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Price-Induced Asymmetric Switching in the Passenger Service Market

Claudia Scolaro

A Thesis

in the

Faculty of

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ABSTRACT

Price-Induced Asymmetric Switching in the Passenger Service Market

Claudia Scolaro

Several empirical studies have shown that price promotions by higher quality brands attract more buyers than price promotions by lower quality brands (Carpenter et al. 1988; Blattberg and Wisniewski 1989; Kamakura and Russell 1989; Allenby and Rossi 1991). This thesis examines the asymmetric sales effect of price promotions using a case of service competition (e.g., non-frequently purchased passenger services). The study uses an experiment, a different research method from past studies, and extends the theory of asymmetric switching to include services. In addition, this thesis highlights the strategic importance of intertype competition (e.g., airline, rail, and bus companies provide travel services) by recognizing its expanding role in shaping the structure and evolution of markets.

The theories of price-induced asymmetric switching and intertype competition were tested in the passenger service market for two cases involving different price structures, namely, advance booking and immediate booking. Two operational measures were used (i) a switching intention measure and (ii) an attitudinal change measure. In testing with the switching intention measure, the findings supported the theories for advance booking and for immediate booking, with the exception of the intratype airline

case. Less conclusive were the results from the analyses with the interval data measuring attitudinal change. Significant asymmetric changes in attitude were not evident in both cases. Further, the findings revealed that income did not have a significant effect on switching intentions in the passenger service market.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

SECTION I

INTRODUCTION TO THE STUDY

Introduction

A review of the marketing literature reveals that consumers tend to be more responsive to price promotions for high quality brands than they are to price discounts for low quality brands (Carpenter et al. 1988; Blattberg and Wisniewski 1989; Kamakura and Russell 1989; Allenby and Rossi 1991). Consequently, higher quality brands tend to experience a significantly greater increase in sales than lower quality brands, when both brand types reduce their regular prices by the same percentage. The *asymmetric sales effect* of price promotions favouring high quality brands is an important and interesting topic for marketing practitioners and academics.

A strategic concern for both product and service marketers is the trend in retailing of intensifying intertype competition (Kotler 1991). Intertype competition demands that firms look beyond their direct competitors in the market place, to considering the not-so obvious and the potential latent rivals. For example, in the broader market for transportation services, a rail- based company may compete with a bus-based or an airline-based company. Insofar as they target the same consumer segments, an airline company's price promotion may take share away from the rail company, or the reverse could also occur. For competing firms, this raises an important strategic question: *which*

service quality type, high or low, will steal more share from the other, when both offer similar percentage price discounts?

Statement of the Problem

Price-induced asymmetric switching between high and low quality brands has been well- documented in the marketing literature. However, past studies have addressed the asymmetric issue only for cases involving frequently purchased household or grocery products (Carpenter et al. 1988; Blattberg and Wisniewski 1989; Kamakura and Russell 1989; Allenby and Rossi 1991). There were at this writing, no studies which have dealt with the theory of asymmetric switching in a service marketing context.

Purpose of the Study

The research study will examine the theory of price-induced asymmetric switching as it applies to non-frequently purchased passenger services. The purpose of the study will be to empirically determine the effects of price promotions on patronage and market share in the passenger service market.

Statement of Objectives

1. *The study will test for price-induced asymmetric switching between similar types of services, i.e., intratype competitors.*

The study will compare the share effects of high and low quality service price promotions using two cases involving intratype competitors; (1) high and low quality airline service and (2) high and low quality ground service (i.e., rail and bus service).

2. *The study will test the significance of intertype competition in the passenger service market.*

The study will determine whether intertype competition is significant in the passenger service market through an examination of the effects of price promotions by the low quality airline service and the rail service on the market share of the other.

3. *The study will test for price-induced asymmetric share changes between intertype competitors, whereby one service is superior to the other in terms of quality.*

The study will compare the asymmetric share effects of price promotions in the passenger service market using a case of intertype competition involving high and low quality airline services and high and low quality ground services .

Significance of the Study

The present study enhances marketing knowledge, in theory and in practice. The study makes a significant academic contribution by extending the theory of price-induced asymmetric switching to include services. Further, the study deals with the concept of intertype competition, stressing the importance of recognizing and appreciating its role in developing markets. The study also provides important managerial implications for marketing practitioners, which is particularly relevant for the marketing managers of lower quality services.

1. *Academic Contribution*

The present study will examine the theory of price-induced asymmetric switching using a different research method, an experiment, and a case involving service competition, e.g., non-frequently purchased passenger services. The test results from the study may make the theory of asymmetric switching more generalizable, as the existing studies have focused mainly on cases of intratype competition involving frequently purchased grocery products. The study will enhance marketing knowledge, as there have only been a few studies which have emphasized the issue of a theory's generality (Zaltman et al. 1982). In addition, the study will focus on the concept of intertype competition, a strategically important topic that deserves more attention in the marketing literature.

2. *Managerial Significance*

The study provides important managerial implications for marketing practitioners. The study advises managers of lower quality services to carefully consider using price promotions (e.g., cash rebates or low financing offers) to take market share from higher quality services, as studies have shown that price reductions by higher quality brands attract more buyers than do price reductions by lower quality brands (Carpenter et al. 1988; Blattberg and Wisniewski 1989; Kamakura and Russell 1989; Allenby and Rossi 1991). The current study is consistent with existing studies, and will show that price reductions by low quality services are most effective in stealing share from other low or lower quality services.

The study also proposes that asymmetric switching may occur between *intertype competitors*, whereby one product/service type is perceived to be superior to another in terms of quality. If the asymmetry applies in the passenger service market, the advertising copy that conveys comparative advantages over a driving option (i.e., a lower quality service) such as the bus, will be more effective than comparisons to a higher quality service alternative, for example, the high quality airline service. For this reason, lower quality services should avoid comparing themselves to higher quality services in their advertising.

The study begins with a review of the marketing literature concerning the theories

of price-induced asymmetric switching and intertype competition. The methodology of the study is presented in section three, and the analysis and results are reported in section four. The study discusses the academic and practical implications of the findings in section five, and closes with the research's limitations and suggestions for future investigation in section six.

SECTION II

LITERATURE REVIEW

The following section is a review of the marketing literature concerning the two main issues in the research study, the *theory of price-induced asymmetric switching* and the concept of *intertype competition*. The theory of price-induced asymmetric switching is discussed in part one. The concept of intertype competition is reviewed in part two.

1. Asymmetric Switching

1.1. Promotional Pricing and Brand Switching

Price is a critical element of the cost/benefit equation influencing consumer decision - making. Consumers' desire for the best bundle of benefits, which includes getting the most value for their dollar, encourages product/service information gathering and buyer deliberation. Buyers contemplate a *product choice set* consisting of the products and/or services that will satisfy a given consumer need (Kotler 1991). The pricing and promotional decisions by firms affects the consumer choice process, specifically the product choice set, when they make consumers aware of alternatives they might not have otherwise considered (Shocker, Stuart, and Zahorik 1990). Kotler (1991) contends that brand switchers are motivated by low price, good value, or premiums. Through trial purchase and brand switching, consumers may give a competing alternative

an opportunity (Wilkie 1990). Thus, patterns of competition may be constructed on the basis of buyers' responses to prices, advertising, product features, and their interaction (Carpenter and Lehmann 1985).

1.2. Brand Switching

Brand switching models have been developed that are capable of measuring the effects of pricing and promotional strategies, however their use has been limited to same category products or *intratype* competitors, e.g., staple foods (Carpenter and Lehmann 1985). Brand switching has not been studied in relation to services, particularly intertype services that require high consumer involvement. The effects of promotional pricing on brand switching should be investigated in different competitive markets, as Kotler (1991) explains how the success of sales promotions may depend on the type of market.

> Sales promotions used in markets of high brand similarity produce a high sales response in the short run but little permanent gain in market share. In markets of high brand dissimilarity, sales promotions can alter market share more permanently.

According to Kotler, the positive effects of sales promotions in markets characterized by high brand similarity, such as a commodity market, are more short term than long term. In markets characterized by high brand dissimilarity, where perceived or real differences exist in terms of product attributes, names, packages etc... and the primacy of price on the purchase decision is reduced, a change in share resulting from sales promotions tends to be more significant and long term.

1.3. Asymmetric Switching Between High and Low Quality Brands

Brand switching may be complicated by a phenomenon referred to as *asymmetric switching*. According to Cooper and Nakanishi (1988), there is asymmetry in the market when *the impact of one competitor's actions affects one rival or one group of rivals more than another*. The effects of price promotions are asymmetric, when consumers are more responsive to price discounts for higher quality brands than they are to price discounts for lower quality brands. Four key studies which address the issue of price-induced asymmetric switching between high and low quality brands are briefly reviewed.

Carpenter et al. (1988) write that the effects of marketing actions of one brand may be distributed among its competitors' market shares in a complex manner. Their discussion is centered on an asymmetric attractions model. They report that cross elasticities consist of two separate competitive effects: a direct effect and a cross effect.

Blattberg and Wisniewski (1989) use a model of price tiers to show how price deals affect the nature of competition. They report that when *higher priced* brands price deal, they steal sales away from their own tier (i.e., the same quality group) and the tier below (i.e., a lower quality group). However, when *lower priced* brands price deal, they take sales from their own tier (e.g. other moderate and private labels) and the tier below (e.g. generics), but in general do not take significant sales from the tier above (e.g. national brands). Blattberg and Wisniewski (1989) illustrate how preference distribution,

essentially consumers' relative preference for (say) brand *i* relative to (say) brand *k* may take one of three possible shapes. Of particular interest is the u-shaped distribution which represents asymmetric price competition. The authors use the u-shaped preference distribution to describe how many consumers are more willing to switch to the higher quality, when the price difference between the higher quality and the lower quality is made more narrow.

Kamakura and Russell (1989) analyze the competition among national brands and private labels for one product category, a food item. They use a probabilistic choice model to show that brand preferences and price sensitivities can be used to construct a managerially useful description of brand competition.

Allenby and Rossi (1991) assert that if the budget constraint were to shift outward due to an increase in income, many consumers would shift from lower quality to higher quality brands, rather than consume more of the same brand. The asymmetry between the high and low quality brands is attributed to an economic concept, the interaction between the income and substitution effects. When a superior brand lowers its price, it induces substitution away from lower quality brands, and an income effect in the same direction. However, when an inferior brand lowers its price, substitution from the higher quality brands will be induced, but the income effect will work in the opposite direction. Thus, the income effect induced by price promotions favours superior brands, at the expense of inferior brands.

The present study will examine the theory of price-induced asymmetric switching in the passenger service market. The theory's application in the service sector has not been documented in the marketing literature. The study tests for price-induced asymmetric switching using two cases of intratype competition: (1) high and low quality airline service and (2) high and low quality ground service, namely, the train and the bus.

Hypothesis 1

For the high quality airline, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the low quality airline compared to the low quality airline offering the same percentage discount to decrease the share of, or purchase intentions for, the high quality airline.

Hypothesis 2

For the passenger rail service, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the bus service compared to the bus service offering the same percentage discount to decrease the share of, or purchase intentions for, the passenger rail service.

