (those that load onto alternative factors above 0.30) is deemed appropriate, provided there are several strong loaders (0.50 or greater) on each factor (Costello & Osborne, 2005). Additionally, variables with communality less than 0.40 were removed from the solution (Costello & Osborne, 2005) as high uniqueness (>.0.60) indicated that the factor model explained less than 40% of the variation of each of these variables. As the classification metrics are suggestions, the impact of relaxing or firming the results of the loadings, cross-loadings, and communality of each variable was individually evaluated.

The two-factor solution that resulted from the orthogonal varimax rotation produced an initial loading of six variables on each factor utilizing a factor loading hurdle of 0.40. These twelve loading variables are denoted in circles in the Stata output in Table 3 - Rotated Factor Loadings. The three survey questions addressing the difficulty in evaluating the alternatives, avoiding regret, and soliciting advice (noevaluate, regret, and advise, respectively) were not

components of the solution. Examination of these two factors shows that Factor 1 is most highly saturated with the variables of highprice and futprice and Factor 2 is most highly saturated with the variables of retain and statusquo as loadings were >0.70.

See Table 3 about here

Six of these initial twelve variables were deemed unrepresentative of the factor analysis solution: posfin, prefer, histprice, experience, recommend, and quick. The posfin variable was dropped as a cross-loading on the first factor of 0.37 exceeded the 0.30 threshold. For the prefer variable, the cross-loading was acceptable at 0.28, but the differential between the two loadings was below the recommended 0.20 reading at only 0.14. The histprice, experience, recommend, and quick variables were eliminated as communality was less than 0.40 (Costello & Osborne, 2005). These four variables have high uniqueness (>.0.60), indicating that the factor model explains less than 40% of the variation of each of these variables. The metrics for these six affected variables are squared in Table 3 - Rotated Factor Loadings.

The remaining six variables are representative of the two-factor solution. Factor 1 is defined by a concern for the potential unfavorable financial impact of higher prices (highprice), uneasiness surrounding the future price of electricity (futprice), displeasure with the prior negative financial results (negfin), and the desire for certainty of a known price (certain). The certain variable was retained despite a cross-loading on the second factor of 0.31, which just breached the suggested 0.30 mark, as the certain variable exhibited high consistency as identified in the preliminary QCA test. Factor 2 is defined by the ease of retaining the previous

product (retain) and a preference to stick with this previous product choice (statusquo). In aggregate, the Factor 1 variables suggest an aversion to losses influenced by unfavorable historical results and a desire for certainty, while the Factor 2 variables indicate a satisfactory solution stemming from familiarity and comfort. Continuation with the previous product achieves a "level of aspiration" (Simon, 1979, p.503) that leads to the pursuit of a "satisficing path" (Simon, 1956, p.136). As "latent constructs are not observed variables themselves" (Thompson & Daniel, 1996, p.202) the two factors were labeled as loss aversion and satisficing, respectively, to adequately differentiate for the observed variables.

A factor analysis of these six variables generated a two-factor solution that explained 64.5% of the total variance in the original variables and exceeded the 50-60% hurdle suggested by Hair et al. (1995). The two-factor solution maintains a meaningful interpretation as at least two variables loaded onto each factor (Henson & Roberts, 2006). The factor analysis results and subsequent rotation are shown in Table 4 - Factor Analysis Solution.

See Table 4 about here

Qualitative Comparative Analysis

Qualitative Comparative Analysis (QCA) was employed as it is "ideally suited to capture causal complexity" (Mello, 2021, p.2) of decisions such as the selection of a fixed-price electricity supply contract. Incorporating the concepts of "conjunctural causation", "equifinality", and "causal asymmetry", causal complexity means that an outcome can be

produced from a combination of factors, that the outcome can be produced from varied combinations of factors, and that the absence of the outcome may be produced with factors not directly opposing those producing the outcome (Mello, 2021, p.69-70). QCA examines the individual groupings, or configurations, to characterize how an outcome occurs and assesses the "analytical coherence" (Marx et al., 2014, p.116) among many respondents or cases through the identification of "patterns of similarity and differences" (Ragin, 1998. P.108) with the comparative evaluation of conditions that are present and absent in each case. For QCA, a common outcome must exist across the case population. For my study, this commonality is the selection of a fixed price for the contracting of electricity supply contract.

QCA incorporates analytical procedures into qualitative case studies, lending quantitative rigor to a comparative case-study investigation. It provides a means of assessment of the survey responses to determine the conditions influencing the choice of an electricity supply contract. QCA can thus be considered a "multi method approach" (Mello, 2021, p.34) that combines beneficial aspects of qualitative and quantitative research methods while maintaining the integrity of both. According to Ragin (1987, p.69), this approach moderates the "tendency towards particularizing" of case-oriented methods and the "tendency towards abstract… generalizations" emanating from variable-oriented methods.

QCA addresses causal complexity across multiple cases to uncover logical statements through a Boolean-based analytical technique. Utilizing a minimization process, extraneous conditions and conditions that are a subset of other conditions are eliminated from the potential solution (Ragin, 1987). An extraneous condition is a factor that is the only difference between two expressions with the same outcome (Ragin, 1987). Since the outcome is

unchanged by the factor's presence or absence, the "condition is irrelevant" (Roig-Tierno et al., 2017, p.17). Boolean minimization generates varied combinations of logically based conditions, or "causal recipes" (Legewie, 2013, P.26), that lead to the outcome.

QCA also supports the classification of conditions as necessary or sufficient that are "increasingly viewed as substantively important" in research (Collier et al., 2010a, p.147). A necessary condition exists when a factor is always present when the outcome occurs with a sufficient condition existing when the outcome occurs when the factor is present. For example, if choosing the same electricity supply product as the previous choice is always evident in contracting a fixed-price supply contract, then choosing the same electricity supply product as the previous choice would be deemed a necessary condition. For sufficiency, choosing the same electricity supply product as the previous choice would lead to the contracting of a fixed-price supply contract, but other factors could also lead to the contracting of a fixed-price supply contract.

The progression of QCA to a "well-suited tool to analyze large-N samples" (Greckhamer et al., 2018, p.484) allows for effective application to the 74 cases in this study. While a greater number of cases than originally envisioned by Ragin (1987), these 74 cases are just greater than the differentiation between small-N and large-N samples (Greckhamer et al., 2018). When viewed as a large-N sample and examining the entire population is not possible, the investigation should consider a representative number of relevant cases with a common foundation (Greckhamer et al., 2018). With over 72% of the 162,730 commercial and industrial sites across the province of Alberta contracted for electricity supply (MSA, 2024), the size and dispersion of this population lead to an investigative path with a representative sample.

Qualitative Comparative Analysis – Data Transformation

Responses from each case were transformed to numeric membership scores representing the presence or absence of each variable in the choice of a fixed-price contract. Such dichotomous membership lends to the application of crisp set QCA to "identify consistent set-theoretical relationships" (Mello, 2021, p.69). With crisp set QCA, a case "belongs to a given set or it does not" (Mello, 2021, p.47).

Fuzzy set QCA, an additional calibration technique, was also considered as the grading of membership scores between 0 and 1 would recognize "the complexity in cases that naturally vary by level or degree", providing data transformation possible (Pappas & Woodside, 2021, p.2). While six possible survey responses were made available to the survey participants, the responses did not lend to such gradation. The challenge was not in assessing the very important and important responses that would be classified between 0.5 and 1 or the unimportant and very unimportant responses between 0 and 0.5 but with the neither and not applicable options. Assigning membership scores to these two responses in the middle of this scale, at 0.5, would indicate membership in both sets, according to Pappas & Woodside (2021), and this is not the case. Responses of neither or not applicable signify that the condition was not a consideration in the choice of a fixed-price contract, similar to the unimportant and very unimportant options. The two groupings representative of presence and absence were most appropriately investigated through a crisp set analysis.

The transformation was performed on the retained six variables from the factor analysis as the results from the factor analysis "can be used as variables in subsequent analyses"

(Henson & Roberts, 2006, p.394). Conducting QCA with six conditions aligns with Ragin's (personal communication, March 17, 2024) recommendation for three to eight conditions for QCA application. With six conditions, there are 2^F, or 64, possible combinations or "kinds of cases" (Ragin, 1998, p.110). Amongst the 74 respondents, there were 18 unique configurations and 46 logical remainders, or configurations without an associated case and lacking empirical evidence. Logical remainders, while not optimal, are acceptable given the impossibility of obtaining cases representative of every configuration (Jordan et al., 2011).

Responses were designated as either present or absent in the choice of the fixed-price electricity supply contract as the classification of the responses in a "useful and meaningful manner" is imperative (Pappas & Woodside, 2021, p.2). Conditions considered important, or very important, in the electricity supply decision were classified as 1 to denote presence. Conditions not contemplated in the decision, stated as unimportant, very unimportant, neither important nor unimportant, or where there was no response were set at 0 to signify absence. With the addition of the outcome represented as a 1 for a fixed price and 0 for a variable price as the first digit, this initial calibration produces a configuration, or a combination of factors, represented as a series of 0s and 1s for each respondent. As an example, the configuration for a representative respondent whose choice was based on high price, future price and certainty was 1100110. The configuration of each respondent is contained in Appendix E.

Establishing a configuration for all possible combinations of factors and linking each case with the corresponding configuration generates the "truth table" (Ragin, 1987, p.87). As the "fundamental unit of analysis" for QCA (Ragin, 1999, p.1232), the truth table defines all possible combinations and comprises configurations with associated cases and configurations without

associated cases. The truth table for the configurations with associated cases is displayed in Appendix F.

Qualitative Comparative Analysis - Application

The fsQCA software, as developed by Ragin & Davey (2002), was employed to determine the conditions leading to the choice of a fixed-price contract. The truth table data were first evaluated for the presence of individual conditions deemed necessary, and then a Boolean minimization process was applied to investigate for sufficiency. All cases were considered relevant for the minimization, with the frequency threshold set at 1 to designate the retention of all configurations with an associated case or cases. To signify configurations that are a subset of the outcome, the consistency threshold was set at 0.75, as values below 0.75 indicative of inconsistency (Ragin, 2017).

The intermediate solution was chosen to identify the combination of configurations sufficient to produce the outcome from the three solutions generated by fsQCA. The intermediate solution recognizes the potential informational value in the logical remainders, or counterfactual cases, while reducing complexity through selected simplifying assumptions that decrease the number of logical remainders in the minimization process (Legewie, 2013). Logical remainders that included any causal conditions that exhibited consistency greater than 0.90 were employed as simplifying assumptions defining the intermediate solution. Therefore, for the minimization process, the intermediate solution evaluated all observed cases and logical remainders where these necessary conditions were evident.

The intermediate solution is more parsimonious than the complex or conservative solution. The complex solution negates assumptions on those configurations without a positive outcome and “treats all logical remainder rows as false” (Mello, 2021, p.134), whereas “any remainder included in the minimization process can only make the solution simpler.” (Dusa, 2019, p.179).

Compared to the parsimonious solution, the intermediate expression reduces the reliance on the counterfactual cases by using only those logical remainders where high consistency conditions are present. While the parsimonious solution “reduces the causal recipes to the smallest number of conditions possible” (Legewie, 2013, p.14), it considers all logical remainders as leading to the outcome (Dusa, 2019).

The produced configurations were evaluated based on consistency and coverage – the “two central measures…of fit” (Legewie, 2013, p.11). Consistency "assesses the degree to which the cases sharing a given condition or combination of conditions…agree in displaying the outcome in question" (Ragin, 2008b, p.44). It reflects the extent when a condition or combination of conditions is evident, the outcome is also evident and shows the proportion of cases that contain the condition or combination of conditions that also produce the outcome (Ragin, 2006). Coverage denotes the relevancy of that condition or combination of conditions for necessary conditions (Ragin, 2006). For sufficient conditions, coverage “assesses the degree to which a cause or causal combination accounts for instances of an outcome” (Ragin, 2008b, p.44). It represents the extent to which the outcome is explained by a given condition or combination of conditions (Mello, 2021) and equates to the “number of cases following a

specific path to the outcome divided by the total number of instances of the outcome" (Ragin, 2006, p.299).

Raw and unique coverage measures were employed to evaluate the conditions produced by the intermediate solution. Raw coverage calculates the proportion of the outcome explained by each term in the configuration (Ragin, 2017). Unique coverage recognizes the potential for the explanation of any condition to come from multiple configurations and negates any overlap with the reporting of the extent to which the outcome is explained exclusively by the configuration (Ragin, 2008). The values for consistency and coverage range from 0 to 1, where 0 signifies an absence of consistency or coverage and 1 indicates complete consistency or coverage.

As the "primary measure of fit" (Mello, 2012, p.124), the consistency of each condition and configuration represented the initial assessment in determining the conditions leading to the choice of the fixed-price product. Following the recommendations of multiple researchers, the minimum threshold for consistency was set at 0.90 for necessary conditions (Ragin, 2008; Schneider & Wagemann, 2012; Legewie, 2013; Greckhamer et al., 2018) and 0.75 for sufficiency conditions (Schneider & Wagemann, 2012; Mello, 2021). The necessity threshold at 0.90 recognizes the improbability of a condition present in every case, so even if a "necessary condition is in place, the outcome is not guaranteed" (Dul, 2016, p.1516).