2. Intertype Competition

It has been suggested in the literature that the marketing concept as a business philosophy be broadened to include the competitive considerations that are involved in marketing decision-making (Weitz 1985). The present marketing concept has an almost exclusive customer focus. While a customer-orientation is essential, it should also be recognized that competitor-oriented concepts and methodologies can provide complementary insights to firms (Shocker, Stewart, and Zahorik 1990). Indeed, the key to developing an effective market positioning strategy is knowledge of the product market and an understanding of the nature of the competition. This is sometimes made difficult with the existence of *intertype competitors* who may not be obvious adversaries. Intertype competition is defined as a market situation in which the market is served by competitors satisfying a consumer need with physically different products, e.g, metal cans and glass bottles (Gale and Buzzell 1990). With intertype competition, comparisons are made among different, sometimes completely separate markets or industries (Gale and Buzzell 1990).

In recent years, competitive structure analysis, or the empirical grouping of firms which customers view as substitutes, has received considerable attention in the research literature (Srivastava, Leone, and Shocker 1981; Kopp, Eng, and Tigert 1989; Shocker, Stewart, and Zahorik 1990). While much has been written about the competitive environment in the marketing literature, relatively little attention has been given to

another important concept, that of *intertype competition.*

2.1. Market Definition and the Positioning Strategy

The term *market* refers to the set of all actual and potential buyers of a product or service (Kotler 1991). The task of defining the market is undertaken by firms attempting to discern the product choice set of buyers. According to Allenby (1989), market definition is the process of organizing a set of products or brands such that the interrelationships between them is apparent. Market definition is recognized to be strategically important because of its role in market planning, particularly in terms of identifying new product opportunities, and for the positioning of new or existing products or services (Urban and Hauser 1987).

Positioning defines the intended perception that targeted consumers have of a firm's product or service relative to competitors' offerings (Aaker and Shansby 1982). Firms attempt to develop strategies that will distinguish themselves from their competitors in the market. The development of a competitive positioning strategy involves a six step process: (1) identifying the competitors, (2) determining how the competitors are perceived and evaluated, (3) determining the competitors' positions, (4) analyzing the customers, (5) selecting the position, (6) monitoring the position (Aaker and Shansby 1982). Market definition is key to the positioning decision. Step one in the positioning strategy, *identifying the competition*, requires a careful definition of the scope of the

business and the business market. Scope may be broadly defined in terms of the customer groups served, the customer functions served, and the technologies utilized (Abell 1980). Because the market environment is dynamic, and because consumers' tastes and preferences are constantly evolving, the task of defining a market can be quite challenging.

2.2. Competitor Myopia

Market boundaries are ambiguous. In the field of marketing, the question of how to define a business market has been the subject of research interest for decades (Sissors 1966; Day, Shocker, and Srivastava 1979; Abell 1980; Shocker, Stewart, and Zahornik 1990). All too frequently and mistakenly, firms identify their competitors simply on the basis of product type and product attributes. The belief is that competing products are called by similar names, bear physical resemblance, perform similar functions, are sold through the same channels or are made by similar manufacturing processes or by firms in the same nominal "industry" (Shocker, Stewart, and Zahorik 1990). Subsequently, major competitors are identified and described in terms of their size, goals, market share, product quality, marketing strategies, and other characteristics (Kotler 1991). However, when firms only pay attention to their obvious competitors, they display a very narrow or selective view of their competition. Levitt (1965) labelled this attitude "myopia".

Myopia is the outcome of a firm's excessive preoccupation with its own product

or like products (Levitt 1965). Myopic firms run the dangerous risk of losing market share to competitors of substitute products. For this reason, the prevailing view in the literature is that the task of identifying competitors and drawing market boundaries are more tactical concerns, than theoretical issues.

2.3. Competitive Structure Analysis

In general terms, a *competitor* is someone who takes part in a competition; a rival. The marketing literature refers to four basic types of competitors in consumer markets; desire competitors, generic competitors, product-form competitors, and brand competitors (Kotler 1991). *Desire competitors* is the broadest concept of competition, encompassing all firms vying for consumers' dollars. *Generic competitors* are competitors that satisfy the same consumer need, albeit in different ways (e.g., intertype competitors). *Product-form competitors* are different forms of the same product type (e.g., intratype competitors). *Brand competitors* are the closest competitors. Brand names and/or symbols are used to differentiate otherwise interchangeable goods or services from the competition (Aaker 1991).

Particularly in times of slow economic growth, market competition may be described as a zero-sum game, a survival of the fit (Henderson 1983). It becomes critical that firms recognize and understand the different types of competitors they face in the market. Competitive structure analysis provides a broader, more accurate representation

of the competitive environment. According to Kelly (1987), firms should ask the following questions: (1) who are the current market participants? (2) who are the potential entrants? and, (3) who are the providers of a substitute product? .

2.4. Industry Definitions vs. Customer-Oriented Market Definitions

The marketing literature usually mentions two approaches to defining product markets; the traditional industry approach, and the customer-oriented approach. The process of defining the market involves using either the *industry* or the *served market* as the unit of analysis (Gale and Buzzell 1990). The differences between the two approaches are outlined in Table 1.

Table 1. - Differing Concepts of Market Position

	Concept	
	Share of Industry	*Market Share*
Unit of Analysis	Industry	Served Market
View of Market	Supply Side	Demand Side
Functional Orientation	Production	Marketing
Basis of categorizing businesses to industries or served markets	Common technology, raw materials, production processes	Common customer groups, customer needs and wants, competitors

Source: Gale, Bradley T. and Robert D. Buzzell (1990), "Market Position and Competitive Strategy". in The Interface of Marketing and Strategy, eds., George Day, Barton Weitz and Robin Wensley (London, Jai Press Ltd) p.196.

An industry is a "group of firms that offer a product or class of products that are close substitutes for each other" (Kotler 1991). According to Day, Shocker and Srivastava (1979), the industry or supply approach to defining product markets uses operational criteria, such as similarity of manufacturing processes, raw materials, physical appearance, or function. In recent years, the customer-oriented approach has received more attention in the marketing literature (Day, Shocker, and Srivastava 1979; Srivastava, Leone, and Shocker 1981; Kopp, Eng and Tigert 1989; Shocker, Stewart, and Zahorik 1990). In Day et al (1979), a product market is defined as follows:

> a set of products judged to be substitutes, within those usage situations in which similar patterns of benefits are sought, and the customers for whom such usages are relevant.

The demand or customer-oriented approach to defining product markets requires that firms evaluate the competition from the consumer's viewpoint; that is, a firm should direct its focus away from delineated product or service categories, concentrating instead on consumer usage of a product or service. Fundamental to this reasoning is the *substitutability criterion,* which maintains that products are competitive if customers regard them as interchangeable for some relevant purpose(s) (Shocker et al 1990). Indeed, the customer-oriented approach concedes that the customer is the source of the competition. It is, therefore, crucial from the outset that a firm settles the basic question of what consumer need they are fulfilling. In so doing, certain products/services will be considered "substitutes" even when they appear to be operating in separate markets.

Aaker (1988) shows how *Tab*, a diet cola, may define its competition in several ways: (1) other diet cola drinks (2) all cola drinks (3) all soft drinks (4) nonalcoholic beverages and (5) all beverages. This example illustrates how it is useful for firms like Tab, to view the competitive market as Abell (1980) describes " a series of overlays of differently defined businesses intersecting with one another, but not necessarily congruent with one another". Industry definitions are replaced by what are referred to as narrow "served markets" and "competitive arenas", which are clusters of interrelated served markets. (Gale and Buzzell 1990). The *served market* or *target market* in the Tab example, are consumers of diet cola. The other beverages are regarded as belonging to sets of related served markets, generic substitutes, or intertype competitors.

2.5. Analytical Approaches to Defining Product/Service Markets

At one time, the concept of competition was the sole domain of economists. Competition was determined through the calculation of the cross-price elasticity of demand. Products were determined to be close substitutes if a *price increase in one product caused an increase in the quantity demanded for another product*, or similarly, a *price decrease in one product caused a decrease in the quantity demanded for another product*. The products were said to have a positive cross-elasticity of demand. While the economic concept of cross elasticity has been helpful in determining whether producers of similar products are competing against each other, marketers use other analytical methods for defining product and service markets. Table 2 shows these methods grouped

into two broad categories: usage behaviour and customer judgments.

Table 2. - Approaches for Defining Markets

Purchase or Usage Behaviour	*Customer Judgments*
A1. Cross Elasticity of Demand	B1. Decision Sequence Analysis
A2. Similarities in Behaviour	B2. Perceptual Mapping
A3. Brand Switching	B3. Technology and Substitution Analysis
	B4. Customer Judgments of Substitutability

Source: Shocker, Allan D., David W. Stewart, and Anthony J. Zahorik (1990), "Market Structure Analysis: Practice, Problems, and Promise", in The Interface of Marketing and Strategy, eds, George Day, Barton Weitz and Robin Wensley (London: Jai Press Ltd) p.11.

Shocker, Stewart, and Zahorik (1990) make the distinction between the two sets of methods based on the criteria of "marketing impact" and "substitutability". They state that the choice of method depends on how the competitive structure is to be analyzed;

> the more behaviourally relevant "marketing impact" would be more useful for evaluating tactical decisions: the more prescriptive, judgmental "substitutability" criterion would be more relevant for "what if" departures from past behaviour and for contemplating strategic moves.

A summary of selected authors' views on the concept of intertype competition is presented in Table 3.

Table 3. - Summary of Authors' Views on Intertype Competition

Author	Intertype Competition
Abell (1980)	***Business definition***: scope and differentiation are viewed in 3 dimensions: 1) customer groups served 2) customer functions served and 3) technologies utilized. This definition is related to a *market boundary definition*, where boundaries are determined by the reasonable *interchangeability of use* or the cross elasticity of demand between the product itself and substitutes for it.
Day et al. (1979)	Two broad classes of measures of interproduct competition: *judgmental* and *behavioural* measures.
Kotler (1991)	Defines and distinguishes between *desire, generic, product-form, and brand competitors*. A company is more likely to be hurt by latent competitors, than by existing ones.
Gale and Buzzell (1990)	Intertype competition exists when the market is served by competitors satisfying a user need with physically different products, e.g., metal cans and bottles. Refer to narrow *served markets* and describe *competitive arenas* as clusters of interrelated served markets.
Srivastava et al. (1981)	Interproduct substitutability based on *substitution-in-use* or similarity of product usage patterns. Hierarchical clustering technique.
Shocker et al. (1990)	Interproduct competition based on two criteria: 1) *marketing impact*: useful for tactical decisions and 2) *substitutability*: useful for strategic planning

Intertype competition in the passenger service market suggests that the price promotions offered by airline services directly affect the market share of ground services and vice versa. For example, a price promotion by a passenger rail service will directly affect the share of a low quality airline service, and conversely, a price promotion by a low quality airline service will directly affect the share of the passenger rail service.

Hypothesis 3

For the low quality airline service, offering a price promotion will decrease the share of, or purchase intentions for, the passenger rail service.

and/or

For the passenger rail service, offering a price promotion will decrease the share of, or purchase intentions for, the low quality airline service.