Once consistency was established, coverage assisted with the "empirical relevance" (Mello, 2012, p.115). The coverage measure is less stringent and, according to Legewie (2013), should not be too low. Raw coverage was deemed adequate at readings greater than 0.50

(Legewie, 2013; Mello, 2021), with solutions displaying unique coverage at or above 0.01 assessed for retention (Ragin, 2008).

Conditions within the solution configurations with sufficient consistency and adequate coverage were accepted as conditions influencing the choice of the fixed-price electricity supply contract.

CHAPTER 5 - RESULTS

The Survey

Representatives from 74 companies completed the survey. Some 84% of respondents held positions of manager, executive, and owner, with 11 respondents, or ~15%, indicating some other position within the company. Over 70% of the respondents were between 40 and 59 years old, with only three people under 30. The gender identity split was approximately two-thirds male and one-third female. Responses to the entire survey for each individual participant are contained in Appendix G – Participant Survey Responses with the demographic breakdown in Appendix H - Respondent Demographics.

The respondents represented varied industries, including multi-residential, manufacturing, hospitality, retail, energy and mining, and agriculture. No single industry sector dominated, with each comprising less than 15% of the total respondents. This is in line with Alberta's industry composition where each industry sector represents less than 16.4% of the provincial economy (Alberta Government, 2017). A majority, about two-thirds, were smaller

commercial and industrial businesses with annual revenues of $10 million or less. The remaining companies were close to evenly split between those earning between $10 million and $100 million in annual revenues and those over $100 million. Geographically, 85% of the companies had their primary business operations in the Edmonton, Calgary, Red Deer, and Grand Prairie urban areas. The annual electricity cost amongst these companies varied, with 80% spending more than $10,000 per year and, of these 60 companies, 27, or 36% of the total, incurred costs exceeding $100,000. Despite the range in costs, 68 of the 74 respondents indicated that the cost of electricity was considered significant or very significant to their company. The electricity supply decision was also deemed significant or very significant by 82% of the respondents. See Appendix I – Respondent Features for a complete itemization.

The fixed-price supply contract was preferred by respondents, with 53 out of the 74 companies, or 71%, locking in a guaranteed price. Thirty-six respondents indicated that the cost of electricity had decreased following the most recent product choice. There was a noticeable inclination for longer-term commitments, with 44 respondents (60%) choosing terms of 3 years or greater and only seven (9%) contracting for less than two years. Some three-quarters of respondents chose this supply product within the last three years, with over 40% deciding in the last 12 months. The product choice was more balanced with the previous decision, with 33 people signing a fixed-price contract and 35 choosing the monthly variable-price out of the 68 respondents who were knowledgeable of the previous decision. Forty of the 74 respondents retained the same product as the previous choice, with 23 people switching from floating to fixed, 5 changing from fixed to floating and 5 were unsure of the previous product choice. Details are contained in Appendix J - Respondent Product.

Qualitative Comparative Analysis

The QCA test for necessary conditions identified three individual conditions with consistency that exceeded the suggested threshold of 0.90, as shown in Table 5 – Analysis of Necessary Conditions. These conditions were a known price for the term of the contract (Certain), an expectation of the future price of electricity (FutPrice), and the unfavorable financial impact of higher prices (HighPrice). In over 90% of the cases where the respondent indicated any one of these conditions, the respondent chose a fixed-price contract. However, none of these three conditions were selected by all those respondents choosing a fixed-price contract as coverage ranged between .74 and .91. Therefore, these conditions are necessary but not sufficient as the presence in combination with other conditions was required to produce the fixed-price contract outcome.

See Table 5 about here

The three core conditions with consistency exceeding 0.90 - Certain, FutPrice, and HighPrice – were employed as simplifying assumptions in applying the minimization process. The intermediate solution identified six causal paths, each with a varied combination of conditions, that led to the choice of a fixed-price electricity supply contract. The solution consistency measure substantiated a convincing fit with the choice of a fixed-price contract occurring in over 92% of the cases where any of these configurations were evident. The solution coverage, at 98%, indicative of a highly relevant grouping of six configurations.

The fsQCA output itemizing these six configurations is displayed in Table 6 – Intermediate Solution. Conditions, represented by their respective identifiers, that are absent within a configuration are denoted by the ~ symbol preceding the identifier. To elucidate, the fourth path, consisting of ~NegFin*FutPrice*Certain*~StatusQuo, shows the combination of an expectation of future prices and the certainty of a known price, with the absence of a recognition of the prior negative financial results and sticking with the previous product led to the choice of a fixed-price contract.

See Table 6 about here

The explanatory power of the first two configurations is considerably greater than the remaining paths with 70% and 38% of the outcome explained by the terms in the configuration. The first configuration comprised the unfavorable financial impact of higher prices (HighPrice), the negative financial results of the previous product choice (NegFin), an expectation of the future price of electricity (FutPrice), and the known price for the term of the contract (Certain), with 41% of the choice of a fixed-price contract uniquely attributable. The second configuration, which added the ease of retaining the previous product (Retain) to the three conditions in the first configuration (HighPrice, FutPrice, and Certain), demonstrated a much lower unique contribution of 6%. This indicates an overlap in the explanation of the HighPrice, FutPrice, and Certain conditions across multiple configurations, in particular, the dominant first configuration. While explained by fewer cases than the first configuration, raw consistency for the second configuration still exceeded Ragin's (2008) suggested threshold of 0.01 as amply sufficient for the fixed-price product choice. The final four configurations, each represented by

a solitary case (unique coverage = 0.189), were not retained despite raw coverage exceeding 0.01 as the contribution was inadequate and, as Mello (2021) deduced from the work of Marx and Dusa (2011, p.27), “patterns of sufficient configurations” may present “when there are too few cases per condition”.

The two sufficient configurations each contained the three necessary conditions of price certainty, future price expectations, and the unfavorable impact of higher prices. The significance of these conditions is evident in the composition of the two sufficient configurations. The conditions of negative previous financial results and ease of retention, evident in the first and second configurations, respectively, are consequential constituents of the necessary conditions in choosing the fixed-price contract.

The first configuration, comprised of the three necessary conditions and the negative previous financial results, aligned with the first factor in the factor solution and corroborated the presence of loss aversion influenced by historical results and a desire for certainty (Table 7). Loss aversion also played a central role in the second configuration, with the continued influence of certainty and the additional contribution of the ease of retention. In combination, this path suggested that loss aversion and satisficing are entwined in the choice of a fixed-price product. The second factor was also defined by the ease of retention however, the other defining variable of the second factor, sticking with the previous product choice (StatusQuo), did not emerge as a necessary or sufficient condition. Sticking with the previous product choice was a negated condition in three of the four configurations that were not retained from the QCA intermediate solution.

See Table 7 about here

CHAPTER 6 - DISCUSSION

The choice of a fixed-price electricity supply contract is a real-world decision rendered by the real-world actors charged with making this decision. The Qualitative Comparative Analysis identified two meaningful configurations of conditions associated with this choice. The multiple and somewhat differing conditions evident in the solution combinations are indicative of the causal complexity of the outcome. While the choice of a fixed-price electricity supply contract was produced from two differing paths, both configurations included the three necessary conditions comprised of the unfavorable financial impact of higher prices, an expectation of the future price of electricity, and a known price for the contract term.

The desire to negate a potentially adverse financial outcome resulting from higher future electricity prices with a fixed-price electricity supply product is suggestive of an aversion to losses. Individuals selected a fixed-price contract even though locking in a fixed-price may not result in the lowest cost outcome over the contract term. The prospect of higher variable prices leading to increased electricity costs represented a negative event, with the possible increased cost representing a loss. The choice of the fixed-price contract reflected a sensitivity to losses. The satisfaction possible from reduced costs on lower future variable prices is less than, or not adequately greater than, the dissatisfaction emanating from the unknown costs associated with any higher future variable prices.

The aversion to risk evident with the choice of a fixed-price electricity supply contract indicatives differential probabilities assessed to the uncertain positive and negative outcomes. With the market price for the fixed-price product based on the expectation of variable prices and indifferent to lower or higher realized prices, equivalent probabilities should be assessed to future lower or higher variable prices. The positive outcome associated with lower future variable prices was not assessed as having a greater attractiveness to the comparatively unfavorable possibility of higher costs from higher future variable prices. The probability of lower variable prices is underweighted compared to the probability of higher variable prices. This leads to a preference for the fixed-price alternative as it affords the lowest evaluated potential electricity cost. Even with individuals possessing experience in making such decisions, as evidenced by the positions held by the decision-makers, evidence of loss aversion still indicates the employment of inaccurate weighting.

With outcomes evaluated relative to a reference point, individuals choosing the fixed-price contract are most likely evaluating gains and losses in comparison to one of the two REP-provided prices – the fixed price or the most recent monthly variable price. It is doubtful that individuals with a previous fixed-price contract would reference the historically set fixed price as marketers present the current fixed and variable prices as the only plausible alternatives reflective of current market prices. With 96% of respondents contracting for more than two years, there is a diminished possibility that the reference point was some other price, like a budget rate, as such rates are generally for shorter periods, like one year.

Higher future variable prices, which may be higher or lower than the most recent monthly variable price, would be assessed as a loss by those referencing the fixed price. A

continuation of higher variable prices compared to the current fixed price or a move in variable prices above the current fixed price would be viewed as a loss by individuals referencing the most recent monthly variable price. Both reference points prompt an assessment of future variable prices with the selection of the fixed-price contract reflective of a higher appraised probability than to lower future variable prices and are suggestive of an aversion to losses.

The certainty provided by contracting for a known price, the third necessary condition, aligns with loss aversion as the presence of a certain outcome "increases the aversiveness of losses" (Kahneman & Tversky, 1979, p.269). The assured cost afforded by the fixed-price product heightened the aversion to a potential loss resulting from higher future variable prices. Individuals contracted the fixed-price product to lock in a guaranteed rate despite the absence of assurance that the fixed-price choice would produce the optimal outcome. The desire for price certainty to avert risk mitigated the outcome uncertainty.

The dominant influence of loss aversion in the choice of a fixed-price contract, heightened by the presence of a certain outcome, lends support to Kahneman and Tversky's (1979) loss aversion hypothesis and corroborates the role that loss aversion plays in financial decisions from Abdellaoui et al. (2013). Individuals exhibited a propensity to avert the risk of a loss resulting from higher future variable prices and favored the price certainty afforded by the fixed-price contract, even though the fixed-price contract had the potential to be the higher cost outcome. The "pain" of a potential loss is "more urgent than pleasure" (Tversky & Kahneman, 1991, p.1057) from a potential gain that would be realized from lower future variable prices.

However, loss aversion and certainty were not the only two conditions influencing the choice of the fixed-price contract, as the negative financial results of the previous product choice and the ease of retaining the previous product also contributed to the decision. More than three-quarters of respondents choosing a fixed-price product stated that previous negative financial results were important or very important in making the decision. This view of the irrelevant past increases the probability assessed the negative consequence of higher future variable rates, making the fixed-price contract increasingly attractive. Yet only thirty percent actually experienced an unfavorable financial outcome with the previous electricity supply contract. Moreover, all of these individuals also affirmed an aversion to losses. The financial impact weighed on the decision and led to a risk-averse choice even when no historical financial impact was realized.

The ease of retention of the previous product suggests a limitation on the capacity of the decision maker and the acceptance of a satisficing choice. Just over 40% of those choosing the fixed-price contract regarded the ease of retention as a determinant in the decision. Interestingly, 20% of those stating the ease of retention as an influence did not re-contract for the same product and switched to fixed, from variable, prices. However, for all these satisficing individuals, an aversion to losses, represented by the desire to negate a potentially adverse financial outcome resulting from higher future electricity prices, was also a consideration. This stated ease in retention of the fixed-price product could, therefore, indicate that the ease of retention was a consequence of loss aversion.

There is a possibility that the respondents, when asked about the importance of the ease of retaining the same product as previously chosen, centered on the word "retain" as

opposed to the phrase "ease to retain". This could have subsequently led to an interpretation of retain not as a capacity limitation but as a preference for the incumbent choice. While the questions that probed the ease of retention and sticking with the previous product choice were designed to investigate capacity limitations and status quo bias independently, the moderately positive correlation at 0.6 could suggest a connection. Of the twenty-seven individuals that re-contracted with the fixed-price product, ease of retention and maintaining the status quo were stated by ~60% and ~52% of individuals, respectively, yet ~90% indicated the influence of one or both in the decision. Re-contracting for the incumbent fixed-price product can be substantiated by loss aversion when "the disadvantages of a change loom larger than its advantages" (Kahneman et al., 1991, p.196).

As a real-world decision, the conditions associated with choosing a fixed-price contract described what influenced individuals in making this decision. The presence of loss aversion, certainty, negative historical results, and ease of retention increased the likelihood that individuals would choose the fixed-price contract. The necessary conditions of loss aversion and certainty demonstrated behaviour evident in findings of loss aversion from experimental settings, albeit not as definitive. The negative historical results and the ease of retention of the previous product also contributed to the choice of the fixed-price contract. While both can be attributed to loss aversion, the association is inconclusive. Loss aversion was the essential condition in the fixed-price contract decision yet independently insufficient as the decision also involved other contributory conditions.

Limitations

Individuals charged with making this electricity supply decision at their respective commercial and industrial companies made the choice of a fixed-price contract. The fixed-price contract may be considered a specialized agreement, with those responsible for execution having some expertise in making financial decisions. Although not evident as a defining influence by the decision makers for the fixed-price contract, the positions held by these individuals, including owner, executive, manager, and analyst, indicate competence.

As the formation of "generalizations about risk-taking preferences is difficult" (Thaler & Johnson, 1990, p.660), the unique nature of the agreement and the expertise of the decision-makers may challenge the "validity of inferences about whether the cause-effect relationship holds over variation in persons, settings" (Shadish et al., 2002, p.38). Individuals within other populations facing different types of agreements or lacking applicable knowledge may not exhibit the primary influences of loss aversion and certainty when faced with an uncertain choice. The description of how individuals make more commonplace decisions, like the choice of a mortgage rate, where competence varies greatly, may indicate that other influences, like the reliance on experts, may be prominent. However, with individuals deemed possessing some measure of expertise still subject to loss aversion and certainty, the influence of these conditions may be more pronounced.

Managerial Implications

REPs marketing to commercial and industrial companies in Alberta are keenly aware of the comparatively higher margins possible when individuals contract a fixed-price electricity supply product. Adding to this financial motivation is the equivalency in the cost to acquire a customer for the contracting of either a fixed-price or variable-price product. In line with this study's findings, marketing that evokes loss aversion, promotes cost certainty, and fosters the ease of fixed-price re-contracting, may prove beneficial in increasing the contracting for the fixed-price product. This could take the form of emphasizing the risk of higher future variable prices that would result in increased costs, heightening a sensitivity to losses with the possibility of future variable prices resulting in increased cost representative of a loss, framing the variable-price product as a risky alternative, and countering the unknown future by contracting for a certainty providing fixed-price product.

All of the larger REPs operating in Alberta reference the provision of some form of assurance in their marketing materials. ATCO Energy offers a "guarantee rate plan" that provides "fixed, reduced" rates (ATCO, n.d.). ENMAX Energy also mentions guaranteed prices offering stability, although the banner advises individuals to examine their options and curiously "connect with the energy that fits" (Enmax, n.d.). In having "your energy, your way", Enmax also infers that the absence of a choice will result in service from the inflexible utility. Savings, stability, and a customized carefree solution are promoted by Epcor’s Encore. One has to keep reading Encore's material to find a statement encouraging an "end to unpredictable energy bills" that is mentioned much further on (Epcor, n.d.). TransAlta believes that businesses desire reliability and cost-effectiveness in wanting to deal with the largest power generator in

Alberta. Sponsor Energy proposes that individuals "secure your energy future" by taking control of energy costs with Sponsor's competitive fixed rates (Sponsor, n.d.). However, this is secondary to Sponsor's philanthropic angle of donating profits to provincial charities and arousing discontent with all other REPs.

Integrating a risk of loss with the certainty message and, for some, a more emphatic pronouncement of assurance, could increase the appeal for the fixed-price contract. By warning of the likelihood of higher variable prices and the resulting exorbitant cost increases resulting from contracting the risky variable-price product, a beneficial discomfort with the variable-price alternative could be created. Contracting the guaranteed fixed-price product would prevent this discomfort and negate any sense of loss. Showing that future prices could reach or exceed unpleasant lofty prices as evidenced at some time in the past would provide a tangible risk value that would quantify the potential loss.

Concentrating the message on the provision of certainty to counter the risk of a potential loss and eliminating superfluous attributes may help focus buyers on the desirability of the fixed-price contract. Talk of connection, customization, undesirable utilities, and displeasure with competing REPs are unrelated and could distract from fixed-price contracting.

Buyers would be advised to assess the financial impact of potential higher and lower variable prices over the desired contract term to critically compare the two product alternatives. Combining this mathematical analysis with recognition of the REP’s marketing tactics focused on fixed price contracting would increase the awareness of the variable price

product – a product that should receive equal consideration given that the expected value of both products is the same.

The findings may also prove helpful in instigating increased fixed price contracting for contract renewals with the REP's existing customers. Contract renewals are a cost-effective source of future margin growth, with margin maximization achieved by customers re-contracting a fixed-price product or switching from a variable-price product. Communication with existing customers requesting approval to renew an existing contract is most commonly a letter or an email that notifies them of the impending contract maturity, offers a new contract price, and advises that a non-response will result in the continued provision of electricity supply at a variable price. The correspondence contains limited marketing content, save the REP logo, yet it could allow the REP to sway customers to contract for the fixed-price product. For customers that are currently paying variable prices, REPs could promote the risk of continued high variable prices for those paying prices higher than the available fixed price or the risk of possible high variable prices for those paying prices lower than the available fixed price, that would lead to increased costs that could be effectively alleviated with a secure fixed-price contract. For customers with an existing fixed-price contract, REPs could again warn of the unfavorable cost implications of the risky variable-price contract with the ease of renewal of the same fixed-price contract. By customizing the communication to reflect the customer's current situation and favorably positioning the fixed-price product as a certain choice in a risky market, the REP should have a greater opportunity to garner higher margins from these already acquired customers.

Avenues for Future Research

Building upon the findings and insights from my investigation into the conditions influencing the choice of a fixed-price electricity contract, several intriguing avenues for future research emerge. As "motives drive behaviour" (Gal, 2006, p.30), gaining insight into the rationale for the responses provided by individuals charged with contracting for electricity supply would add helpful context to the two sufficient configurations and increase the understanding of the descriptive value of loss aversion. For my study, participants supplied anonymous responses to fifteen questions that characterized distinct behaviours that could have influenced the contract decision. Expanding through the employment of qualitative methods would provide a more nuanced understanding of the participants' choices that were beyond the scope of my study. For instance, interviews could reveal that some conditions carried more significant weight, that there were circumstances where retention was more pronounced, that boundedness played a more significant role, or that participants relied on heuristics.

Another interesting direction would be an examination of the robustness of loss aversion and certainty in the choice of a fixed-price contract through the study of a REP marketing campaign centered solely on these conditions. With a concentrated message warning of the likelihood of higher variable prices, the resulting exorbitant cost increases that would result from contracting the risky variable-price product, and the assurance provided by the fixed-price alternative, would an increase in the proportion of individuals who choose the fixed-price contract result?

Lastly, exploring the conditions influencing the choice of a fixed-price contract in jurisdictions in addition to Alberta would highlight common or unique patterns and offer another representative sample of decision-making in a real-world setting. Many opportunities exist for additional studies as there are 20 states and provinces across North America, along with the District of Columbia, with deregulated electricity markets where REPs offer fixed-price contracts (MarketWatch, 2024). Comparing findings across different jurisdictions would contribute to the discourse on decisions under uncertainty and assist REPs in refining their marketing approach.

Conclusion

Commercial and industrial companies with operations in the province of Alberta have a distinct choice to make when contracting for electricity supply. They can choose a fixed-price product where the price is guaranteed for the contract term or a variable-price product where the price changes monthly in response to market movements. The decision between the fixed and variable-price alternatives is made with a view to the future with the least cost outcome known only at the term's conclusion. The fixed-price product's certainty contrasts with the variable-price alternative's uncertain outcome.

Upon application of Qualitative Comparative Analysis, survey responses from individuals charged with making this electricity supply decision revealed two primary configurations associated in the choice of the fixed-price contract. Evident in both configurations was the consideration of the unfavorable financial impact of higher prices, an expectation of future

electricity prices, and a guaranteed price. The negative financial results of the previous product choice and the ease of retaining the previous product were added conditions to the first and second configurations, respectively.

Concern with higher future prices and the possibility of incurring increased costs in the choice of a fixed-price contract was indicative of an aversion to losses. Individuals preferred to avert a possible loss by contracting for a fixed price even though locking in a fixed price may not result in the lowest cost outcome. This preference for the fixed-price product is suggestive of an assessment of a greater weighting to the possibility of higher future variable prices and the resulting higher costs than the possible positive outcome associated with lower future variable prices. The availability of a certain alternative heightened the aversion to a potential loss that would result from higher future variable prices. This lends support to Kahneman and Tversky's (1979) loss aversion hypothesis and extends the research on loss aversion to real-world actors making a real-world decision. The additional conditions of the negative previous financial results and the ease of retention of the existing product also contributed to the choice of the fixed-price contract and were possibly attributable to loss aversion but may also indicate the influence of these additional conditions in combination with loss aversion.

For Retail Energy Providers, in their quest for the contracting of the higher value contributing fixed-price product by commercial and industrial electricity consumers, the findings suggest concentrating the marketing message on the provision of certainty to counter the risk of a potential loss. Opportunities may also exist with the customization of the renewal offering that positions the fixed-price product as a certain choice that negates higher costs from possible higher future prices. Future research into the impetus for the conditions chosen by

those responsible for contracting electricity supply and investigating the conditions influencing the choice of a fixed-price contract in other jurisdictions would advance REP marketing efforts and further the research into loss aversion.

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Table 1

Empirical Research Review

Researcher	Year	Topic	Subject Type	Problem Type
Tversky & Kahneman	1992	Prospect theory	University students	Hypothetical choice
Tversky & Kahneman	1991	Loss aversion	University students	Hypothetical choice
Thaler et al.	1997	Loss aversion	University students	Hypothetical choice
Gal	2006	Loss aversion	University students	Hypothetical choice
Harinck et al.	2007	Loss aversion	University students	Hypothetical choice
Erev et al.	2008	Loss aversion	University students	Hypothetical choice
McGraw at al.	2010	Loss aversion	University students	Hypothetical choice
Ert & Erev	2013	Loss aversion	University students	Hypothetical choice
Samuelson and Zeckhauser	1988	Decisions with status quo	University students	Hypothetical choice
Ritov & Barron	1992	Decisions with status quo	University students	Hypothetical choice
Thaler & Johnson	1990	Decisions with prior outcomes	University students	Hypothetical choice
Barron & Erev	2003	Decisions with feedback	University students	Hypothetical choice
Erev et al.	2017	Decisions under risk	University students	Hypothetical choice
Hertwig et al.	2004	Decisions from experience	University students	Hypothetical choice
Ert & Yechiam	2010	Decisions from experience	University students	Hypothetical choice
Levy & Levy	2021	Prospect theory	University students, faculty and financial practitioners	Hypothetical choice
Novemsky & Kahneman	2005	Loss aversion	University students and other undefined participants	Hypothetical choice
Kahneman & Tversky	1979	Prospect theory	University students & faculty	Hypothetical choice
Walasek & Stewart	2015	Loss aversion	University students & crowdsource	Hypothetical choice
List	2004	Prospect theory	Ordinary consumers and professional card dealers	Hypothetical choice
Abdellaoui et al.	2013	Prospect theory	Financial professionals	Hypothetical choice
Mukherjee et al.	2017	Loss aversion	Crowdsource	Hypothetical choice
Chesson & Viscusi	2003	Risk aversion	Business people	Hypothetical choice

Table 2

Survey Questions and Associated Constructs

Survey Question	Behaviour	Identifier	Construct
An analysis of the historical price paid for electricity	Rational	HistPrice	Rational Behaviour
The unfavorable financial impact of higher prices	Loss Aversion	HighPrice	Bias
An expectation of the future price of electricity	Loss Aversion	FutPrice	
The positive financial results of the previous product choice	Gambler's Fallacy	PosFin	
The negative financial results of the previous product choice	Gambler's Fallacy	NegFin	
Knowledge of the product gained from years of experience	Experience Heuristic	Experience	
Certainty of a known price for the term of the contract	Certainty	Certain	
Sticking with the previous product choice	StatusQuo	StatusQuo	
A preference for the fixed price or floating price of the chosen product	Affect Influence	Prefer	
Avoiding regret with the choice of the alternative product	Regret	Regret	
Difficulty in evaluating the alternatives given the uncertainty of the outcome	Cognitive Limitation	NoEvaluate	Bounded Rationality
Easier to retain the same product as previously chosen	Capacity Limitation	Retain	
The desire to make a quick decision	Time Limitation	Quick	
A recommendation from an external electricity marketer or consultant	Capacity Limitation	Recommend	
Advice from a colleague	Capacity Limitation	Advise	

Table 3

Rotated Factor Loadings

Variable	Factor1	Factor2	Uniqueness
histprice	0.5930	0.0094	0.6483
highprice	0.7395	0.0277	0.4524
noevaluat	0.2733	0.2267	0.8739
retain	-0.0249	0.7526	0.4329
posfin	0.3711	0.5627	0.5457
negfin	0.6605	0.1091	0.5518
futprice	0.7407	0.0860	0.4439
certain	0.5719	-0.3109	0.5763
statusquo	0.0188	0.8649	0.2515
prefer	0.2810	0.4173	0.7469
regret	0.3796	0.2912	0.7711
experienc	0.1664	0.4377	0.7807
recommer	0.4728	0.1973	0.7376
advise	0.2853	0.3403	0.8028
quick	-0.1290	0.5225	0.7104

Legend

Initial Loading Variable where Factor Loading > 0.40

Subsequent Unrepresentative Variable due to Cross-Loading or Uniqueness

Table 4

Factor Analysis Solution

Factor analysis

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2.2084	0.5458	0.3681	0.3681
Factor2	1.6626	0.8697	0.2771	0.6452
Factor3	0.7929	0.0841	0.1322	0.7773
Factor4	0.7089	0.3166	0.1181	0.8955
Factor5	0.3923	0.1573	0.0654	0.9608
Factor6	0.2350	.	0.0392	1.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
highprice	0.8317	0.0291	0.3075
retain	0.0293	0.8737	0.2357
negfin	0.6496	0.0810	0.5715
futprice	0.8638	0.1174	0.2400
certain	0.5758	-0.3115	0.5714
statusquo	0.0630	0.8906	0.2029