The two main issues in the study, price-induced asymmetric switching and intertype competition are jointly examined and tested in the passenger service market. If the following are found to be true of the passenger service market, namely that (1) airlines compete with ground services and (2) consumers perceive the low quality airline service to be superior in quality to the rail service, then it is expected that the low quality airline's price promotion will be more effective in taking market share away from ground services, than would a rail service's price promotion be effective in taking share from airline services. Based on the opinions expressed by consumers during informal discussions, and intuitive reasoning, it was predetermined that airlines do compete with

ground services and that consumers perceive the low quality airline to be superior in quality to the rail service. This would later be confirmed in the research study, with respondents giving the low quality airline service a better overall evaluation compared to the passenger rail service.

Hypothesis 4

For the low quality airline, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the rail and bus services compared to the passenger rail service offering the same percentage discount to decrease the share of, or purchase intentions for, the high and low quality airline services.

Summary of Hypotheses

Asymmetric Switching

Hypothesis 1

For the high quality airline, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the low quality airline compared to the low quality airline offering the same percentage discount to decrease the share of, or purchase intentions for, the high quality airline.

Hypothesis 2

For the passenger rail service, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the bus service compared to the bus service offering the same percentage discount to decrease the share of, or purchase intentions for, the passenger rail service.

Intertype Competition

Hypothesis 3

For the low quality airline service, offering a price promotion will decrease the share of, or purchase intentions for, the passenger rail service.

and/or

For the passenger rail service, offering a price promotion will decrease the share of, or purchase intentions for, the low quality airline service.

Asymmetric Switching and Intertype Competition

Hypothesis 4

For the low quality airline, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the rail and bus services compared to the passenger rail service offering the same percentage discount to decrease the share of, or purchase intentions for, the high and low quality airline service.

SECTION III

METHODOLOGY

The study uses an experiment to test the theory of price-induced asymmetric switching between intratype and intertype passenger services (e.g., high and low quality airline services, rail, and bus). The choice of research method differs from most studies in this area, which have mainly used scanner techniques and methods (Blattberg and Wisniewski 1989; Kamakura and Russell 1989; Allenby and Rossi 1991). An experiment was considered to be a suitable research method for the study's objective to analyze switching behaviour.

Four Alternative Service Choices

The study focuses on the consumer choice process for passenger services. The study deals with the central issue of asymmetric switching between high and low quality services by limiting respondents' travel options to include only two types of airline service and two types of ground service. Respondents were asked to make purchase decisions given the following four alternatives: high quality airline, economy airline (i.e., low quality airline), train (i.e., high quality ground service), and bus (i.e., low quality ground service). In the questionnaires, the term *economy airline* was used instead of *low quality airline* to prevent bias in the data from a negative cuing effect.

Respondents were asked to select a passenger service alternative for personal travel between *City X* and *City K*, a distance of 500 km. It was believed that a hypothetical travel destination would eliminate potential bias, as respondents would be compelled to consider each passenger service alternative when formulating their purchase decision. However, in order to ensure that the respondents could discern travel distances of 500 km, the example of Montreal to Toronto was provided. Similarly, respondents were given as examples, *Air Canada, Nationair, Via* rail, and *Voyageur* bus to aid their understanding of the terminology used in the study.

The study deals with the issue of intertype competition by manipulating the fare prices of certain passenger services in the market. In this experiment, the low quality airline service may be purchased for the same price as the passenger rail service (i.e., high quality ground service) in the advance booking case. This measure is reasonable and consistent with the actual passenger service market. In 1993, *Nationair*, perceived as a low quality airline company, offered fares for the Montreal/Toronto destination which were comparable to *VIA* rail's fares for the same route.

During preliminary interviews, consumers were asked whether they believed the different price structures in the market based on confirmation time (i.e., advance booking and immediate booking) influenced the passenger service choice process. It was revealed that indeed the different price structures played a role in consumer decision-making. For this reason, the questionnaire asked respondents to consider two scenarios, a case with

advance booking fares, and a case with immediate booking fares.

Two Cases: Advance Booking and Immediate Booking; Two Conditions: Pre-Promotion and Post-Promotion

In *Case A*, respondents were presented with two market conditions, namely, pre-promotion and post-promotion prices for passenger services booked in advance and with imposed stay restrictions. Similarly in *Case B*, respondents were presented with pre-promotion and post-promotion prices for services booked immediately, but with no stay restrictions. Respondents were asked to treat the two cases, (advance booking and immediate booking), and the two conditions (pre-promotion and post-promotion), separately. Table 4 displays the pre-promotion prices for the passenger services appearing in each questionnaire.

Table 4. - Pre-Promotion Fares in the Passenger Service Market

CASE A: Advance booking, stay restrictions regular return fare prices (taxes not included)		CASE B: Immediate Booking, no stay restrictions regular return fare prices (taxes not included)	
quality airline	$200	quality airline	$370
economy airline	$150	economy airline	$200
train	$150	train	$150
bus	$100	bus	$100

Table 4 shows the pre-promotion price differentials between the airline services is much higher in the immediate booking case. The high quality airline service is more expensive in the immediate booking case, than in the advance booking case, and is also

relatively more costly than the other three alternatives. Fares for the low quality airline service in the immediate booking case are also more expensive than in the advance booking case. The fare prices for the rail and bus services remain the same in both cases, as *Via* rail and *Voyageur* bus offer various price discounts to seniors and students, but rarely offer price specials based on confirmation time.

Design

The study uses a before - after randomized research design or a "one-way ANOVA four group design" (Christensen 1988) to examine the effects of price promotions on both the market share and purchase intentions for four passenger service alternatives. A separate control group was created independent of the ANOVA design. The control group would serve to validate the pre-promotion results in the four experimental groups and to confirm that the subjects were not predisposed to the promotion being offered. Subjects were randomly given questionnaires. Depending on the questionnaire they received, they were assigned to one of the following five groups:

(1) the high quality airline offers a discount

(2) the low quality airline offers a discount

(3) the high quality ground service (i.e., train) offers a discount

(4) the low quality ground service (i.e., bus) offers a discount

(5) control group: regular prices for the four services

Subjects in the experimental groups were asked to choose between the four passenger services and express purchase intentions for each alternative (1) when regular list prices were provided and (2) when one service option was discounted by 20%. A price discount of 20% was used because it closely approximated the industry standard for price promotions. Consumer switching and patterns of response to price changes in the market for two cases, advance booking and immediate booking, were then observed using *pre-promotion* and *post-promotion* measures. Subjects in the control group only participated for the pre-promotion condition, as prices for this group were maintained at their regular level throughout the experiment. A summary of the four treatment groups and the control group is illustrated in Table 5.

Table 5. - Treatment Conditions

Treatment Groups				Control Group
1 n=30	2 n=30	3 n=30	4 n=30	5 n=30
HAW	HAW/O	HAW/O	HAW/O	HAW/O
LAW/O	**LAW**	LAW/O	LAW/O	LAW/O
HGW/O	HGW/O	**HGW**	HGW/O	HGW/O
LGW/O	LGW/O	LGW/O	**LGW**	LGW/O

symbols: HA = high quality airline
LA = low quality airline
HG = high quality ground or rail service
LG = low quality ground or bus service
W = with the price discount
W/O = without the price discount

Sample

Over a period of five days beginning on July 22, 1993, 180 questionnaires were distributed in person to a convenient sample consisting of the employees and customers of two large-size banks in the Montreal area. The goal was to obtain a minimum of 30 subjects for each of the five treatment groups. Questionnaires were discarded when obvious inconsistencies and problems with missing data were apparent. Other questionnaires were randomly discarded, so as to achieve equal numbers in each group. A total of 150 questionnaires were used, allowing for 30 subjects per cell treatment. Each subject received a package of chewing gum, a token of appreciation for their participation in the study.

Research Instrument

The research instrument was a questionnaire (see Appendix A). The questionnaire consisted of two parts; the first part did not include the price promotion, the second part included the price promotion. Subjects in the control group only received part one of the questionnaire. Subjects in the four experimental groups received both parts of the questionnaire. Four different versions of the questionnaire with the promotion were given to the four experimental groups. The questionnaires for the experimental groups differed only in terms of which passenger service offered a price discount of 20%.

Within each treatment group, two versions of the questionnaire were distributed. The first set of fifteen questionnaires had the service alternatives presented in the following order: quality airline, economy airline, train, and bus. The second set of fifteen questionnaires had the order of alternatives reversed to prevent a possible sequence effect influencing the subjects' responses. A pretest of the questionnaire was conducted using a smaller sample from the bank population.

Measures

Subjects were given sets of fare prices for advance booking and immediate booking, both with pre- and post- promotion conditions, and were asked to do the following: (1) make categorical purchase decisions between four passenger service alternatives and (2) reveal their purchase intentions for each alternative on a seven -point Likert type scale at extremely likely (rated 1) and extremely unlikely (rated 7).

Independent Variables: There is one independent treatment variable, (X), in the study, divided into four groups representing the different service price promotions:

X_1 = high quality airline promotion (20%)

X_2 = low quality airline promotion (20%)

X_3 = high quality ground or rail promotion (20%)

X_4 = low quality ground or bus promotion (20%)

Dependent Variables: There are two major dependent variables used to assess price-induced asymmetric switching in the passenger service market; (i) a switching intention measure and (ii) an attitudinal change measure. Two operational measures were employed for comparison purposes, with the expectation that the measures would yield similar results and provide more confidence in the research study. The dependent variable, *switching intention* was calculated as a ratio difference measure as follows: *In a single treatment group, each service's market share after the price promotion (i.e., the aggregate post-promotion score for a service) was subtracted from its original market share (i.e., the aggregate pre-promotion score for a service). The share difference was then divided by the service's original market share to obtain a proportion of share change.* Converting to ratio measures allowed the researcher to test and compare the strength of different price promotions' "pull" with respect to consumer switching.

The second dependent variable, *attitudinal change*, was a difference measure. Contrary to the preceding question where it was necessary to capture the proportion of share decrease for a particular service, in the present situation the researcher's interest was directed towards measuring the overall movement in attitude for a particular service. A ratio would not have addressed this movement. Since the object was to measure change in attitude of the group as a whole towards a service alternative to the one being promoted, it was appropriate to test the difference between the pre- and post- measures. Attitudinal change was calculated as follows: *In a single treatment group, the post-promotion average purchase intention score for a service was subtracted from the pre-*

promotion average purchase intention score for that service. Attitudinal change measures were obtained and tested for each of the passenger services in two cases, advance booking and immediate booking.

Two variables were created to represent respondents' switching intentions for the advance booking case (*switch A*), and for the immediate booking case (*switch B*). If the absolute value of the aggregate difference between the pre-promotion and post-promotion choices was greater than '0', this signified that a switch had indeed occurred, and the variable *switch A* or *switch B* was coded with a '1'. If a switch did not happen, the variable was coded with a '0'.

Other Additional Variables: The variable *overall service evaluation* was related to six other variables, namely these: *comfortable travel, convenient scheduling, departure location, fare prices, safety* and *travel time.* The six characteristics were selected on the basis that they were the most frequently mentioned passenger service attributes during informal interviews with consumers. The attribute variables may be described as follows:

convenient schedules: departure/arrival times of passenger services

travel comfort: passenger service amenities (seating, meals, entertainment)

price of fares: the monetary cost of the service alternative

safety: defined as the freedom from risk or doubt

travel time: travel time from point of departure to confirmed destination

departure location: boarding/disembarking location

Main Analysis

In this study, investigating the theories of asymmetric switching and intertype competition required examining the size and direction of price-induced share/attitudinal changes in the passenger service market. In Table 6, the pre-promotion share of, or intention for, a service alternative 'j ' for a cell 'k ' is represented as s_j^{kb}. The post-promotion share of, or intention for, a service alternative 'j' for a cell 'k' is represented as s_j^{ka}. For example, s_1^{HAb} represents the share/intention of the 1st service alternative, the high quality airline, for the treatment group HA, *before* the high quality airline's price reduction; s_1^{HAa} represents the share of the 1st service alternative, the high quality airline, for the treatment group HA, *after* the high quality airline offers a price promotion.

Table 6. - Share/Attitude Change - Treatment Group Matrix

	Treatment Groups				
Share for	control group	HA price cut (k=HA)	LA price cut (k=LA)	HG price cut (k=HG)	LG price cut (k=LG)
HA (j=1)	s_1^{o}	$s_1^{HAa} \leftarrow s_1^{HAb}$	$s_1^{LAa} \leftarrow s_1^{LAb}$	$s_1^{HGa} \leftarrow s_1^{HGb}$	$s_1^{LGa} \leftarrow s_1^{LGb}$
LA (j=2)	s_2^{o}	$s_2^{HAa} \leftarrow s_2^{HAb}$	$s_2^{LAa} \leftarrow s_2^{LAb}$	$s_2^{HGa} \leftarrow s_2^{HGb}$	$s_2^{LGa} \leftarrow s_2^{LGb}$
HG (j=3)	s_3^{o}	$s_3^{HAa} \leftarrow s_3^{HAb}$	$s_3^{LAa} \leftarrow s_3^{LAb}$	$s_3^{HGa} \leftarrow s_3^{HGb}$	$s_3^{LGa} \leftarrow s_3^{LGb}$
LG (j=4)	s_4^{o}	$s_4^{HAa} \leftarrow s_4^{HAb}$	$s_4^{LAa} \leftarrow s_4^{LAb}$	$s_4^{HGa} \leftarrow s_4^{HGb}$	$s_4^{LGa} \leftarrow s_4^{LGb}$

Note: HA = high quality airline; LA = low quality airline;
HG = high quality ground service (rail); LG = low quality ground service (bus)
b = before promotion, a = after promotion

The question of price-induced asymmetric switching between high and low quality

services will involve analyzing cross relationships. Carpenter et al. (1988) describe the cross effect as "the combined influence of all the competitors *j* which have a specific influence on brand *i* ". The cross effect of service price promotions on switching intention and attitudinal change will be examined and tested across particular cells.

Four hypotheses dealing with the theories of asymmetric switching and intertype competition are tested in the passenger service market. The first two hypotheses deal with the theory of asymmetric switching applied to *intratype* passenger services, i.e., the same category of services: (1) high and low quality airline services and (2) high and low quality ground services, i.e., rail and bus. The third hypothesis tests the significance of intertype competition in the passenger service market. The last hypothesis deals with the theory of asymmetric switching applied to *intertype* passenger services, i.e., airline vs. ground services.

The testing will be dealt with in this way. In testing share change, the z-test, the classical test for differences between proportions using independent samples will be used (Glass and Stanley 1970). This involves comparisons between two proportions using the following equation:

$$Z = \frac{p_1 - p_2}{\sqrt{\left(\frac{f_1+f_2}{n_1+n_2}\right)\left(1-\frac{f_1+f_2}{n_1+n_2}\right)\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

where: p_1 = proportion of persons responding to a promotion from population 1
p_2 = proportion of persons responding to a promotion from population 2
n_1 = sample from population 1

n_2 = sample from population 2
f_1 = number of persons in a particular class in the sample from population 1 responding to the promotion being offered
f_2 = number of persons in a particular class in the sample from population 2 responding to the promotion being offered

The sampling distributions of means or differences between means are not normally distributed when the population variances are unknown. For these situations, the t-distributions were developed. No analogous distributions are available for testing proportions. Statistical texts (e.g. Glass and Stanley (1970), Daniel and Terrel (1986)) prescribe the z-test as the statistic of choice in these cases. The null and alternate hypotheses may be stated as follows:

$$H_0: P_1 = P_2$$

$$H_A: P_1 > P_2$$

The null hypothesis will be tested at the .05 level of significance. Significant share changes will be discussed in relation to the issues of price-induced asymmetric switching and intertype competition. In the case of hypothesis 3, where a single proportion is being evaluated, the null and alternate hypotheses can be stated as follows:

$$H_0: P_1 = 0$$

$$H_A: P_1 > 0$$

The equation that will be used is the following:

$$Z = \frac{p - a}{\sqrt{a(1-a)/n}}$$

where: n = sample size
p = proportion of population responding to a promotion
a = in this study, an approximate to 0 (.01)

When instead we are testing attitudinal change, we will be testing the difference between means, and t-scores generated by the SPSS-X program will be used. The null and alternate hypotheses may be stated as follows:

$$H_0: \mu_1 = \mu_2$$

$$H_A: \mu_1 > \mu_2$$

Following each hypothesis are two statements with two operational measures. The first statement of the hypothesis will refer to switching intention. The second statement of the hypothesis will refer to attitudinal change.

Hypotheses one and two will test the theory of price-induced asymmetric switching between *intratype* passenger services. The theory suggests that a price promotion by a high quality airline service will lead to greater decreases in the share of the low quality airline service, compared to the low quality airline service offering the same percentage discount to decrease the share of the high quality airline service. Similarly, asymmetric

switching applied to intratype ground services suggests that a passenger rail service's price promotion will lead to greater decreases in the share of the bus service, compared to the bus service offering the same percentage discount to decrease the share of the passenger rail service.

Hypothesis 1

For the high quality airline, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the low quality airline compared to the low quality airline offering the same percentage discount to decrease the share of, or purchase intentions for, the high quality airline.

$$H_1: \frac{S_2^{HAb} - S_2^{HAa}}{S_2^{HAb}} > \frac{S_1^{LAb} - S_1^{LAa}}{S_1^{LAb}}$$

$$H_1: S_2^{HAb} - S_2^{HAa} > S_1^{LAb} - S_1^{LAa}$$

Hypothesis 2

For the passenger rail service, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the bus service compared to the bus service offering the same percentage discount to decrease the share of, or purchase intentions for, the passenger rail service.

$$H_2: \frac{S_4^{HGb} - S_4^{HGa}}{S_4^{HGb}} > \frac{S_3^{LGb} - S_3^{LGa}}{S_3^{LGb}}$$

$$H_2: S_4^{HGb} - S_4^{HGa} > S_3^{LGb} - S_3^{LGa}$$

The third hypothesis will test the significance of intertype competition in the passenger service market. The existence of intertype competition implies that a low quality airline's price promotion decreases the share of the passenger rail service (i.e., a different category of travel service), and conversely, a price promotion by the passenger rail service decreases the share of the low quality airline service.

Hypothesis 3

For the low quality airline service, offering a price promotion will decrease the share of, or purchase intentions for, the passenger rail service.

and/or

For the passenger rail service, offering a price promotion will decrease the share of, or purchase intentions for, the low quality airline service.

$$H_3: \frac{S_3^{LAb} - S_3^{LAa}}{S_3^{LAb}} > 0 \quad \text{and/or} \quad \frac{S_2^{HGb} - S_2^{HGa}}{S_2^{HGb}} > 0$$

$$H_3: S_3^{LAb} - S_3^{LAa} > 0 \quad \text{and/or} \quad S_2^{HGb} - S_2^{HGa} > 0$$

The fourth hypothesis tests the theories of price-induced asymmetric switching and intertype competition simultaneously. The theory of asymmetric switching applied to *intertype* passenger services suggests that a price promotion by a low quality airline will lead to greater decreases in the share of the rail and bus services, compared to the rail service offering the same percentage discount to decrease the share of the high and low

quality airline services.

Hypothesis 4

For the low quality airline, offering a price promotion will lead to greater decreases in the share of, or purchase intentions for, the rail and bus services compared to the passenger rail service offering the same percentage discount to decrease the share of, or purchase intentions for, the high and low quality airline services.

$$H_4: \frac{S_{3,4}^{LAb} - S_{3,4}^{LAa}}{S_{3,4}^{LAb}} > \frac{S_{1,2}^{HGb} - S_{1,2}^{HGa}}{S_{1,2}^{HGb}}$$

$$H_4: S_{3,4}^{LAb} - S_{3,4}^{LAa} > S_{1,2}^{HGb} - S_{1,2}^{HGa}$$

Supplementary Analysis

The subjects were randomly given questionnaires and were subsequently assigned to treatment groups offering different passenger service promotions. Analysis of variance tested for significant differences between the groups in terms of *switching intention* and *income level.*

In addition, subjects answered general questions pertaining to the passenger service

market. The questionnaire presented six service characteristics (e.g., convenient schedules, comfortable travel, fare prices, travel time, departure location, and safety) and requested that subjects rate the four alternatives on these attributes. A seven - point Likert type scale was used, with '1' signifying excellent, and '7' signifying poor. Subjects provided overall evaluations for each of the passenger service alternatives using the same seven-point scale. In the final section of the questionnaire, subjects answered demographic questions.

SECTION IV

ANALYSIS AND RESULTS

Overview

The SPSS-X statistical software was used for the data analysis which was based on 150 completed questionnaires representing a return rate of 83%. The results will be reported in two parts. The first part will provide (i) a brief demographic profile of the respondents (Table 7) and (ii) information pertaining to the passenger service market, including the respondents' evaluations of the service alternatives (Table 9, Figure 1), and the primary reasons for their service choices (Table 8). Regression and factor analysis report on the relative importance of major service characteristics in passenger service evaluation (Tables 10, 11 and 12).

The second part is the main analysis. Part II will report the findings for asymmetric switching and intertype competition in the passenger service market. This will involve comparing and testing for significant differences in switching intention and attitudinal change between services when price promotions are offered, for two cases, advance booking and immediate booking.

Part I:

Demographics

A demographic profile of the sample consisting of 150 respondents is presented in Table 7. The sample is comprised of females (60%) and males (40%). Table 8 reveals that a large proportion of the subjects are young people under the age of 35 (68.6%) and few of the subjects are over the age of 55 (1.4%). While there appears to be a sampling bias, as the majority of the respondents are under the age of 35, it would seem that the sample is still acceptable for the purposes of this study. The range of ages covers well the group that could afford to travel, as 70% are between the ages 25 and 55. The income levels among the respondents is fairly diverse, ranging from under $19,999 to above $100,000. Analysis of covariance using the variable *income* as a covariate confirmed that *income* did not have a significant effect on the respondents' switching behaviour across the treatment groups in the advance booking case ($F= 2.182$, $p= 0.142$) and in the immediate booking case ($F= 1.947$, $p= 0.166$) (see Appendix B). In this study, income level is seen as having a minimal effect on switching intention in the passenger service market, and is therefore excluded from further analysis.