Legend

Variance Explained by 2-Factor Solution

Factor Loading Variable where Factor Loading > 0.40

Table 5

Analysis of Necessary Conditions

Conditions tested:

	Consistency	Coverage
Certain	0.9623	0.9107
FutPrice	0.9434	0.7353
HighPrice	0.9245	0.7424
NegFin	0.7358	0.7647
Retain	0.4340	0.6053
StatusQuo	0.3208	0.5484

Table 6

Intermediate Solution

--- INTERMEDIATE SOLUTION ---
frequency cutoff: 1
consistency cutoff: 0.75
Assumptions:

HighPrice	(present)
FutPrice	(present)
Certain	(present)

	raw coverage	unique coverage	consistency
HighPrice*NegFin*FutPrice*Certain	0.6981	0.4151	0.9024
HighPrice*Retain*FutPrice*Certain	0.3774	0.0566	0.8333
Retain*NegFin*FutPrice*Certain*StatusQuo	0.1887	0.0189	0.7692
~NegFin*FutPrice*Certain*~StatusQuo	0.1698	0.0189	1.0000
~Retain*~NegFin*Certain*~StatusQuo	0.1321	0.0189	1.0000
HighPrice*Retain*NegFin*~StatusQuo	0.1321	0.0189	0.8750

solution coverage:	0.9811
solution consistency:	0.9286

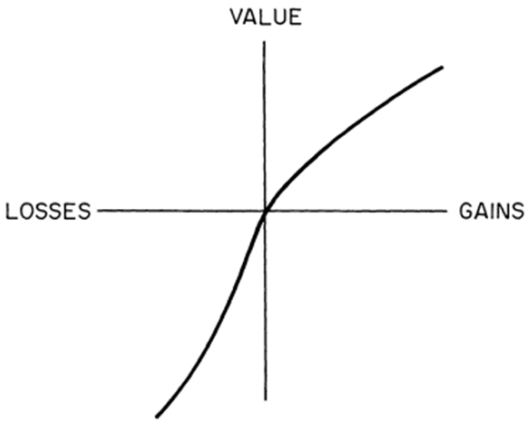
Table 7

Factor Solution & QCA Solution Integration

QCA Solution		Factor Solution			
Necessary Conditions	**Sufficient Conditions**	**Factor 1**	**Factor 2**	**Survey Question**	**Construct**
HighPrice	HighPrice	HighPrice		The unfavourable financial impact of higher prices	Loss Aversion Bias
FutPrice	FutPrice	FutPrice		An expectation of the future price of electricity	Loss Aversion Bias
	NegFin	NegFin		The negative financial results of the previous product choice	Loss Aversion Contributor
Certain	Certain	Certain		Certainty of a known price for the term of the contract	Loss Aversion Contributor
	Retain		Retain	Easier to retain the same product as previously chosen	Boundedness
			StatusQuo	Sticking with the previous product choice	Status Quo Bias

Figure 1

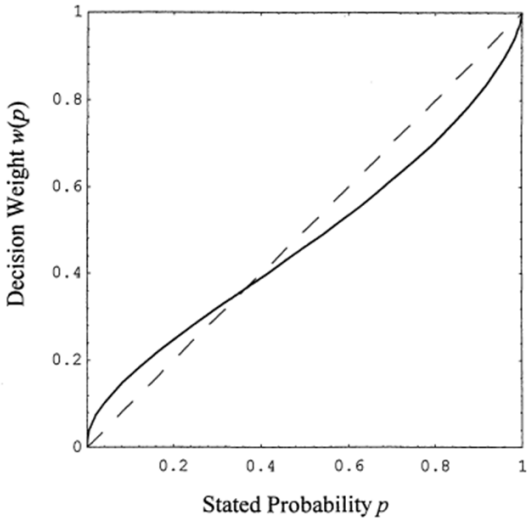
Value Function



(Tversky & Kahneman, 1991, p.1040)

Figure 2

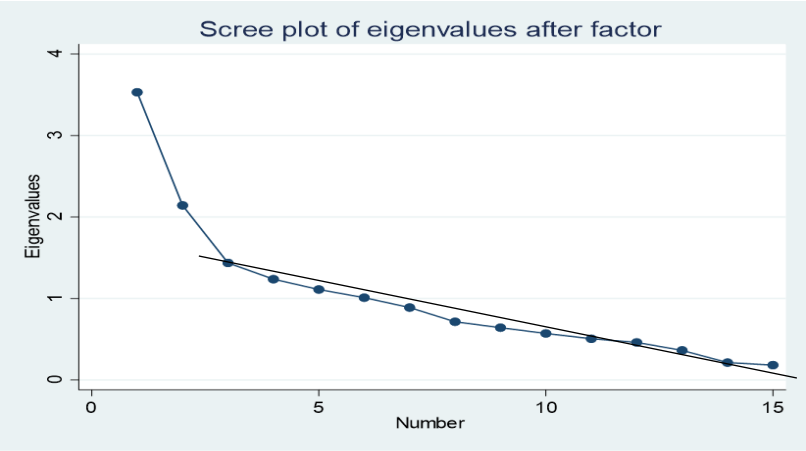
Weighting Function



(Fox & Tversky, 1998, p.880)

Figure 3

Scree Test



Appendix A

Sales Agent Scripts

Immediately following execution of an electricity supply contract

"Before we finish our call, we are assisting a university student with his research into the considerations underlying the choice of electricity supply contracts. Would you be willing to participate in a short survey regarding the contract we just completed? The entire survey is comprised of 38 multiple choice questions that should take less than 15 minutes to complete. Your responses are anonymous, and you will be asked to confirm your consent to participate before you start the survey as it's a university requirement. Would you be interested in participating in this survey?"

Customer agrees - "Great, I'll send you an email with a link to the anonymous survey. Thank you."

Customer declines – "Thanks for considering."

Subsequent call to a previously executed electricity supply contract

Good morning/afternoon. It's <insert name> calling from <insert broker name>. We previously completed an electricity supply contract with you and I'm now calling as we are assisting a university student with his research into the considerations underlying the choice of electricity supply contracts. Would you be willing to participate in a short survey regarding the contract we previously completed? The entire survey is comprised of 38 multiple choice questions that should take less than 15 minutes to complete. Your responses are anonymous, and you will be asked to confirm your consent to participate before you start the survey as it's a university requirement. Would you be interested in participating in this survey?"

Customer agrees - "Great, I'll send you an email with a link to the anonymous survey. Thank you."

Customer declines – "Thanks for considering."

Appendix B

Survey

Hello. I'm Ken Bowen and I'm a Doctor of Business Administration student at the University of Calgary. I appreciate your assistance with my required research by completing this survey that is intended to assess your considerations when choosing an electricity product for your company's electricity supply. The entire survey is comprised of 38 multiple choice questions that should take less than 15 minutes to complete. Thank you for your support with my education.

Click on the arrow in the bottom right of the screen to move to the first, and subsequent, question.

Consent is a University of Calgary requirement for your participation in my study. Please read the attached form and, once complete, indicate either your consent to participate in my study and respond to this survey or your preference not to participate. Please take the time to read this carefully and to understand any accompanying information.

If you want more details about something mentioned here, or information not included here, you should feel free to ask.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Participation is completely voluntary with all responses confidential.

Consent document

- ○ I consent to participate in this research study
- ○ I do not wish to participate in the research study

The first 5 questions look at your current electricity supply contract:

---

1. What product did you choose?

- ○ Fixed-price
- ○ Floating Price
- ○ Not Sure or Don't Know

---

2. What term did you choose?

- ○ Less than 1 year
- ○ 1 year up to less than 2 years
- ○ 2 years up to less than 3 years
- ○ 3 years up to less than 4 years
- ○ 4 years or greater
- ○ Not Sure or Don't Know

---

3. Who was the decision maker?

- ○ Yourself
- ○ Your immediate supervisor
- ○ Another person
- ○ Group decision
- ○ Not Sure or Don't Know

---

4. How many years since the current electricity supply contract was chosen?

- ○ 1 year or less
- ○ 1 year up to less than 3 years
- ○ 3 years or greater
- ○ Not Sure or Don't Know

---

5. Has this choice resulted in reduced electricity cost?

- ○ Yes - Cost has reduced
- ○ No - Cost is unchanged
- ○ No - Cost has increased
- ○ Not Sure or Don't Know

The next 3 questions look at your previous electricity supply contract:

---

6. What product did you choose?

- ○ Fixed-price
- ○ Floating Price
- ○ Not Sure or Don't Know

7. Who was the decision maker?

- ○ Yourself
- ○ Your immediate supervisor
- ○ Another person
- ○ Group decision
- ○ Not Sure or Don't Know

8. Did this product choice result in reduced electricity cost?

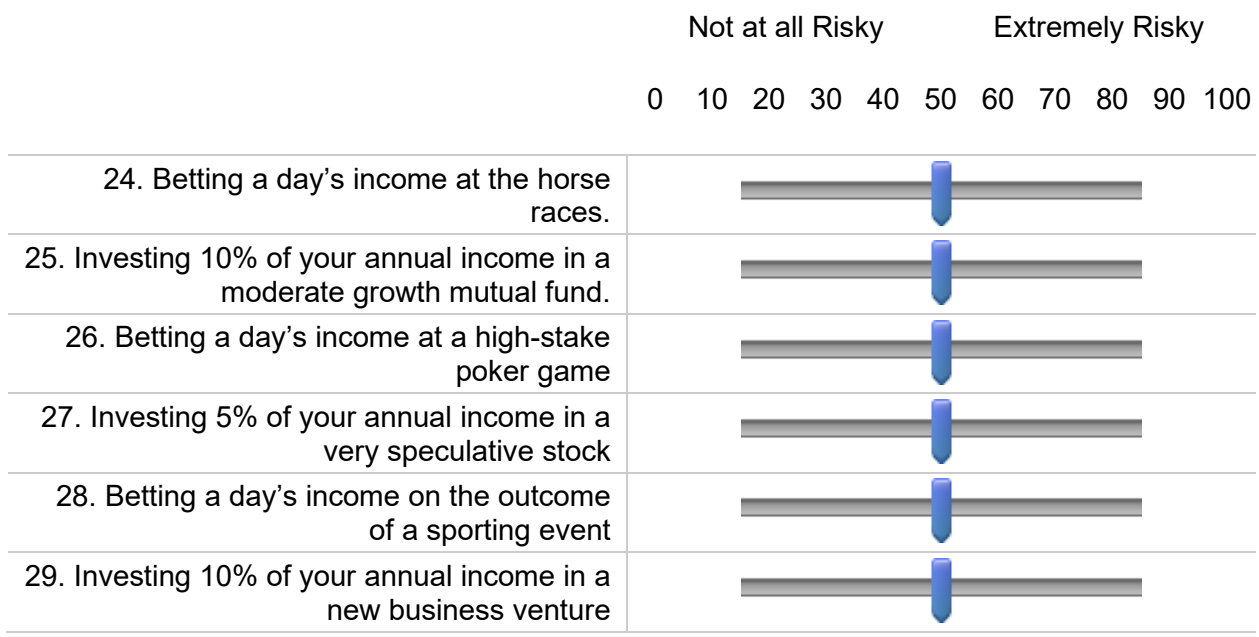
- ○ Yes - Cost was reduced
- ○ No - Cost was unchanged
- ○ No - Cost increased
- ○ Nor Sure or Don't Know

Looking at your current electricity supply product choice (fixed-price or floating price), to what degree were the following important in your choice:

	Very Unimportant	Unimportant	Neither Important or Unimportant	Important	Very Important	Not Applicable
9. An analysis of the historical price paid for electricity	○	○	○	○	○	○
10. The unfavorable financial impact of higher prices	○	○	○	○	○	○
11. Difficulty in evaluating the alternatives given the uncertainty of the outcome	○	○	○	○	○	○
12. Easier to retain the same product as previously chosen	○	○	○	○	○	○
13. The positive financial results of the previous product choice	○	○	○	○	○	○
14. The negative financial results of the previous product choice	○	○	○	○	○	○
15. An expectation of the future price of electricity	○	○	○	○	○	○
16. Certainty of a known price for the term of the contract	○	○	○	○	○	○
17. Sticking with the previous product choice	○	○	○	○	○	○
18. A preference for the fixed-price or floating price of the chosen product	○	○	○	○	○	○

19. Avoiding regret with the choice of the alternative product	○	○	○	○	○	○
20. Knowledge of the product gained from years of experience	○	○	○	○	○	○
21. A recommendation from an external electricity marketer or consultant	○	○	○	○	○	○
22. Advice from a colleague	○	○	○	○	○	○
23. The desire to make a quick decision	○	○	○	○	○	○

Now thinking of your attitude towards risk, please indicate how risky you perceive each of the following situations from Not at all Risky to Extremely Risky:



And next, 6 questions on your company to assist in classifying the responses:

30. What industry is your company in?

- ○ Multi-Residential
- ○ Government
- ○ School or Hospital
- ○ Agriculture
- ○ Hotel and/or Restaurant
- ○ Retail
- ○ Manufacturing
- ○ Energy or Mining
- ○ Other