Table 7. - Respondent Profile

Gender	Count	(%)	Age	Count	(%)	Income	Count	(%)
Male	60	40	< 20	5	3.3	Under $19,999	10	6.7
Female	90	60	20-24	30	20.0	$20,000-29,999	35	23.3
	—	—	25-34	68	45.3	$30,000-39,999	18	12.0
Total	150	100	35-44	25	16.7	$40,000-49,999	12	8.0
			45-54	13	8.7	$50,000-59,999	14	9.3
			55-64	7	4.7	$60,000-69,999	12	8.0
			65 +	1	.7	$70,000-79,999	19	12.7
Marital Status	Count	(%)	Missing	1	.7	$80,000-89,999	12	8.0
			Total	—	—	$90,000-99,999	6	4.0
single	83	55.3		150	100.0	$100,000 +	11	7.3
married	64	42.7				Missing	1	.7
missing	3	2.0					—	—
	—	—				Total	150	100.0
Total	150	100.0						

The Passenger Service Market

The questionnaire asked respondents to indicate the passenger services they had used in the past twelve months for travel distances of approximately 500 km to 600 km. The majority of the respondents reported having used at least one of the four transportation types for that particular distance, which confirmed that most of the respondents had had some experience with decision-making in the passenger service market (see Appendix B).

Determinants of Service Choice

Having been given a list of six attributes, respondents were asked to select their

primary reason for choosing a passenger service alternative. The six characteristics were selected on the basis that they were the most frequently mentioned passenger service attributes during informal interviews with consumers. Respondents were also given the opportunity to express more personal reasons in a space labelled *other*. Such responses however, were excluded from the analysis, as they were similar to the attributes previously mentioned. Table 8 displays the frequency in which the respondents considered each of the six attributes to be important in the service choice process.

Table 8. - Reasons for Service Choice

Reasons	Frequency	(%)
Fares	62	41.3
Travel Time	28	18.7
Travel Comfort	24	16.0
Schedules	15	10.0
Departure Location	12	8.0
Other	6	4.0
Safety	2	1.3
Missing	1	.7
Total	150	100.0

Table 8 reveals that 41.3% of the respondents consider *fare prices* to be the primary reason for their choice of passenger services. To a much lesser degree, respondents said that *travel time* (18.7%), *travel comfort* (16%), *convenient schedules* (10%), and *departure location* (8%) were the most important factors influencing their purchase decision. Only 1.3% of the respondents said that *safety* was the prime consideration in their choice of passenger services. *Price of fares* seems to matter more,

indicating that the purpose of this study, which is to examine the effects of price promotions on consumer switching, is worth investigating in this market.

Comparison and Evaluation of Service Alternatives

The respondents were asked to evaluate the passenger service alternatives on the six attributes and to provide overall evaluations using the same seven - point Likert type scale at *excellent* (rated 1) and *poor* (rated 7). The mean scores of the respondents on each service attribute and the proportion of respondents who considered each service to be *above average* (i.e., a rating of good to excellent) is presented in Table 9.

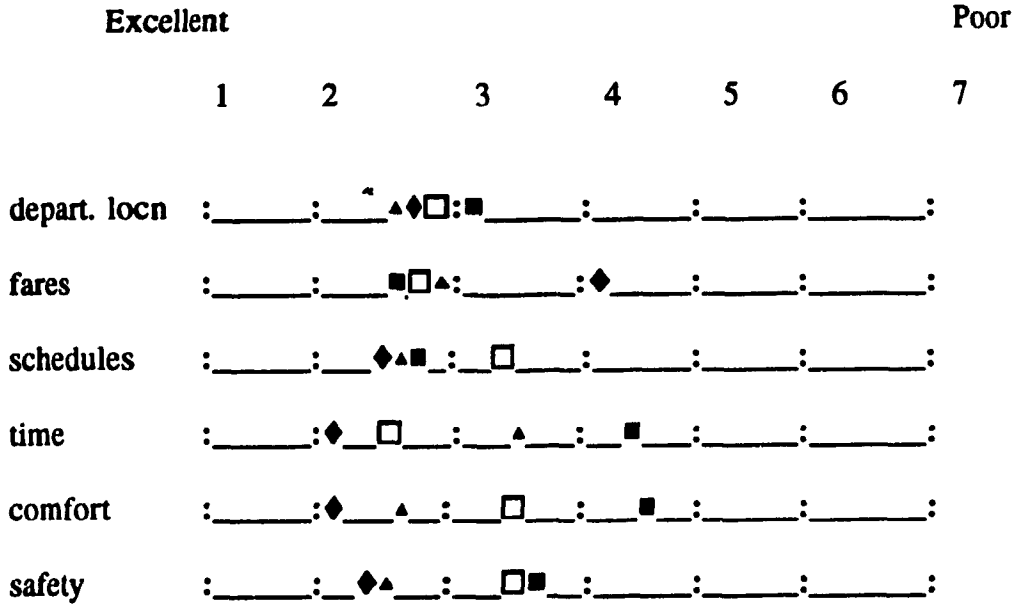
Table 9. - Means (Standard Deviations) for Service Attributes and Service Evaluation

	Passenger Services			
Attributes	HA	LA	HG	LG
departure location	2.61 (1.43)	2.92 (1.63)	2.61 (1.54)	3.03 (1.73)
fares	4.14 (1.68)	2.75 (1.47)	2.92 (1.53)	2.73 (1.63)
schedules	2.63 (1.24)	3.35 (1.54)	2.78 (1.44)	2.82 (1.57)
travel time	2.05 (1.05)	2.59 (1.55)	3.67 (1.70)	4.37 (1.97)
comfort	2.10 (1.21)	3.45 (1.69)	2.77 (1.61)	4.60 (1.96)
safety	2.41 (1.24)	3.41 (1.82)	2.49 (1.43)	3.47 (1.68)
overall evaluation	2.10 (1.10)	2.75 (1.21)	3.02 (1.38)	4.91 (1.67)
above ave. rating (%)	.87	.70	.57	.19

Note: HA= high quality airline service; LA= low quality airline service
HG= high quality ground service; LG= low quality ground or bus service
scale: '1' = excellent, '7' = poor

Figure 1 shows the mean scores of the attributes plotted and joined to produce contrasting profiles of the passenger services.

Figure 1. - Contrasting Profiles of Passenger Service Alternatives



Legend:

♦ = high quality airline service
□ = low quality airline service
▲ = high quality ground service (i.e., rail)
■ = low quality ground service (i.e., bus)

Figure 1 shows the high quality airline is perceived as being close to excellent on every attribute except *price of fares*, in which it received the lowest score. The low quality airline fell short on the attributes *comfort*, *safety*, and *scheduling*. Interestingly,

the passenger rail service received higher or similar scores to the low quality airline on every attribute except *travel time*. In Table 8, it was revealed that the respondents considered *travel time* to be the second most important factor influencing decision-making, and this is likely the reason why the low quality airline received a better overall evaluation score than the passenger rail service (see Table 9). The mean scores for the bus indicate a perception of below average quality on many of the attributes, in particular *travel time* and *comfort*. The bus however, did obtain the highest score on the attribute *price of fares*.

Relative Importance of Major Attributes in Service Evaluation

Regression analysis was used to determine the relative importance of each of the six major service attributes, namely, convenient schedules, comfortable travel, fare prices, travel time, and departure location for passenger service evaluation. Respondents rated the passenger services on each attribute and indicated their overall evaluations for each alternative using a seven-point Likert type scale at *excellent* (rated 1) and *poor* (rated 7). The results show that a linear relationship exists between the dependent variable, *passenger service evaluation*, and the independent variables, the *service characteristics* (F= 131.26, p=.000). The raw regression coefficients were examined to determine the relative importance of each attribute for passenger service evaluation. It was appropriate to interpret the raw regression coefficients because the six independent variables had been measured in the same units. Table 10 displays the results of the regression analysis of

service evaluation with the service attributes.

Table 10. - Regression Analysis of Service Evaluation with Service Attributes

Dependent Variable: Service Evaluation			
Independent Variables	coefficients	t statistic	p value
Safety	0.081219	2.199	0.0283
Fares	0.065363	2.282	0.0229
Travel time	0.365520	11.761	0.0000
Depart/locn	0.115793	3.461	0.0006
Schedules	-0.033665	-0.909	0.3637
Comfort	0.222708	6.366	0.0000
Overall F= 131.36	p= 0.000		
Sample: N= 150			
Adj.R^2 =.56694			

* not significant (p > 0.05)

The results in Table 10 show that only the variable *convenient schedules* had a negative beta value (b = - 0.031808), with no significant effect on passenger service evaluation (p = 0.3637). The variable *travel time* appears to be the most important attribute or best predictor of service evaluation. The study found that the most important attribute for service evaluation, the attribute *travel time*, did not correspond with what was reported to be the most critical factor in decision-making, namely, the *price of fares* (see Table 8). The study shows, that although consumers may give more favourable evaluations to passenger services based on criteria such as *travel time* and *travel comfort*, with regards to decision-making, the main consideration seems to be the *price of fares*.

Factor analysis was conducted to examine the correlations between the service attribute variables and to detect possible underlying constructs. Using principal components analysis, two factors were extracted with eigenvalues greater than one (see Appendix B). The results of the factor analysis are presented in Table 11.

Table 11. - Factor Analysis of Service Attributes in Passenger Service Evaluation

	Factors		
Variables	1	2	Communality
Comfort	0.88545	0.12056	.79856
Time	0.83859	0.06526	.70750
Safety	0.74158	0.32705	.65690
Fares	0.69900	0.90527	.82440
Schedules	0.48019	0.62903	.62627
Depart. Location	0.46378	0.62329	.60358
Eigenvalue	3.11466	1.10255	
% of Variance	51.9	18.4	

Factor analysis reduced the six original variables into two dimensions. Table 11 shows factor 1 to be highly correlated with the variables *travel comfort, travel time,* and *safety.* Factor 1 appears to represent attributes associated with a more pleasurable travel experience. Factor 2 is highly correlated with the variables *price of fares, schedules,* and *departure location.* Factor 2 seems to represent attributes that are basic and practical. Factor scores were created (i.e., FSATTS) because they eliminate all extraneous influences and represent pure scores. FSATTS 1 was identified as a *nonessential, additional attributes* construct. FSATTS2 was identified as an *essential, practical*

attributes construct.

Another regression analysis was done using the created factor scores, and four key demographic variables; namely, *income, gender, age,* and *marital status* as independent variables. The results of the regression analysis appear in Table 12.

Table 12. - Regression Analysis with Demographic Variables and Factor Scores

Dependent Variable: Service Evaluation			
Independent Variables	standardized coefficients	t statistic	p value
Income	.033410	.235	.8143
Sex	.168496	1.132	.2596
Age	.077417	-1.490	.1383
Marital Status	.165501	-1.494	1373
FSATTS1	.139956	4.646	.0000
FSATTS2	.086383	3.918	.0001
Overall F= 7.87061 Sample: N= 150 Adj.R^2 =.21786	p= 0.000		

* not significant (p > 0.05)

The results showed that none of the demographic variables had significant effects on passenger service evaluation (p=.8143, p=.2596, p=.1383, p=.1373) and that the nonessential attributes (e.g, travel comfort, travel time, and safety) represented by FSATTS1, are more important for service evaluation than the practical attributes (e.g price of fares, schedules, and departure location) represented by FSATTS2.

Part II:

Overview

Part II reports the major findings of the research study arranged in three sections, namely, A, B, and C. In section A, the results from the analyses using the switching intention and attitudinal change measures are reported for the case with advance booking fares. In section B, the results from the analyses using the switching intention and attitudinal change measures are reported for the case with immediate booking fares. In section C, the results from analyses of variance on the switching intention variables (i.e., *switch A* and *switch B*) and the variable *income* are reported. Part II concludes with two summary tables displaying the results for the advance booking case (Table 17), and the immediate booking case (Table 18), and a summary discussion.