---

31. Where is the largest physical location in Alberta for your business?

- ○ Greater Edmonton Area
- ○ Greater Calgary Area
- ○ Greater Lethbridge Area
- ○ Greater Grand Prairie Area
- ○ Greater Red Deer Area
- ○ Greater Medicine Hat Area
- ○ Great Fort McMurray Area
- ○ All Other Areas

---

32. What is the estimated size of the company (by annual revenues)?

- ○ Less than $10 million
- ○ $10 million up to $100 million
- ○ $100 million or greater
- ○ Not Sure or Don't Know

---

33. What is your estimated annual electricity cost?

- ○ Less than $10,000
- ○ $10,000 up to $100,000
- ○ $100,000 or greater
- ○ Not Sure or Don't Know

---

34. How significant a cost is electricity to your company?

- ○ Not significant at all
- ○ Not very significant
- ○ Somewhat significant
- ○ Very significant

---

35. How significant is the electricity supply decision to your company?

- ○ Not significant at all
- ○ Not very significant
- ○ Somewhat significant
- ○ Very significant

And to conclude, 3 demographic questions to assist in segmenting the responses:

---

36. What was your position in the company (title) when the current product choice was made?

- ○ Analyst
- ○ Manager
- ○ Executive
- ○ Owner
- ○ Other

---

37. What is your age?

- ○ Under 30 years
- ○ 30-39 years
- ○ 40-49 years
- ○ 50-59 years
- ○ 60 years or over
- ○ Prefer not to say

---

38. To which gender identity do you most identify?

- ○ Female
- ○ Male
- ○ Transgender
- ○ Non-binary or non-conforming
- ○ Other
- ○ Prefer not to say

Appendix C

Factor Analysis Suitability

Bartlett's Test of Sphericity				Kaiser-Meyer-Olkin Measure of Sampling Adequacy						Squared Multiple Correlations of variables with all other variables			
Chi-square	=	300.973			Variable		KMO				Variable		SMC
Degrees of freedom	=	105											
p-value	=	0			histprice		0.730				histprice		0.292
H0:	variables are not intercorrelated				highprice		0.613				highprice		0.610
					noevaluat		0.631				noevaluat		0.239
					retain		0.742				retain		0.448
					posfin		0.599				posfin		0.586
					negfin		0.845				negfin		0.321
					futprice		0.580				futprice		0.679
					certain		0.613				certain		0.326
					statusquo		0.635				statusquo		0.638
					prefer		0.522				prefer		0.397
					regret		0.685				regret		0.265
					experienc		0.740				experienc		0.272
					recommer		0.594				recommer		0.372
					advise		0.653				advise		0.292
					quick		0.578				quick		0.270
					Overall		**0.640**						

Appendix D

Horn's (1965) Parallel Analysis
&
Velicer's (1976) Minimum Average Partial Method (MAP)

Horn's Parallel Analysis
for principal components

Component or Factor	Adjusted Eigenvalue	Unadjusted Eigenvalue	Estimated Bias
1	**2.7288**	3.5313	0.8025
2	**1.4335**	2.1424	0.7090
3	0.8392	1.4362	0.5971
4	0.7852	1.2364	0.4512
5	0.7849	1.1096	0.3247
6	0.8470	1.0093	0.1624
7	0.8538	0.8882	0.0344
8	0.7634	0.7136	-0.0498
9	0.8151	0.6410	-0.1741
10	0.8425	0.5702	-0.2723
11	0.8163	0.5051	-0.3113
12	0.9008	0.4604	-0.4404
13	0.8881	0.3622	-0.5259
14	0.8100	0.2125	-0.5975
15	0.8916	0.1815	-0.7101

Criterion: retain adjusted components > 1

Minimum Average Partial Correlation for Number of Principal Components

minap procedure suggests that 2 principal components should be extracted

m	=	0	f0	=	0.050535
m	=	1	f1	=	0.036841
m	=	2	f2	=	0.032173
m	=	3	f3	=	0.036558
m	=	4	f4	=	0.042825
m	=	5	f5	=	0.049934
m	=	6	f6	=	0.063157
m	=	7	f7	=	0.075289
m	=	8	f8	=	0.099012
m	=	9	f9	=	0.124674
m	=	10	f10	=	0.173512
m	=	11	f11	=	0.23394
m	=	12	f12	=	0.345157
m	=	13	f13	=	0.475969
m	=	14	f14	=	1

Appendix E

Response Configurations

Respondent #	Fixed Price	HighPrice	Retain	NegFin	FutPrice	Certain	StatusQuo	Configuration
1	1	1	1	1	1	1	1	1111111
2	1	0	0	0	0	0	0	1000000
3	1	1	1	0	1	1	1	1110111
4	1	1	1	1	1	1	1	1111111
5	1	1	0	0	1	1	0	1100110
6	1	1	0	1	1	1	0	1101110
7	1	1	0	1	1	1	1	1101111
8	1	1	1	1	1	1	1	1111111
9	1	1	1	0	1	1	1	1110111
10	1	1	1	1	1	1	1	1111111
11	1	1	1	1	1	1	0	1111110
12	1	1	1	1	1	1	1	1111111
13	1	1	0	1	1	1	0	1101110
14	1	0	1	0	1	1	0	1010110
15	1	1	1	1	1	1	0	1111110
16	0	1	1	1	1	1	1	0111111
17	1	1	0	1	1	1	0	1101110
18	1	1	0	1	1	1	0	1101110
19	1	1	0	1	1	1	1	1101111
20	1	1	1	1	0	0	0	1111000
21	1	1	0	1	1	1	0	1101110
22	1	1	0	0	1	1	0	1100110
23	1	1	1	1	1	1	1	1111111
24	1	1	1	1	1	1	1	1111111
25	1	1	0	1	1	1	0	1101110
26	1	1	1	0	1	1	0	1110110
27	1	1	0	0	1	1	0	1100110
28	1	1	0	1	1	1	0	1101110
29	1	1	0	1	1	1	0	1101110
30	1	1	1	1	1	1	0	1111110
31	1	1	0	1	1	1	0	1101110
32	1	1	0	1	1	1	1	1101111
33	1	1	1	1	1	1	1	1111111
34	1	1	0	1	1	1	0	1101110
35	1	1	1	1	1	1	0	1111110
36	1	1	1	1	1	1	0	1111110
37	0	0	0	0	0	0	0	0000000
38	1	1	1	1	1	1	1	1111111
39	0	0	1	0	1	1	1	0010111
40	0	1	1	1	1	1	0	0111110
41	1	1	0	0	1	1	0	1100110
42	1	1	0	0	1	1	0	1100110
43	1	1	0	1	1	1	0	1101110
44	1	0	1	1	1	1	1	1011111
45	1	1	0	1	1	1	0	1101110
46	1	1	0	1	1	1	0	1101110
47	1	1	1	0	1	1	0	1110110
48	1	1	1	1	1	1	0	1111110
49	1	1	0	1	1	1	0	1101110
50	1	1	0	1	1	1	0	1101110
51	1	0	0	0	0	1	0	1000010
52	1	1	0	1	1	1	0	1101110
53	0	1	1	1	1	0	1	0111101
54	1	1	0	1	1	1	0	1101110
55	0	1	1	1	1	0	1	0111101
56	0	1	1	1	1	1	1	0111111
57	1	1	0	0	1	1	0	1100110
58	0	1	0	1	1	0	0	0101100
59	0	1	1	0	1	0	1	0110101
60	0	1	1	1	1	0	1	0111101
61	1	1	1	0	1	1	1	1110111
62	0	1	1	1	1	1	1	0111111
63	0	0	0	0	0	0	0	0000000
64	0	1	1	1	1	0	1	0111101
65	0	1	1	1	1	0	1	0111101
66	1	1	0	1	1	1	0	1101110
67	0	1	0	1	1	0	0	0101100
68	0	1	1	1	1	0	1	0111101
69	0	1	0	0	1	0	0	0100100
70	0	0	1	0	0	0	1	0010001
71	1	1	0	1	1	1	1	1101111
72	0	1	1	0	1	0	1	0110101
73	0	1	1	0	1	0	1	0110101
74	0	1	0	0	1	0	0	0100100

Appendix F

Truth Table

HighPrice	Retain	NegFin	FutPrice	Certain	StatusQuo	Number	Raw Consistency
1	0	1	1	1	0	18	1
1	1	1	1	1	1	12	0.75
1	1	1	1	1	0	7	0.86
1	0	0	1	1	0	6	1
1	1	1	1	0	1	6	0
1	0	1	1	1	1	4	1
0	0	0	0	0	0	3	0.33
1	1	0	1	0	1	3	0
1	1	0	1	1	1	3	1
1	0	0	1	0	0	2	0
1	0	1	1	0	0	2	0
1	1	0	1	1	0	2	1
0	0	0	0	1	0	1	1
0	1	0	1	1	0	1	1
0	1	0	0	0	1	1	0
0	1	0	1	1	1	1	0
0	1	1	1	1	1	1	1
1	1	1	0	0	0	1	1
0	1	0	0	0	0	0	
0	0	1	0	0	0	0	
0	1	1	0	0	0	0	
0	0	0	1	0	0	0	
0	1	0	1	0	0	0	
0	0	1	1	0	0	0	
0	1	1	1	0	0	0	
0	1	0	0	1	0	0	
0	0	1	0	1	0	0	
0	1	1	0	1	0	0	
0	0	0	1	1	0	0	
0	0	1	1	1	0	0	
0	1	1	1	1	0	0	
0	0	0	0	0	1	0	
0	0	1	0	0	1	0	
0	1	1	0	0	1	0	
0	0	0	1	0	1	0	
0	1	0	1	0	1	0	
0	0	1	1	0	1	0	
0	1	1	1	0	1	0	
0	0	0	0	1	1	0	
0	1	0	0	1	1	0	
0	0	1	0	1	1	0	
0	1	1	0	1	1	0	
0	0	0	1	1	1	0	
0	0	1	1	1	1	0	
1	0	0	0	0	0	0	
1	1	0	0	0	0	0	
1	0	1	0	0	0	0	
1	1	0	1	0	0	0	
1	1	1	1	0	0	0	
1	0	0	0	1	0	0	
1	1	0	0	1	0	0	
1	0	1	0	1	0	0	
1	1	1	0	1	0	0	
1	0	0	0	0	1	0	
1	1	0	0	0	1	0	
1	0	1	0	0	1	0	
1	1	1	0	0	1	0	
1	0	0	1	0	1	0	
1	0	1	1	0	1	0	
1	0	0	0	1	1	0	
1	1	0	0	1	1	0	
1	0	1	0	1	1	0	
1	1	1	0	1	1	0	
1	0	0	1	1	1	0	