In both sections A and B, the findings are organized accordingly: first, the switching intention results are reported (Table 13 for advance booking, and Table 15 for immediate booking) followed by hypothesis testing; second, the attitudinal change results are reported (Table 14 for advance booking, and Table 16 for immediate booking), also proceeded by hypothesis testing.

1. *Analysis of Switching Intention*

Crosstabulation procedures were performed to investigate the demand for each passenger service, as it related to specific service price promotions. Four crosstabulations involving the variables *service choice* and *treatment group* generated tables showing the share distribution in the market for the pre- and post- promotion conditions, for two cases, advance booking and immediate booking (see Appendix B). Table 13 for advance booking, and Table 15 for immediate booking display the pre-promotion and post-promotion share percentages side-by-side, making the increases and decreases in the market readily observable.

While the procedure crosstabulations allowed for the observation of percentage share increases and decreases in the passenger service market, in order to effectively compare the absolute magnitudes of share changes across treatment groups, it was necessary to represent the percentage share changes as ratio difference measures. Using the ratio difference measures, cross relationships between particular cells were examined and tested. Proportion for share change was found for the cases that moved to the alternative service when a promotion was offered. Then the difference between relevant proportions was tested. The null and alternate hypotheses can be stated as follows:

$$H_0: P_{\text{service 1}} = P_{\text{service 2}}$$

$$H_A: P_{\text{service 1}} > P_{\text{service 2}}$$

In the case of hypothesis 3, where a single proportion is being evaluated, the null and alternate hypotheses can be stated as follows:

$$H_0: P_{\text{service 1}} = 0$$

$$H_A: P_{\text{service 1}} > 0$$

2. *Analysis of Attitudinal Change*

Pre-promotion and post-promotion average intention scores were generated for each service. Differences between pre-promotion and post-promotion scores, termed attitudinal change, were found for each service. These differences appear in Table 14 for advance booking, and Table 16 for immediate booking. Since the original scale had '1' signifying extremely likely, and '7' signifying extremely unlikely, to facilitate understanding, the scale in the questionnaire was reversed; '1' would represent *extremely unlikely* to purchase and '7' would represent *extremely likely* to purchase. Differences in attitudinal change between selected services were compared using the SPSS-X t-test procedures for groups. The null and alternate hypotheses can be stated as follows:

$$H_0: \mu_1 = \mu_2$$

$$H_A: \mu_1 > \mu_2$$

A one-tailed test of significance was used (i.e., at percentile 95).

A. Major Results: Advance Booking Case

Respondents were presented with sets of prices for passenger services booked in advance, where the pre-promotion price differentials between the airline services was fairly narrow (see Table 4). Respondents in the experimental groups made categorical purchase decisions for both the pre-promotion and post-promotion market conditions.

1. *Switching Intention*

Table 13 shows the share increases and decreases and the ratio measures of share change in the market resulting from the price promotions.

Table 13. - Share Change (%) - Treatment Group Matrix for Advance Booking

		Treatment Groups			
Share (%) for	control group	HA price cut (k=HA)	LA price cut (k=LA)	HG price cut (k=HG)	LG price cut (k=LG)
HA (j=1)	43.6	96.7 ← 53.3 (-.81)	13.3 ←43.3 (.69)	33.3 ← 33.3 (0.0)	26.7 ← 43.3 (.38)
LA (j=2)	40.3	0.0 ← 33.3 (1.00)	80.0 ←43.3 (-.84)	36.7 ← 46.7 (.21)	36.7 ← 40.0 (.08)
HG (j=3)	9.4	0.0 ← 10.0 (1.00)	3.3 ← 3.3 (0.0)	30.0 ← 13.3 (-1.25)	13.3 ← 13.3 (0.0)
LG (j=4)	6.7 100.0	3.3 ← 3.3 (0.0)	3.3 ← 10.0 (.67)	0.0 ← 6.7 (1.00)	23.3 ← 3.3 (-6.00)

Note: HA = high quality airline; LA = low quality airline
HG = high quality ground service; LG = low quality ground service
Arrow indicates share change from pre-promotion share to post-promotion share
( ) contains ratio measure; negative value = share increase, positive value = share decrease

Asymmetric Switching

Hypothesis 1

For the high quality airline, offering a price promotion will lead to greater decreases in the share of the low quality airline (p_1) compared to the low quality airline offering the same percentage discount to decrease the share of the high quality airline (p_2).

$$H_A: \frac{S_2^{HAb} - S_2^{HAa}}{S_2^{HAb}} > \frac{S_1^{LAb} - S_1^{LAa}}{S_1^{LAb}}$$

Testing H_0 produced a z-score of 1.944. Therefore, the null hypothesis is rejected and the alternate is supported. An asymmetric effect was evident between the intratype competitors, the high and low quality airline services. When the high quality airline offered a price promotion, the share of the low quality airline decreased 100%. When the low quality airline offered a similar price discount, the high quality airline experienced a share decrease of 69%. The asymmetric effect favoured the high quality airline price promotion.

Hypothesis 2

For the passenger rail service, offering a price promotion will lead to greater decreases in the share of the bus service (p_1) compared to the bus service offering the same percentage discount to decrease the share of the passenger rail service (p_2).

$$H_A: \frac{S_4^{HGb} - S_4^{HGa}}{S_4^{HGb}} > \frac{S_3^{LGb} - S_3^{LGa}}{S_3^{LGb}}$$

Testing H_0 produced a z-score of 2.32. Therefore, the null hypothesis is rejected and the alternate is supported. An asymmetric effect was evident between the intratype ground competitors, the rail and the bus service. When the rail service offered a price promotion, the share of the bus decreased 100%. When the bus offered a similar price discount, the rail service did not experience a decrease in share. There was an asymmetric effect favouring the high quality ground service's price promotion.

Intertype Competition

Hypothesis 3

For the low quality airline service, offering a price promotion will decrease the share of the passenger rail service (p_1).

and/or

For the passenger rail service, offering a price promotion will decrease the share of the low quality airline service (p_1).

$$H_A: \quad \frac{S_3^{LAb} - S_3^{LAa}}{S_3^{LAb}} > 0 \qquad \text{and/or} \qquad \frac{S_2^{HGb} - S_2^{HGa}}{S_2^{HGb}} > 0$$

For hypothesis 3, both or one can be true. It is sufficient to test one of the hypotheses. Testing the latter produced a z-score of 7.52. Therefore, the null hypothesis is rejected and the alternate is supported. The results show that intertype competition exists in the passenger service market. Although there was no change in the rail's share when the low quality airline price promoted, there was a 21% decrease in the share of the low quality airline when the rail service reduced prices by the same percentage.

Asymmetric Switching and Intertype Competition

Hypothesis 4

For the low quality airline, offering a price promotion will lead to greater decreases in the share of the rail and bus services (p_1) compared to the passenger rail service offering the same percentage discount to decrease the share of the high and low quality airline services (p_2).

$$H_A: \frac{S_{3,4}^{LAb} - S_{3,4}^{LAa}}{S_{3,4}^{LAb}} > \frac{S_{1,2}^{HGb} - S_{1,2}^{HGa}}{S_{1,2}^{HGb}}$$

Testing H_0 produced a z- score of 1.74. Therefore, the null hypothesis is rejected and the alternate is supported. Asymmetric switching was evident between the low quality airline service and the passenger rail service. When the rail service offered a price promotion, the airlines lost a combined total of 12.5% market share. When the low quality airline offered a similar price promotion, ground services lost 50% market share. The asymmetric effect favoured the perceived superior service, the low quality airline.

2. *Attitudinal Change*

Respondents in the experimental groups indicated their purchase intentions for each service alternative for both the pre-promotion and post-promotion conditions. The pre-promotion and post-promotion mean scores and mean differences appear in Table 14.

Table 14. - Attitudinal Change - Treatment Group Matrix for Advance Booking

	Treatment Groups			
attitude for	HA price cut (k=HA)	LA price cut (k=LA)	HG price cut (k=HG)	LG price cut (k=LG)
HA (j=1)	5.63 ←4.30 (-1.33)	3.83 ←4.20 (0.37)	3.77 ←3.97 (0.20)	3.23 ← 3.83 (0.60)
LA (j=2)	4.13 ←4.23 (0.10)	5.17 ←4.20 (-0.97)	4.67 ←4.70 (0.03)	4.10 ← 4.43 (0.33)
HG (j=3)	3.37 ←3.73 (0.36)	2.70 ←3.00 (0.30)	4.00 ←3.30 (-0.70)	4.00 ← 3.77 (-0.23)
LG (j=4)	1.77 ←1.70 (-0.07)	1.77 ←1.50 (-0.27)	1.80 ←1.67 (-0.13)	3.67 ← 2.57 (-1.10)

Note: HA = high quality airline; LA = low quality airline
HG = high quality ground service (rail); LG = low quality ground service (bus)
scale: '1' = extremely *unlikely*, '7' = extremely *likely*
( ) contains difference measure; negative value = change in attitude towards *likely*, positive value = change in attitude towards *unlikely*

Asymmetric Switching

Hypothesis 1

For the high quality airline, offering a price promotion will lead to greater decreases in the purchase intentions for the low quality airline ($\bar{x}_1$) compared to the low quality airline offering the same percentage discount to decrease the purchase intentions for the high quality airline ($\bar{x}_2$).

$$H_A: \; S_2^{HAb} - S_2^{HAa} \; > \; S_1^{LAb} - S_1^{LAa}$$

Testing H_0 produced a t-score of - 0.74. Therefore, the null hypothesis is not rejected and the alternate is not supported.

Hypothesis 2

For the passenger rail service, offering a price promotion will lead to greater decreases in the purchase intentions for the bus service ($\bar{x}_1$) compared to the bus service offering the same percentage discount to decrease the purchase intentions for the passenger rail service ($\bar{x}_2$).

$$H_A: S_4^{HGb} - S_4^{HGa} > S_3^{LGb} - S_3^{LGa}$$

Testing H_0 produced a t-score of .39. Therefore, the null hypothesis is not rejected and the alternate is not supported.

Intertype Competition

Hypothesis 3

For the low quality airline service, offering a price promotion will decrease the purchase intentions for the passenger rail service ($\bar{x}_1$).

and/or

For the passenger rail service, offering a price promotion will decrease the purchase intentions for the low quality airline service ($\bar{x}_1$).

$$H_A: S_3^{LAb} - S_3^{LAa} > 0 \quad \text{and/or} \quad S_2^{HGb} - S_2^{HGa} > 0$$

Testing H_0 produced the t-scores .160 and -1.43. Therefore, the null hypothesis

is not rejected and the alternate is not supported.

Asymmetric Switching and Intertype Competition

Hypothesis 4

For the low quality airline, offering a price promotion will lead to greater decreases in the purchase intentions for the rail and bus services ($\bar{x}_1$) compared to the passenger rail service offering the same percentage discount to decrease the purchase intentions for the high and low quality airline services ($\bar{x}_2$).

$$H_A: \; S_{3,4}^{LAb} - S_{3,4}^{LAa} > S_{1,2}^{HGb} - S_{1,2}^{HGa}$$

Testing H_0 produced a t-score of .39. Therefore the null is not rejected and the alternate is not supported.

B. Major Results: Immediate Booking Case

This section reports on the results for the case where subjects were given sets of prices for passenger services based on immediate booking. In this case the price differentials between the airline services was considerably higher (see Table 4).

1. *Switching Intention*

Table 15 shows the share increases and decreases and the ratio measures of switching intention in the market resulting from the price promotions.

Table 15. - Share Change (%) - Treatment Group Matrix for Immediate Booking

		Treatment Groups			
Share (%) for	Control Group	HA price cut (k=HA)	LA price cut (k=LA)	HG price cut (k=HG)	LG price cut (k=LG)
HA (j=1)	10.0	36.7 ← 30.0 (- 0.22)	10.0 ← 0.0 (0.0)	13.3 ← 6.7 (- 0.98)	6.7 ← 6.7 (0.0)
LA (j=2)	56.7	30.0 ← 33.3 (0.09)	73.3 ← 46.7 (- 0.56)	36.7 ← 53.3 (0.31)	40.0 ← 56.7 (0.29)
HG (j=3)	23.3	30.0 ← 30.0 (0.0)	10.0 ← 40.0 (0.75)	46.7 ← 36.7 (- 0.27)	23.3 ← 23.3 (0.0)
LG (j=4)	10.0 100.0	3.3 ← 6.7 (3.4)	6.7 ← 13.3 (4.9)	3.3 ← 3.3 (0.0)	30.0 ← 13.3 (-1.25)

Note: HA = high quality airline; LA = low quality airline
HG = high quality ground service (rail); LG = low quality ground service (bus)
Arrow indicates share change from pre-promotion share to post-promotion share
( ) contains ratio measure; negative value = share increase, positive value = share decrease

Asymmetric Switching

Hypothesis 1

For the high quality airline, offering a price promotion will lead to greater decreases in the share of the low quality airline (p_1) compared to the low quality airline offering the same percentage discount to decrease the share of the high quality airline (p_2).

$$H_A: \frac{S_2^{HAb} - S_2^{HAa}}{S_2^{HAb}} > \frac{S_1^{LAb} - S_1^{LAa}}{S_1^{LAb}}$$

Testing H_0 produced a z-score of .58. Therefore, the null hypothesis is not rejected and the alternate is not supported.

Hypothesis 2

For the passenger rail service, offering a price promotion will lead to greater decreases in the share of the bus service (p_1) compared to the bus service offering the same percentage discount to decrease the share of the passenger rail service (p_2).

$$H_A: \frac{S_4^{HGb} - S_4^{HGa}}{S_4^{HGb}} > \frac{S_3^{LGb} - S_3^{LGa}}{S_3^{LGb}}$$

The data in this case did not warrant statistical testing because the proportions were both equal to zero. However, an examination of the frequencies (see Appendix B) showed that all seven rail passengers continued to choose the rail service after the bus'

promotion. This number may be compared to the one bus passenger who was not influenced by the rail promotion. It would seem that rail passengers are more loyal and less willing to switch.

Intertype Competition

Hypothesis 3

For the low quality airline service, offering a price promotion will decrease the share of the passenger rail service (p_1).

and/or

For the passenger rail service, offering a price promotion will decrease the share of the low quality airline service (p_1).

$$H_A: \frac{S_3^{LAb} - S_3^{LAa}}{S_3^{LAb}} > 0 \quad \text{and/or} \quad \frac{S_2^{HGb} - S_2^{HGa}}{S_2^{HGb}} > 0$$

Testing H_0 produced the z-scores 25.76 and 12.06. Therefore, the null hypothesis is rejected in both instances, and the alternate is supported. The results show that intertype competition exists in the passenger service market. Both promotions by the low quality airline service and the passenger rail service significantly affected the share of the other.

Asymmetric Switching and Intertype Competition

Hypothesis 4

For the low quality airline, offering a price promotion will lead to greater decreases in the share of the rail and bus services (p_1) compared to the passenger rail service offering the same percentage discount to decrease the share of the high and low quality airline services (p_2).

$$H_A: \frac{S_{3,4}^{LAb} - S_{3,4}^{LAa}}{S_{3,4}^{LAb}} > \frac{S_{1,2}^{HGb} - S_{1,2}^{HGa}}{S_{1,2}^{HGb}}$$

Testing H_0 produced a z-score of 3.12. Therefore, the null hypothesis is rejected and the alternate is supported. Asymmetric switching was apparent in the intertype case between the low quality airline service and the passenger rail service. When the low quality airline price promoted, the ground services lost a combined total of 68% market share. When the passenger rail service offered a similar price promotion, the airlines lost a total of 16% market share. The asymmetric effect favoured the low quality airline promotion.

2. *Attitudinal Change*

Purchase intention measures were obtained for each passenger service alternative for the pre- and post- promotion conditions in the experimental groups. The mean pre- and post-promotion intention scores and mean differences appear in Table 16.

Table 16. - Attitudinal Change - Treatment Group Matrix for Immediate Booking

attitude for	Treatment Groups: HA price cut (k=HA)	LA price cut (k=LA)	HG price cut (k=HG)	LG price cut (k=LG)
HA (j=1)	3.90 ←3.30 (-0.60)	2.70 ←2.23 (-0.47)	2.10 ←2.20 (0.10)	2.63 ←2.60 (-0.03)
LA (j=2)	3.87 ←3.67 (-0.20)	4.90 ←4.00 (-0.90)	4.23 ←4.20 (-0.03)	4.17 ←4.47 (0.30)
HG (j=3)	3.77 ←3.80 (0.03)	2.80 ←3.87 (1.07)	4.33 ←4.03 (-0.30)	4.27 ←4.27 (0.0)
LG (j=4)	1.97 ←2.20 (0.23)	1.93 ←1.90 (-0.03)	1.80 ←2.17 (0.37)	3.40 ←2.83 (-0.57)

Note: HA = high quality airline service; LA = low quality airline service
HG = high quality ground service; LG = low quality ground service
scale: '1' = extremely *unlikely*, '7' = extremely *likely*
( ) contains difference measure; negative value = change in attitude towards *likely*, positive value = change in attitude towards *unlikely*

Asymmetric Switching

Hypothesis 1

For the high quality airline, offering a price promotion will lead to greater decreases in the purchase intentions for the low quality airline ($\bar{x}_1$) compared to the low quality airline offering the same percentage discount to decrease the purchase intentions for the high quality airline ($\bar{x}_2$).

$$H_A: \; S_2^{HAb} - S_2^{HAa} \quad > \quad S_1^{LAb} - S_1^{LAa}$$

Testing H_0 produced a t-score of .70. Therefore, the null hypothesis is not rejected and the alternate is not supported.

Hypothesis 2

For the passenger rail service, offering a price promotion will lead to greater decreases in the purchase intentions for the bus service ($\bar{x}_1$) compared to the bus service offering the same percentage discount to decrease the purchase intentions for the passenger rail service ($\bar{x}_2$).

$$H_A: S_4^{HGb} - S_4^{HGa} > S_3^{LGb} - S_3^{LGa}$$

Testing H_0 produced the t-score of 1.08. Therefore, the null hypothesis is not rejected and the alternate is not supported.

Intertype Competition

Hypothesis 3

For the low quality airline service, offering a price promotion will decrease the purchase intentions for the passenger rail service ($\bar{x}_1$).

and/or

For the passenger rail service, offering a price promotion will decrease the purchase intentions for the low quality airline service ($\bar{x}_1$).

$$H_A: S_3^{LAb} - S_3^{LAa} > 0 \text{ and/or } S_2^{HGb} - S_2^{HGa} > 0$$

Testing the first hypothesis produced a t-score of 4.81. Therefore, the null hypothesis is rejected and the alternate is supported. The results indicate that intertype competition exists in the passenger service market. The price promotion by the low quality airline service caused a significant decrease in the purchase intentions for the passenger rail service.

Asymmetric Switching and Intertype Competition

Hypothesis 4

For the low quality airline, offering a price promotion will lead to greater decreases in the purchase intentions for the rail and bus services compared to the passenger rail service ($\bar{x}_1$) offering the same percentage discount to decrease the purchase intentions for high and low quality airline services ($\bar{x}_2$).

$$H_A: S_{3,4}^{LAb} - S_{3,4}^{LAa} > S_{1,2}^{HGb} - S_{1,2}^{HGa}$$

Testing H_0 produced the t-score 3.58. Therefore, the null is rejected and the alternate is supported. An asymmetric effect was apparent between the intertype competitors, the low quality airline and the passenger rail service. When the low quality airline offered a price promotion, the purchase intentions for the rail and bus services decreased more than the purchase intentions for the high and low quality airlines when the rail service offered a similar price promotion.

C. Supplementary Analysis

Analysis of Variance: Analysis of variance revealed that there were no significant differences in switching intention (i.e., *switch A*) across the treatment groups in the advance booking case (F= 1.1918, p = 0.3161). In the immediate booking case, respondents displayed significant differences in switching intention (i.e., *switch B*) across the experimental groups (F= 3.0726, p=0.0305). Using the Student-Newman Keuls procedure for multiple comparisons, the following differences were found between the treatment group HA (mean = .1333) and the treatment group LA (mean = .4667). As aforementioned, analysis of covariance using the variable *income* as a covariate confirmed that *income* did not have a significant effect on the respondents' switching behaviour across the treatment groups in the advance booking case (F= 2.182, p= 0.142) and in the immediate booking case (F= 1.947, p= 0.166) (see Appendix B).

Summary

Two measures were used to address the issues in the study: (1) the switching intention measure offered a way to clinically examine and test the effects of price promotions on market share, and (2) the attitudinal change measures offered a way to examine the issues in terms of purchase intentions. Two cases were studied (1) with advance booking fares and (2) with immediate booking fares.

In the advance booking case, in testing the proportions of share change with the switching intention measure, the findings supported the theories of asymmetric switching and intertype competition. However, using the switching intention measure, the theory of asymmetric switching in the intratype airline case for immediate booking was not supported. In the advance booking case, in testing with the attitudinal change measures, the findings did not support the theories of asymmetric switching and intertype competition. In the immediate booking case, in testing with the attitudinal change measures, the findings did not support asymmetric switching in both intratype cases.

Table 17. - Summary Table of Results for Advance Booking Case

Hypotheses	Switching Intention	Attitudinal Change
The theory of asymmetric switching implies the following: H1: $\frac{S_2^{HAb} - S_2^{HAa}}{S_2^{HAb}} > \frac{S_1^{LAb} - S_1^{LAa}}{S_1^{LAb}}$ H1: $S_2^{HAb} - S_2^{HAa} > S_1^{LAb} - S_1^{LAa}$ H2: $\frac{S_4^{HGb} - S_4^{HGa}}{S_4^{HGb}} > \frac{S_3^{LGb} - S_3^{LGa}}{S_3^{LGb}}$ H2: $S_2^{HGb} - S_2^{HGa} > S_1^{LGb} - S_1^{LGa}$	H_1 is supported. There is an asym. effect b/w intratype competitors, HA and LA. H_2 is supported. There is an asym. effect b/w intratype competitors, rail and bus.	H_1 is not supported. No asym. effect b/w intratype competitors HA and LA. H_2 is not supported. No asym. effect b/w the intratype competitors, rail and bus.
The existence of significant intertype competition implies the following: H3: $\frac{S_3^{LAb} - S_3^{LAa}}{S_3^{LAb}} > 0$ and/or $\frac{S_2^{HGb} - S_2^{HGa}}{S_2^{HGb}} > 0$ H3: $S_3^{LAb} - S_3^{LAa} > 0$ and/or $S_2^{HGb} - S_2^{HGa} > 0$	H_3 is supported. There is intertype competition in the market.	H_3 is not supported. Intertype competition is not significant in the market.
The existence of both asymmetric switching and intertype competition implies the following: H4: $\frac{S_{3,4}^{LAb} - S_{3,4}^{LAa}}{S_{3,4}^{LAb}} > \frac{S_{1,2}^{HGb} - S_{1,2}^{HGa}}{S_{1,2}^{HGb}}$ H4: $S_{3,4}^{LAb} - S_{3,4}^{LAa} > S_{1,2}^{HGb} - S_{1,2}^{HGa}$	H_4 is supported. Asymmetric switching is evident b/w the intertype competitors, ground and airline services.	H_4 is not supported. No Asym.switching evident b/w the intertype competitors, ground and airline services.