Appendix G

Participant Survey Responses

Respondent #	1. Product	2. Term	3. Decision Maker	4. Decision Recency	5. Cost Impact	6. Previous Product	7. Previous Decision Maker	8. Previous Cost Impact
1	Fixed Price	3 years up to less than 4 years	Yourself	1 year up to less than 3 years	No - Cost has increased	Fixed Price	Another person	Yes - Cost was reduced
2	Fixed Price	4 years or greater	Yourself	1 year or less	Yes - Cost has reduced	Fixed Price	Yourself	Yes - Cost was reduced
3	Fixed Price	4 years or greater	Another person	1 year up to less than 3 years	No - Cost is unchanged	Fixed Price	Another person	No - Cost was unchanged
4	Fixed Price	2 years up to less than 3 years	Yourself	1 year up to less than 3 years	Yes - Cost has reduced	Fixed Price	Yourself	Nor Sure or Don't Know
5	Fixed Price	4 years or greater	Yourself	1 year up to less than 3 years	Not Sure or Don't Know	Not Sure or Don't Know	Yourself	Nor Sure or Don't Know
6	Fixed Price	3 years up to less than 4 years	Group decision	1 year or less	Yes - Cost has reduced	Floating Price	Group decision	Nor Sure or Don't Know
7	Fixed Price	2 years up to less than 3 years	Yourself	3 years or greater	Not Sure or Don't Know	Fixed Price	Yourself	No - Cost increased
8	Fixed Price	4 years or greater	Another person	3 years or greater	Yes - Cost has reduced	Not Sure or Don't Know	Not Sure or Don't Know	Nor Sure or Don't Know
9	Fixed Price	3 years up to less than 4 years	Your immediate supervisor	1 year or less	Not Sure or Don't Know	Fixed Price	Your immediate supervisor	Yes - Cost was reduced
10	Fixed Price	2 years up to less than 3 years	Yourself	3 years or greater	Yes - Cost has reduced	Fixed Price	Yourself	Yes - Cost was reduced
11	Fixed Price	3 years up to less than 4 years	Group decision	1 year up to less than 3 years	Yes - Cost has reduced	Floating Price	Not Sure or Don't Know	No - Cost increased
12	Fixed Price	4 years or greater	Yourself	1 year up to less than 3 years	Yes - Cost has reduced	Fixed Price	Yourself	Yes - Cost was reduced
13	Fixed Price	3 years up to less than 4 years	Yourself	3 years or greater	No - Cost has increased	Fixed Price	Yourself	No - Cost increased
14	Fixed Price	1 year up to less than 2 years	Yourself	1 year up to less than 3 years	Yes - Cost has reduced	Fixed Price	Yourself	No - Cost was unchanged
15	Fixed Price	4 years or greater	Group decision	3 years or greater	Not Sure or Don't Know	Floating Price	Yourself	Nor Sure or Don't Know
16	Floating Price	2 years up to less than 3 years	Your immediate supervisor	1 year or less	Yes - Cost has reduced	Fixed Price	Your immediate supervisor	No - Cost was unchanged
17	Fixed Price	4 years or greater	Group decision	1 year or less	No - Cost has increased	Fixed Price	Group decision	Yes - Cost was reduced
18	Fixed Price	4 years or greater	Yourself	1 year or less	Yes - Cost has reduced	Floating Price	Yourself	No - Cost increased
19	Fixed Price	3 years up to less than 4 years	Yourself	1 year or less	Yes - Cost has reduced	Fixed Price	Yourself	No - Cost increased
20	Fixed Price	4 years or greater	Group decision	1 year or less	Yes - Cost has reduced	Floating Price	Group decision	No - Cost increased
21	Fixed Price	3 years up to less than 4 years	Yourself	3 years or greater	No - Cost has increased	Fixed Price	Yourself	Yes - Cost was reduced
22	Fixed Price	4 years or greater	Yourself	3 years or greater	Yes - Cost has reduced	Fixed Price	Another person	Nor Sure or Don't Know
23	Fixed Price	4 years or greater	Yourself	1 year or less	Yes - Cost has reduced	Floating Price	Another person	No - Cost increased
24	Fixed Price	1 year up to less than 2 years	Your immediate supervisor	1 year up to less than 3 years	Not Sure or Don't Know	Fixed Price	Your immediate supervisor	No - Cost was unchanged
25	Fixed Price	3 years up to less than 4 years	Yourself	1 year or less	Yes - Cost has reduced	Floating Price	Another person	No - Cost increased
26	Fixed Price	3 years up to less than 4 years	Group decision	3 years or greater	Yes - Cost has reduced	Fixed Price	Group decision	Yes - Cost was reduced
27	Fixed Price	2 years up to less than 3 years	Yourself	1 year up to less than 3 years	Not Sure or Don't Know	Floating Price	Another person	Nor Sure or Don't Know
28	Fixed Price	4 years or greater	Group decision	1 year up to less than 3 years	Yes - Cost has reduced	Fixed Price	Group decision	Yes - Cost was reduced
29	Fixed Price	4 years or greater	Yourself	3 years or greater	Yes - Cost has reduced	Floating Price	Yourself	No - Cost increased
30	Fixed Price	4 years or greater	Yourself	1 year up to less than 3 years	No - Cost has increased	Fixed Price	Yourself	No - Cost increased
31	Fixed Price	3 years up to less than 4 years	Group decision	1 year or less	Yes - Cost has reduced	Floating Price	Yourself	Nor Sure or Don't Know
32	Fixed Price	4 years or greater	Yourself	1 year or less	Yes - Cost has reduced	Floating Price	Yourself	No - Cost was unchanged
33	Fixed Price	3 years up to less than 4 years	Yourself	1 year or less	Yes - Cost has reduced	Fixed Price	Yourself	No - Cost was unchanged
34	Fixed Price	4 years or greater	Group decision	1 year or less	Yes - Cost has reduced	Floating Price	Another person	Nor Sure or Don't Know
35	Fixed Price	3 years up to less than 4 years	Yourself	1 year or less	Not Sure or Don't Know	Floating Price	Another person	No - Cost increased
36	Fixed Price	4 years or greater	Yourself	1 year or less	Yes - Cost has reduced	Not Sure or Don't Know	Yourself	Nor Sure or Don't Know
37	Floating Price	1 year up to less than 2 years	Yourself	1 year or less	No - Cost has increased	Fixed Price	Yourself	No - Cost was unchanged
38	Fixed Price	3 years up to less than 4 years	Group decision	1 year up to less than 3 years	Yes - Cost has reduced	Fixed Price	Not Sure or Don't Know	Nor Sure or Don't Know
39	Floating Price	2 years up to less than 3 years	Yourself	3 years or greater	Yes - Cost has reduced	Floating Price	Yourself	No - Cost was unchanged
40	Floating Price	2 years up to less than 3 years	Yourself	3 years or greater	No - Cost has increased	Floating Price	Your immediate supervisor	No - Cost was unchanged
41	Fixed Price	Not Sure or Don't Know	Yourself	3 years or greater	Not Sure or Don't Know	Fixed Price	Yourself	Yes - Cost was reduced
42	Fixed Price	4 years or greater	Group decision	1 year or less	Yes - Cost has reduced	Fixed Price	Group decision	Yes - Cost was reduced
43	Fixed Price	3 years up to less than 4 years	Group decision	Not Sure or Don't Know	Yes - Cost has reduced	Not Sure or Don't Know	Another person	Nor Sure or Don't Know
44	Fixed Price	2 years up to less than 3 years	Yourself	1 year up to less than 3 years	No - Cost has increased	Fixed Price	Yourself	No - Cost increased
45	Fixed Price	3 years up to less than 4 years	Group decision	1 year or less	Yes - Cost has reduced	Floating Price	Group decision	No - Cost increased
46	Fixed Price	3 years up to less than 4 years	Yourself	1 year up to less than 3 years	Yes - Cost has reduced	Floating Price	Yourself	Nor Sure or Don't Know
47	Fixed Price	4 years or greater	Yourself	1 year up to less than 3 years	No - Cost is unchanged	Fixed Price	Yourself	Nor Sure or Don't Know
48	Fixed Price	2 years up to less than 3 years	Yourself	3 years or greater	Not Sure or Don't Know	Fixed Price	Yourself	Nor Sure or Don't Know
49	Fixed Price	4 years or greater	Your immediate supervisor	1 year up to less than 3 years	Yes - Cost has reduced	Floating Price	Your immediate supervisor	Nor Sure or Don't Know
50	Fixed Price	4 years or greater	Group decision	1 year or less	Not Sure or Don't Know	Floating Price	Not Sure or Don't Know	No - Cost increased
51	Fixed Price	3 years up to less than 4 years	Yourself	1 year or less	No - Cost is unchanged	Floating Price	Yourself	Yes - Cost was reduced
52	Fixed Price	2 years up to less than 3 years	Yourself	1 year or less	Yes - Cost has reduced	Floating Price	Not Sure or Don't Know	No - Cost increased
53	Floating Price	2 years up to less than 3 years	Group decision	1 year or less	No - Cost has increased	Floating Price	Your immediate supervisor	No - Cost increased
54	Fixed Price	3 years up to less than 4 years	Yourself	3 years or greater	Yes - Cost has reduced	Floating Price	Another person	Nor Sure or Don't Know
55	Floating Price	2 years up to less than 3 years	Yourself	3 years or greater	Yes - Cost has reduced	Floating Price	Yourself	No - Cost was unchanged
56	Floating Price	2 years up to less than 3 years	Yourself	Not Sure or Don't Know	Not Sure or Don't Know	Not Sure or Don't Know	Not Sure or Don't Know	Nor Sure or Don't Know
57	Fixed Price	4 years or greater	Your immediate supervisor	3 years or greater	Yes - Cost has reduced	Floating Price	Your immediate supervisor	Yes - Cost was reduced
58	Floating Price	2 years up to less than 3 years	Group decision	3 years or greater	No - Cost has increased	Fixed Price	Another person	No - Cost was unchanged
59	Floating Price	3 years up to less than 4 years	Yourself	3 years or greater	Yes - Cost has reduced	Floating Price	Another person	No - Cost was unchanged
60	Floating Price	1 year up to less than 2 years	Yourself	1 year or less	Not Sure or Don't Know	Floating Price	Yourself	No - Cost increased
61	Fixed Price	4 years or greater	Yourself	1 year or less	No - Cost is unchanged	Fixed Price	Yourself	Yes - Cost was reduced
62	Floating Price	2 years up to less than 3 years	Yourself	1 year or less		Floating Price	Yourself	Yes - Cost was reduced
63	Floating Price	4 years or greater	Yourself	1 year or less	No - Cost has increased	Floating Price	Another person	Nor Sure or Don't Know
64	Floating Price	1 year up to less than 2 years	Your immediate supervisor	Not Sure or Don't Know	No - Cost has increased	Not Sure or Don't Know	Your immediate supervisor	Nor Sure or Don't Know
65	Floating Price	2 years up to less than 3 years	Yourself	1 year or less	No - Cost has increased	Floating Price	Yourself	Nor Sure or Don't Know
66	Fixed Price	4 years or greater	Group decision	1 year or less	Yes - Cost has reduced	Floating Price	Yourself	No - Cost was unchanged
67	Floating Price	2 years up to less than 3 years	Yourself	1 year up to less than 3 years	No - Cost has increased	Fixed Price	Yourself	Yes - Cost was reduced
68	Floating Price	2 years up to less than 3 years	Yourself	1 year or less	No - Cost has increased	Floating Price	Yourself	No - Cost was unchanged
69	Floating Price	1 year up to less than 2 years	Yourself	1 year or less	No - Cost has increased	Fixed Price	Yourself	No - Cost increased
70	Floating Price	2 years up to less than 3 years	Yourself	1 year up to less than 3 years	No - Cost has increased	Floating Price	Another person	No - Cost increased
71	Fixed Price	2 years up to less than 3 years	Yourself	1 year up to less than 3 years	Not Sure or Don't Know	Fixed Price	Yourself	No - Cost increased
72	Floating Price	2 years up to less than 3 years	Yourself	1 year or less	No - Cost has increased	Floating Price	Yourself	Yes - Cost was reduced
73	Floating Price	2 years up to less than 3 years	Yourself	1 year up to less than 3 years	No - Cost has increased	Floating Price	Yourself	Yes - Cost was reduced
74	Floating Price	1 year up to less than 2 years	Group decision	1 year up to less than 3 years	No - Cost has increased	Fixed Price	Yourself	No - Cost increased

Respondent #	9. Historical Price	10. Potential Higher Prices	11. Difficult to Evaluate	12. Easier to Retain	13. Positive Results
1	Very Important	Very Important	Important	Very Important	Very Important
2	Important	Very Unimportant	Important	Neither Important or Unimportant	Unimportant
3	Neither Important or Unimportant	Important	Important	Very Important	Important
4	Very Important	Very Important	Very Important	Very Important	Very Important
5	Neither Important or Unimportant	Very Important	Important		
6	Very Important	Very Important	Important		
7	Very Important	Very Important	Important	Unimportant	Important
8	Very Important	Very Important	Very Important	Very Important	Very Important
9	Important	Important	Important	Important	Very Important
10	Very Important	Very Important	Very Important	Very Important	Very Important
11	Very Important	Very Important	Neither Important or Unimportant	Important	
12	Very Important	Very Important	Very Important	Very Important	Very Important
13	Very Important	Very Important	Neither Important or Unimportant	Unimportant	Important
14	Very Important		Important	Very Important	
15	Unimportant	Important	Important	Important	
16	Important	Very Important	Important	Very Important	Very Important
17	Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant	Very Important
18	Very Important	Very Important	Very Important	Very Unimportant	
19	Important	Important	Important	Neither Important or Unimportant	Important
20	Very Important	Very Important	Neither Important or Unimportant	Very Important	Neither Important or Unimportant
21	Very Important	Very Important	Important	Unimportant	Important
22	Very Important	Very Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant
23	Very Important	Very Important	Very Important	Very Important	Very Important
24	Important	Important	Important	Important	Important
25	Very Important	Very Important	Neither Important or Unimportant	Very Unimportant	Very Unimportant
26	Very Important	Very Important	Neither Important or Unimportant	Very Important	Very Important
27	Important	Important	Unimportant	Very Unimportant	Very Important
28	Very Important	Important	Important	Unimportant	Important
29	Very Important	Very Important	Neither Important or Unimportant	Very Unimportant	
30	Neither Important or Unimportant	Very Important	Neither Important or Unimportant	Important	Neither Important or Unimportant
31	Important	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
32	Very Important	Very Important	Very Important	Neither Important or Unimportant	Very Important
33	Important	Very Important	Important	Important	Very Important
34	Neither Important or Unimportant	Important	Neither Important or Unimportant		
35	Very Important	Very Important	Very Important	Very Important	
36	Very Important	Very Important	Neither Important or Unimportant	Important	Very Important
37	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant
38	Unimportant	Important	Important	Important	Important
39	Important		Important	Important	
40	Very Important	Very Important	Important	Important	Very Important
41	Neither Important or Unimportant	Important	Neither Important or Unimportant	Very Unimportant	Neither Important or Unimportant
42	Important	Very Important	Unimportant	Unimportant	Important
43	Important	Very Important	Important	Neither Important or Unimportant	Important
44	Important	Very Unimportant	Important	Important	Important
45	Important	Very Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
46	Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant	Important
47	Important	Very Important	Neither Important or Unimportant	Important	Neither Important or Unimportant
48	Important	Very Important	Important	Important	Neither Important or Unimportant
49	Very Important	Very Important	Very Important		Neither Important or Unimportant
50	Very Important	Very Important	Important	Unimportant	
51	Very Unimportant	Very Unimportant	Very Unimportant	Neither Important or Unimportant	Very Unimportant
52	Very Important	Very Important	Important	Unimportant	
53	Neither Important or Unimportant	Very Important	Important	Very Important	Important
54	Important	Very Important	Important	Neither Important or Unimportant	Important
55	Very Important	Very Important	Important	Very Important	Important
56	Unimportant	Important	Important	Very Important	Important
57	Very Unimportant	Important	Important	Unimportant	Very Important
58	Important	Important	Important	Unimportant	Very Important
59	Important	Very Important	Important	Very Important	Very Important
60	Important	Important	Neither Important or Unimportant	Very Important	Important
61	Very Important	Very Important	Neither Important or Unimportant	Very Important	Very Important
62	Very Important	Very Important	Important	Very Important	Very Important
63	Neither Important or Unimportant	Neither Important or Unimportant		Neither Important or Unimportant	Neither Important or Unimportant
64	Neither Important or Unimportant	Important	Unimportant	Very Important	Important
65	Neither Important or Unimportant	Important	Important	Very Important	Important
66	Important	Very Important	Important	Neither Important or Unimportant	Important
67	Important	Very Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
68	Important	Very Important	Neither Important or Unimportant	Very Important	Very Important
69	Neither Important or Unimportant	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
70	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Very Important	Neither Important or Unimportant
71	Very Important	Very Important	Unimportant	Neither Important or Unimportant	Neither Important or Unimportant
72	Important	Very Important	Important	Very Important	Very Important
73	Important	Very Important	Important	Very Important	Very Important
74	Neither Important or Unimportant	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant

Respondent #	14. Negative Results	15. Price Expectations	16. Certainty	17. Status Quo	18. Product Preference
1	Important	Very Important	Important	Important	Important
2	Very Unimportant	Very Unimportant	Very Unimportant	Unimportant	Unimportant
3	Unimportant	Important	Important	Important	Important
4	Very Important	Very Important	Very Important	Very Important	Very Important
5		Important	Very Important		Important
6	Important	Very Important	Very Important	Very Unimportant	Important
7	Important	Very Important	Very Important	Important	Important
8	Very Important	Very Important	Very Important	Very Important	Very Important
9		Important	Very Important	Important	Very Important
10	Very Important	Very Important	Very Important	Very Important	Very Important
11	Important	Very Important	Very Important	Neither Important or Unimportant	Important
12	Very Important	Very Important	Very Important	Very Important	Very Important
13	Important	Very Important	Very Important	Unimportant	Important
14	Unimportant	Very Important	Very Important	Very Unimportant	Very Important
15	Important	Important	Important	Very Unimportant	Important
16	Very Important	Very Important	Very Important	Important	Unimportant
17	Important	Very Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant
18	Very Important	Very Important	Very Important	Very Unimportant	Very Important
19	Important	Very Important	Very Important	Important	Very Important
20	Important	Very Unimportant	Very Unimportant	Neither Important or Unimportant	Very Important
21	Important	Important	Important	Unimportant	Important
22	Neither Important or Unimportant	Very Important	Important	Neither Important or Unimportant	Important
23	Very Important	Very Important	Very Important	Very Important	Very Important
24	Important	Important	Very Important	Important	Very Important
25	Very Important	Very Important	Important	Very Unimportant	Very Important
26	Neither Important or Unimportant	Very Important	Very Important	Neither Important or Unimportant	Very Important
27	Unimportant	Important	Important	Very Unimportant	Neither Important or Unimportant
28	Important	Very Important	Very Important	Unimportant	Neither Important or Unimportant
29	Very Important	Very Important	Very Important	Very Unimportant	Very Important
30	Important	Important	Important	Unimportant	Important
31	Important	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
32	Very Important	Very Important	Very Important	Important	Very Important
33	Very Important	Very Important	Important	Important	Important
34	Important	Important	Very Important	Unimportant	Important
35	Very Important	Very Important	Very Important	Very Unimportant	Important
36	Important	Very Important	Very Important	Unimportant	Very Important
37	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Important
38	Important	Very Important	Very Important	Important	Very Important
39		Important	Important	Important	Important
40	Important	Very Important	Important	Neither Important or Unimportant	Important
41	Neither Important or Unimportant	Important	Important	Very Unimportant	Very Unimportant
42	Neither Important or Unimportant	Very Important	Very Important	Unimportant	Important
43	Important	Important	Very Important	Neither Important or Unimportant	Important
44	Important	Very Important	Important	Important	Important
45	Important	Important	Very Important	Neither Important or Unimportant	Important
46	Important	Very Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
47	Neither Important or Unimportant	Important	Very Important	Neither Important or Unimportant	Important
48	Very Important	Very Important	Very Important	Neither Important or Unimportant	Very Important
49	Very Important	Very Important	Very Important	Neither Important or Unimportant	Very Important
50	Important	Very Important	Very Important	Very Unimportant	Unimportant
51	Very Unimportant	Very Unimportant	Important	Neither Important or Unimportant	Neither Important or Unimportant
52	Important	Very Important	Very Important	Very Unimportant	Important
53	Very Important	Very Important	Neither Important or Unimportant	Important	Important
54	Important	Very Important	Very Important	Neither Important or Unimportant	Important
55	Important	Very Important	Neither Important or Unimportant	Important	Important
56	Important	Important	Important	Important	Important
57	Unimportant	Important	Very Important	Unimportant	Unimportant
58	Very Important	Very Important	Unimportant	Neither Important or Unimportant	Important
59	Neither Important or Unimportant	Very Important	Neither Important or Unimportant	Important	Important
60	Important	Important	Neither Important or Unimportant	Important	Important
61	Neither Important or Unimportant	Very Important	Very Important	Very Important	Very Important
62	Very Important	Very Important	Important	Important	Very Important
63	Neither Important or Unimportant	Unimportant	Unimportant	Neither Important or Unimportant	Very Unimportant
64	Important	Important	Unimportant	Important	Neither Important or Unimportant
65	Important	Very Important	Neither Important or Unimportant	Important	Important
66	Important	Very Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant
67	Important	Very Important	Unimportant	Unimportant	Important
68	Very Important	Very Important	Neither Important or Unimportant	Important	Important
69	Unimportant	Very Important	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant
70	Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Very Important	Very Important
71	Very Important	Very Important	Important	Important	Important
72	Neither Important or Unimportant	Very Important	Neither Important or Unimportant	Important	Important
73	Neither Important or Unimportant	Very Important	Neither Important or Unimportant	Important	Important
74	Neither Important or Unimportant	Very Important	Neither Important or Unimportant	Neither Important or Unimportant	Important

Respondent #	19. Regret	20. Experience	21. Recommendation	22. Advise	23. Quick Decision
1	Very Important	Important	Very Important	Important	Unimportant
2	Very Unimportant	Neither Important or Unimportant	Important	Neither Important or Unimportant	Neither Important or Unimportant
3	Unimportant	Important	Important	Neither Important or Unimportant	Important
4	Very Important	Very Important	Very Important	Very Important	Very Important
5	Neither Important or Unimportant				Important
6	Important	Neither Important or Unimportant	Very Important		Neither Important or Unimportant
7	Neither Important or Unimportant	Important	Very Important	Very Important	Unimportant
8	Important	Important	Very Important	Important	Neither Important or Unimportant
9		Very Important			
10	Very Important	Very Important	Very Important	Neither Important or Unimportant	Very Important
11	Very Important	Important	Important	Important	Important
12	Very Important	Very Important	Very Important	Very Important	Very Important
13	Neither Important or Unimportant	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
14	Unimportant	Unimportant			
15	Very Important	Unimportant	Very Important	Important	Important
16	Very Important	Important	Very Important	Very Important	Very Important
17	Neither Important or Unimportant	Important	Important		Important
18	Very Important		Very Important		Very Important
19	Important		Very Important	Important	Important
20	Important	Important	Important	Important	Unimportant
21	Important	Important	Very Important	Important	Unimportant
22	Important	Important	Important	Neither Important or Unimportant	Unimportant
23	Very Important	Very Important	Very Important	Very Important	Very Important
24	Important	Important	Important	Important	Important
25	Important	Very Unimportant	Unimportant	Important	Unimportant
26	Neither Important or Unimportant	Very Important	Very Important	Important	Neither Important or Unimportant
27	Very Important	Very Important	Very Important	Very Unimportant	Unimportant
28	Important	Very Important	Very Important	Important	Unimportant
29	Neither Important or Unimportant	Neither Important or Unimportant	Very Important	Very Important	
30	Neither Important or Unimportant	Important	Important	Important	Neither Important or Unimportant
31	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant
32	Very Important	Important	Very Important	Important	Neither Important or Unimportant
33	Neither Important or Unimportant	Unimportant	Important	Unimportant	Very Unimportant
34	Important	Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant
35	Important		Very Important		
36	Very Important	Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant
37	Important	Important	Important	Important	Important
38	Important	Neither Important or Unimportant	Neither Important or Unimportant	Important	Important
39	Important	Important	Neither Important or Unimportant		Important
40	Neither Important or Unimportant	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
41	Important	Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Unimportant
42	Unimportant	Important	Important	Neither Important or Unimportant	Unimportant
43	Important	Important	Very Important	Very Important	Neither Important or Unimportant
44	Very Important	Important	Very Important	Neither Important or Unimportant	Important
45	Neither Important or Unimportant	Important	Very Important	Important	Neither Important or Unimportant
46	Important	Important	Important	Neither Important or Unimportant	Neither Important or Unimportant
47	Important	Neither Important or Unimportant	Important	Neither Important or Unimportant	Unimportant
48	Very Important	Important	Important	Important	Important
49	Neither Important or Unimportant	Very Important	Very Important	Very Important	Very Important
50	Very Important	Very Important		Unimportant	Important
51	Unimportant	Important	Important	Important	Neither Important or Unimportant
52	Unimportant	Neither Important or Unimportant	Important	Important	Unimportant
53	Important	Important	Important	Very Important	Neither Important or Unimportant
54	Important	Important	Very Important	Important	Very Important
55	Important	Important	Important	Important	Important
56	Important		Very Important	Very Important	Very Important
57	Unimportant	Important	Very Important	Important	Important
58	Neither Important or Unimportant	Important	Important	Very Important	Neither Important or Unimportant
59	Important	Important	Important	Important	Important
60	Important	Important	Important	Important	Important
61	Very Important	Very Important	Very Important	Neither Important or Unimportant	Neither Important or Unimportant
62	Important	Important	Important	Very Important	Important
63	Neither Important or Unimportant	Neither Important or Unimportant	Unimportant	Very Unimportant	Neither Important or Unimportant
64	Neither Important or Unimportant	Important	Neither Important or Unimportant	Neither Important or Unimportant	Important
65	Neither Important or Unimportant	Important	Important	Neither Important or Unimportant	Unimportant
66	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Very Important	Neither Important or Unimportant
67	Unimportant	Very Important	Unimportant	Very Important	Unimportant
68	Important	Important	Important	Important	Important
69	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Neither Important or Unimportant	Important
70	Neither Important or Unimportant	Important	Neither Important or Unimportant	Neither Important or Unimportant	Important
71	Important	Very Important	Important	Important	Important
72	Unimportant	Important	Unimportant	Important	Important
73	Important	Very Important	Very Important	Important	Unimportant
74	Neither Important or Unimportant	Neither Important or Unimportant	Important	Very Important	Important

Respondent #	24. Betting - horse races	25. Investing - mutual fund	26. Betting - poker game	27. Investing - speculative stock	28. Betting - sporting event	29. Investing- new business
1	70	80	70	80	20	90
2	70		70	70	70	30
3	90	10	100	20	100	30
4	90	20	100	80	100	60
5	50	20	50	30	50	30
6	30	20	60	40	50	50
7	80	30	50	60	10	50
8	100	10	100	40	100	50
9	100	60	100	40	100	20
10						
11	60	50	80	70	80	90
12	100	20	100	100	100	20
13	90	10	100	30	90	40
14	70	10	50	30	50	40
15	20	0	70	70	50	100
16	20	10	20	10	20	70
17	100	20	100	50	100	50
18	90	10	90	90	90	10
19	100	50	100	50	100	40
20	10	20	10	50	10	70
21	20	10	20	30	20	30
22	80		80	20	80	40
23	70	70	70	70	70	70
24	100	80	100	100	100	100
25	20	0	10			10
26	100	10	100	100	100	100
27	90	10	90	10	90	10
28	90	0	70	10	20	50
29	90	40	100	80	90	80
30	100	0	0	0	100	50
31	70	20	70	30	70	70
32	90	0	100	0	90	50
33	10	0	90	30	80	
34	100	50	100	50	100	50
35	90	40	90	40	90	40
36	100	20	100	10	100	60
37	60	50	30	20	30	20
38	50	40	90	50	90	70
39	90	50	90	40	50	80
40	100	40	100	50	100	80
41	60	20	70	60	70	50
42	90	10	90	70	90	70
43	60	10	80	80	100	50
44	100	20	100	50	100	60
45	30	10	20	50	50	60
46	90	10	90	50	90	80
47	70	40	70	50	60	60
48	90	30	90	80	90	50
49						
50	100	30	100	50	80	80
51	100	20	100	50	100	70
52	60	20	60	80	70	90
53	100	20	100	40	100	40
54	30	10	30	50	50	50
55	70	30	50	60	20	50
56	50	30	50	30	50	30
57	90	10	90	90	90	90
58	90	10	70	10	50	70
59	100	50	100	50	100	70
60	90	40	100	70	100	50
61	100	30	100	50	100	70
62	70	20	90	40	80	
63	50	50	50	70	50	70
64	70	70	70	70	70	70
65	70	30	70	30	70	30
66	90	30	90	60	90	70
67	100	20	100	60	100	20
68	90	50	90	40	90	70
69	90	30	80	80	80	30
70	50	80	50	30		30
71	80	20	80	30	80	40
72	100	50	100	70	90	70
73	20	10	20	30	20	30
74	20	10	20	30	20	30

Respondent #	30. Industry	31. Location	32. Company Size	33. Annual Cost	34. Cost significance	35. Decision Significance
1	Multi-Residential	Greater Calgary Area	$100 million or greater	$100,000 or greater	Very significant	Somewhat significant
2	Agriculture	All Other Areas	Less than $10 million	$10,000 up to $100,000	Very significant	Somewhat significant
3	Other	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Not very significant	Somewhat significant
4	Agriculture	All Other Areas	Less than $10 million	Less than $10,000	Very significant	Very significant
5	Multi-Residential	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
6	Multi-Residential	Greater Edmonton Area	Less than $10 million	$100,000 or greater	Very significant	Very significant
7	Other	Greater Edmonton Area	Less than $10 million	$100,000 or greater	Somewhat significant	Somewhat significant
8	Other	Greater Edmonton Area	Less than $10 million	Less than $10,000	Somewhat significant	Somewhat significant
9	Other	Greater Calgary Area	Not Sure or Don't Know	$100,000 or greater	Very significant	Very significant
10	Multi-Residential	Greater Edmonton Area	$100 million or greater	$100,000 or greater	Very significant	Very significant
11	Manufacturing	All Other Areas	$10 million up to $100 million	$100,000 or greater	Very significant	Very significant
12	Manufacturing	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
13	Other	Greater Edmonton Area	$100 million or greater	$100,000 or greater	Somewhat significant	Somewhat significant
14	Multi-Residential	Greater Edmonton Area	Less than $10 million	Less than $10,000	Not very significant	Not very significant
15	Agriculture	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Very significant	Somewhat significant
16	Other	Greater Edmonton Area	$100 million or greater	$100,000 or greater	Somewhat significant	Somewhat significant
17	Other	Greater Calgary Area	Less than $10 million	$100,000 or greater	Somewhat significant	Somewhat significant
18	Manufacturing	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Very significant	Very significant
19	Other	Greater Calgary Area	Less than $10 million	Less than $10,000	Very significant	Very significant
20	Other	Greater Red Deer Area	$10 million up to $100 million	$100,000 or greater	Somewhat significant	
21	Retail	Greater Red Deer Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
22	Other	Greater Edmonton Area	$10 million up to $100 million	$10,000 up to $100,000	Very significant	Very significant
23	Hotel and/or Restaurant	Greater Edmonton Area	Less than $10 million	$100,000 or greater	Very significant	Very significant
24	Other	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Very significant	Very significant
25	Hotel and/or Restaurant	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Very significant	Somewhat significant
26	Retail	All Other Areas	$10 million up to $100 million	$10,000 up to $100,000	Somewhat significant	Not very significant
27	Energy or Mining	Greater Calgary Area	$100 million or greater	$100,000 or greater	Not very significant	Not very significant
28	Other	Greater Edmonton Area	$10 million up to $100 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
29	Agriculture	Greater Grand Prairie Area	Less than $10 million	Less than $10,000	Somewhat significant	Somewhat significant
30	Agriculture	Greater Red Deer Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
31	Manufacturing	Greater Edmonton Area	$10 million up to $100 million	$100,000 or greater	Somewhat significant	Not very significant
32	Manufacturing	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Very significant	Somewhat significant
33	Retail	Greater Grand Prairie Area	Less than $10 million	$100,000 or greater	Very significant	Not very significant
34	Other	Greater Edmonton Area	Less than $10 million	Less than $10,000	Somewhat significant	Not very significant
35	Other	Greater Red Deer Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
36	Other	Greater Edmonton Area	Less than $10 million	Less than $10,000	Somewhat significant	Not very significant
37	Manufacturing	Greater Calgary Area	$10 million up to $100 million	$100,000 or greater	Somewhat significant	Not very significant
38	Manufacturing	Greater Red Deer Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
39	Other		Less than $10 million	Less than $10,000	Somewhat significant	Somewhat significant
40	Energy or Mining	All Other Areas	$100 million or greater	$100,000 or greater	Very significant	Very significant
41	Hotel and/or Restaurant	Greater Red Deer Area	Less than $10 million	Less than $10,000	Somewhat significant	Somewhat significant
42	Other	Greater Edmonton Area	Not Sure or Don't Know	$100,000 or greater	Very significant	Somewhat significant
43	Multi-Residential	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Very significant	Very significant
44	Retail	Greater Edmonton Area	Less than $10 million	Less than $10,000	Somewhat significant	Somewhat significant
45	Multi-Residential	Greater Red Deer Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
46	Retail	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
47	Energy or Mining	Greater Calgary Area	$10 million up to $100 million	$100,000 or greater	Somewhat significant	Somewhat significant
48	Hotel and/or Restaurant	All Other Areas	Less than $10 million	$10,000 up to $100,000	Very significant	Somewhat significant
49	Multi-Residential	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Very significant	Very significant
50	Other	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
51	Retail	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
52	Energy or Mining	All Other Areas	$100 million or greater	$100,000 or greater	Somewhat significant	Somewhat significant
53	Multi-Residential	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
54	Manufacturing	Greater Red Deer Area	$10 million up to $100 million	$100,000 or greater	Very significant	Very significant
55	Energy or Mining	Greater Edmonton Area	$100 million or greater	$100,000 or greater	Very significant	Very significant
56	Retail	Greater Edmonton Area	Not Sure or Don't Know	Less than $10,000	Somewhat significant	Somewhat significant
57	Multi-Residential	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
58	Manufacturing	Greater Grand Prairie Area	$10 million up to $100 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
59	Other	Greater Calgary Area	$100 million or greater	$100,000 or greater	Very significant	Somewhat significant
60	Other	Greater Calgary Area	Less than $10 million	$100,000 or greater	Very significant	Very significant
61	Other	Greater Edmonton Area	$100 million or greater	$10,000 up to $100,000	Somewhat significant	Somewhat significant
62	Retail	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
63	Manufacturing	Greater Edmonton Area	$10 million up to $100 million	$100,000 or greater	Not very significant	Very significant
64	Other	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Not very significant
65	Other	Greater Red Deer Area	Less than $10 million	Less than $10,000	Not significant at all	Not significant at all
66	Multi-Residential	Greater Calgary Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
67	Other	Greater Calgary Area	$10 million up to $100 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
68	Agriculture	Greater Edmonton Area	Less than $10 million	$100,000 or greater	Very significant	Very significant
69	Hotel and/or Restaurant	Greater Edmonton Area	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant
70	Energy or Mining	Greater Calgary Area	$100 million or greater	$100,000 or greater	Somewhat significant	Not very significant
71	Other	Greater Edmonton Area	Less than $10 million	Less than $10,000	Not very significant	Not very significant
72	Other	Greater Red Deer Area	Less than $10 million	Less than $10,000	Somewhat significant	Somewhat significant
73	Other	All Other Areas	Less than $10 million	$100,000 or greater	Very significant	Somewhat significant
74	Other	All Other Areas	Less than $10 million	$10,000 up to $100,000	Somewhat significant	Somewhat significant

Respondent #	36. Position	37. Age	38. Gender
1	Manager	Prefer not to say	Male
2	Owner	60 years or over	Male
3	Owner	30-39 years	Male
4	Owner	50-59 years	Female
5	Other	30-39 years	Female
6	Other	50-59 years	Male
7	Executive	30-39 years	Male
8	Other	60 years or over	Female
9	Other	40-49 years	Female
10	Executive	50-59 years	Male
11	Analyst	Under 30 years	Female
12	Owner	30-39 years	Male
13	Executive	40-49 years	Male
14	Owner	40-49 years	Male
15	Owner	60 years or over	Male
16	Manager	40-49 years	Female
17	Manager	50-59 years	Male
18	Owner	40-49 years	Male
19	Owner	60 years or over	Female
20	Manager	40-49 years	Male
21	Owner	40-49 years	Male
22	Executive	40-49 years	Male
23	Manager	40-49 years	Male
24	Other	40-49 years	Female
25	Owner	50-59 years	Male
26	Executive	40-49 years	Female
27	Manager	30-39 years	Female
28	Executive	40-49 years	Male
29	Owner	60 years or over	Male
30	Owner	50-59 years	Male
31	Owner	50-59 years	Male
32	Executive	40-49 years	Male
33	Owner	50-59 years	Male
34	Manager	30-39 years	Prefer not to say
35	Executive	40-49 years	Female
36	Owner	40-49 years	Female
37	Manager	40-49 years	Male
38	Other	40-49 years	Female
39	Other	50-59 years	Female
40	Manager	50-59 years	Male
41	Owner	40-49 years	Female
42	Manager	30-39 years	Male
43	Manager	50-59 years	Female
44	Owner	30-39 years	Male
45	Manager	50-59 years	Male
46	Manager	50-59 years	Male
47	Manager	40-49 years	Male
48	Owner	40-49 years	Male
49	Manager	50-59 years	Female
50	Manager	40-49 years	Female
51	Manager	50-59 years	Male
52	Manager	40-49 years	Male
53	Manager	40-49 years	Female
54	Owner	50-59 years	Male
55	Manager	40-49 years	Male
56	Other	Under 30 years	Female
57	Manager	40-49 years	Male
58	Owner	60 years or over	Male
59	Executive	40-49 years	Male
60	Owner	50-59 years	Male
61	Manager	40-49 years	Male
62	Manager	40-49 years	Female
63	Manager	50-59 years	Male
64	Other	Under 30 years	Male
65	Owner	50-59 years	Female
66	Manager	30-39 years	Female
67	Manager	40-49 years	Male
68	Other	60 years or over	Male
69	Manager	40-49 years	Male
70	Manager	60 years or over	Female
71	Other	50-59 years	Female
72	Owner	50-59 years	Male
73	Manager	50-59 years	Female
74	Owner	50-59 years	Male

Appendix H

Respondent Demographics

Female

	< 30 yrs old	30-39 years old	40-49 years old	50-59 years old	> 60 years old	Prefer Not To Say	**Total**
Analyst	1						1
Manager		2	4	3	1		10
Executive			2				2
Owner			2	2	1		5
Other	1	1	3	2	1		8
TOTAL	2	3	11	7	3	0	26

Male

	< 30 yrs old	30-39 years old	40-49 years old	50-59 years old	> 60 years old	Prefer Not To Say	**Total**
Analyst							0
Manager		1	10	6		1	18
Executive		1	5	1			7
Owner		3	4	8	4		19
Other	1			1	1		3
TOTAL	1	5	19	16	5	1	47

Prefer Not To Say

	< 30 yrs old	30-39 years old	40-49 years old	50-59 years old	> 60 years old	Prefer Not To Say	**Total**
Analyst							0
Manager		1					1
Executive							0
Owner							0
Other							0
TOTAL		1					1

Appendix I

Respondent Features

Industry

Multi-Residential	Manufacturing	Retail	Agriculture	Energy or	Hotel and/or	Other	Total
11	10	8	6	6	5	28	74
15%	14%	11%	8%	8%	7%	38%	

Largest Alberta Physical Location

Greater Edmonton Area	Greater Calgary Area	Greater Red Deer	Greater Grand Prairie	All Other Areas	No Response	Total
30	21	10	3	9	1	74
41%	28%	14%	4%	12%	1%	

Estimated Company Size (by annual revenues)

Less than $10 million	$10 million up to $100	$100 million or	Not Sure or Don't Know	Total
48	12	11	3	74
65%	16%	15%	4%	

Estimated Annual Electricity Cost

Less than $10,000	$10,000 up to $100,000	$100,000 or greater	Total
14	33	27	74
19%	45%	36%	

Significance of Electricity Cost to the Company

Not very significant	Somewhat significant	Very significant	Not significant at all	Total
5	41	27	1	74
7%	55%	36%	1%	

Significance of the Electricity Supply Decision to the Company

Not very significant	Somewhat significant	Very significant	Not significant at all	No Response	Total
11	43	18	1	1	74
15%	58%	24%	1%	1%	

Appendix J

Respondent Product

Recent Product Choice

Fixed Price	Floating Price	Total
53	21	74
72%	28%	

Recent Product Choice - Term

Less than 1 year	1 year up to less than 2 years	2 years up to less than	3 years up to less than 4	4 years or	Not Sure or	Total
0	7	22	19	25	1	74
0%	9%	30%	26%	34%	1%	

Recent Product Choice - Years Since Decision

1 year or less	1 year up to less than 3 years	3 years or greater	Not Sure or Don't Know	Total
32	21	18	3	74
43%	28%	24%	4%	

Recent Product Choice - Reduced Cost

Yes - Cost has reduced	No - Cost has increased	Not Sure or Don't Know	No - Cost is unchanged	Total
36	20	13	4	74
49%	27%	18%	5%	

Previous Product Choice

Fixed Price	Floating Price	Not Sure or Don't Know	Total
33	35	6	74
45%	47%	8%	

Switching

Unchanged - Fixed	Changed - Fixed	Unchanged - Float	Changed - Float	Unknown	Total
27	23	13	5	6	74
36%	31%	18%	7%	8%	

Previous Product Choice - Reduced Cost

Yes - Cost was reduced	No - Cost increased	Nor Sure or Don't Know	No - Cost was unchanged	Total
18	21	21	14	74
24%	28%	28%	19%	