Table 18. - Summary Table of Results for Immediate Booking Case

Hypotheses	Switching Intention	Attitudinal Change
The theory of asymmetric switching implies the following: H1: $\frac{s_2^{HAb} - s_2^{HAa}}{s_2^{HAb}} > \frac{s_1^{LAb} - s_1^{LAa}}{s_1^{LAb}}$ H1: $s_2^{HAb} - s_2^{HAa} > s_1^{LAb} - s_1^{LAa}$ H2: $\frac{s_4^{HGb} - s_4^{HGa}}{s_4^{HGb}} > \frac{s_3^{LGb} - s_3^{LGa}}{s_3^{LGb}}$ H2: $s_2^{HGb} - s_2^{HGa} > s_1^{LGb} - s_1^{LGa}$	H_1 is not supported. No asym. effect b/w the intratype competitors, HA and LA. H_2 is supported. There is an asym. effect b/w the intratype competitors, rail and bus.	H_1 is not supported. No asym. effect b/w the intratype competitors, HA and LA. H_2 is not supported. There is no asym. effect b/w the intratype competitors, rail and bus.
The existence of significant intertype competition implies the following: H3: $\frac{s_3^{LAb} - s_3^{LAa}}{s_3^{LAb}} > 0$ and/or $\frac{s_2^{HGb} - s_2^{HGa}}{s_2^{HGb}} > 0$ H3: $s_3^{LAb} - s_3^{LAa} > 0$ and/or $s_2^{HGb} - s_2^{HGa} > 0$	H_3 is supported. There is intertype competition in the market.	H_3 is supported. There is intertype competition in the market.
The existence of both asymmetric switching and intertype competition implies the following: H4: $\frac{s_{3,4}^{LAb} - s_{3,4}^{LAa}}{s_{3,4}^{LAb}} > \frac{s_{1,2}^{HGb} - s_{1,2}^{HGa}}{s_{1,2}^{HGb}}$ H4: $s_{3,4}^{LAb} - s_{3,4}^{LAa} > s_{1,2}^{HGb} - s_{1,2}^{HGa}$	H_4 is supported. Asym.switching is evident b/w the intertype competitors, ground and airline services.	H_4 is supported. Asym. switching is evident b/w the intertype competitors, ground and airline services.

SECTION V

DISCUSSION

An unexpected issue in the study was the discrepancies in the research findings involving the two operational measures, namely, switching intention and attitudinal change. The study had anticipated that the results would be similar. The reasons for the differences is not clear and requires further investigation. However, the study found that it may not be reasonable to examine the cross effect of price promotions using interval data, as the cross effect might not in fact be captured. Often the changes along the seven-point scale were only incremental movements in either direction. It would, therefore, be inappropriate to judge and compare the effectiveness of price promotions given such marginal changes in attitude.

An alternative method may be to simply examine and compare the direct effects of price promotions on attitudinal change for the promoted service. For example, the researcher may examine the effects of (say) the high quality airline promotion in relation to the attitude change for the high quality airline service, compared with the change in attitude for (say) the low quality airline service elicited by a low quality airline price promotion. Using this approach, the asymmetric switching issue is addressed directly, namely, by examining the effects of a firm's own actions, rather than those of its competitors.

Academic Implications

This study represents an initial attempt to describe and quantify asymmetric switching in a service marketing context. The past studies which have dealt with the theory of price-induced asymmetric switching only involved cases of intratype competition using frequently purchased household or grocery products (Blattberg and Wisniewski 1989; Kamakura and Russell 1989; Allenby and Rossi 1991). The present study makes a significant academic contribution by employing a different research method, an experiment, and a case of service competition to the existing literature regarding price-induced asymmetric switching.

For both cases, advance booking and immediate booking, with the switching intention measures, the present study found that higher quality passenger services tended to experience a greater increase in sales than lower quality passenger services, when the two types offered the same percentage discount. The study confirmed the findings of previous studies, and extended the theory of price-induced asymmetric switching to include non-frequently purchased passenger services.

Implications and Recommendations for Marketing Managers

The study provides important managerial implications for marketing practitioners. The study suggests to managers of lower quality services that they should avoid using

price promotions (e.g., cash rebates or low financing offers) in attempting to take market share from higher quality services. The present study demonstrates that consumers respond more favourably to price promotions offered by higher quality services (e.g. high quality airline), than they do to price promotions offered by lower quality services (e.g. bus). Lower quality firms should perhaps consider other marketing strategies. Kotler (1991) suggests emphasizing secondary service features. For example, for travel within Europe, the passenger rail service has robbed the airlines of many customers with their advertising showing the convenience and ease of travel with rail service (Economist 1992).

The study also shows that when a premium service is priced too high relative to the other alternatives, it may be severely affected by a lower quality price promotion. For example, in the immediate booking case, few consumers chose the high quality airline service even when a price promotion was offered. Thus, the narrowing of the price differential is a key determinant of asymmetric switching in consumer markets. In price sensitive markets, higher quality services that are not price competitive may need to build in switching costs (e.g., Air Miles Program, Aeroplan) to increase customer loyalty, and to gain and sustain market share.

In addition, the study encourages firms to recognize intertype competitors in the market and to consider them in strategic planning. The study shows that even services that are highly differentiated may be competitors in the same market. The study

illustrates that to treat three modes of transportation (i.e., airline, rail, and bus) as three separate industries is using poor judgment, because at the retail level their share are interdependent. A price deal by an airline service affects the ridership for ground services and vice versa.

SECTION VI

CONCLUSION

Conclusion

Offering price promotions is a strategy often used by firms looking to increase market share, but it should be approached with more cautious deliberation. The present study confirmed the findings of previous studies, showing that the market share effects of price promotions may be asymmetric. Whether a service is perceived as being of high or low quality will, in large part, determine the effectiveness of its price promotions. Price promotions by higher quality services tend to experience a significantly greater increase in sales than lower quality services offering the same percentage discount. This was true in the intratype cases (i.e., high and low quality airlines, high and low quality ground services) and the intertype case (i.e., low quality airline and high quality ground service).

The narrowing of the price differential between the service alternatives seems to have an influence on the extent of the asymmetric switching. The more narrow is the price differential (e.g., advance booking case), the more evident is the asymmetric switching favouring the higher quality service. Consequently, firms should plan their pricing and promotional decisions using the competition as a reference point, which includes intertype competitors.

Research Limitations and Considerations for Future Study

It is important to recognize three limitations with the present study that may restrict the generality of the research results.

The first limitation with the study is that in order to effectively observe price-induced asymmetric switching, the study must control for competitor reaction to price promotions in the market, i.e., price wars. Consequently, in the experiment, only one passenger service option could be discounted in each of the treatment groups. While such competitor inaction may seem unrealistic, the experimental situation is in fact consistent with an actual case. In 1993, *Nationair*, an economy airline company, reduced its fares and was priced below *VIA* rail's passenger service fares. *VIA* rail chose to not respond to *Nationair's* price promotion for the popular Montreal/Toronto destination.

Second, in order to address the central issue of asymmetric switching between high and low quality intertype services, it was necessary to confine respondents' travel options to two types of airline service and two types of ground service. However, some consumers if given the choice would elect to drive their own automobiles for travel distances of 500 km - 600 km. In this study, a large proportion of the respondents, approximately 31%, reported not having used any of the passenger service alternatives in the last twelve months (see Appendix B). The study forces these respondents to choose between passenger service alternatives they would not otherwise consider for such travel

distances.

A third limitation with the study was that the sample was largely comprised of young people under the age of 35 (68.6%). This consumer segment is characterized as price-sensitive because of its generally lower income levels. Although, analysis of covariance with the variable *income* as a covariate confirmed that *income* did not have a significant effect on the respondents' behaviour in the advance booking case ($F= 2.182$, $p= 0.142$) and in the immediate booking case ($F= 1.947$, $p= 0.166$) (see Appendix B), the income constraints of this group may explain some of the results in the study. For example, in the immediate booking case, few of the respondents chose the high quality airline service, and none of the respondents chose the high quality airline service in the treatment group with the low quality airline price promotion.

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APPENDIX A

Questionnaire

The following questionnaire was distributed to five groups; a control group and four experimental groups. The questionnaire consists of four pages, including a cover letter. The questionnaire contains two parts; the first part was without the price promotion, the second part included the price promotion. Subjects in the control group only received part one of the questionnaire. Subjects in the four experimental groups received both parts of the questionnaire. Four different versions of the questionnaire with the promotion were given to the four experimental groups. The questionnaires for the experimental groups differed only in terms of which passenger service offered a price discount of 20%.

Full Questionnaire for Treatment Group 1

Concordia
UNIVERSITY

July 22, 1993

Dear Sir/Madam:

I am currently completing the requirements for a Master of Science in Administration (marketing). I am conducting a research study among consumers in the Montreal area. The purpose of this research is to examine consumers' purchase choices of passenger services (airline, train or bus services) for travel distances of approximately 500-600 km when price promotions are being offered. I request your participation in my research.

The enclosed questionnaire should take approximately 10 minutes to complete. I ask that you answer all the questions. Please express your true opinions. Your responses will remain anonymous.

Thanking you in advance for your cooperation and prompt return of this questionnaire.

Sincerely,

Claudia Scolaro

Claudia Scolaro

1455 de Maisonneuve Blvd W
Montreal, Quebec H3G 1M8

PLEASE ANSWER THE FOLLOWING QUESTIONS HONESTLY AND THOUGHTFULLY. YOUR HELP IN THIS STUDY IS GREATLY APPRECIATED.

1. ***In the last 12 months, which type(s) of passenger services have you used for travel distances of approximately 500-600 km ? (circle all types)***

1. bus 2. train

3. economy airline 4. quality airline 5. none

2. ***What do you consider to be your main reason for choosing a particular passenger service type? (circle one please)***

1. convenient schedules 2. comfortable travel 3. fare prices

4. travel time 5. departure location 6. safety

7. other———————————please specify

3. ***Please evaluate the passenger service alternatives in terms of the following characteristics:***

	Excellent						Poor
Bus							
departure location	1	2	3	4	5	6	7
fare prices	1	2	3	4	5	6	7
schedules	1	2	3	4	5	6	7
travel time	1	2	3	4	5	6	7
comfortable travel	1	2	3	4	5	6	7
safety	1	2	3	4	5	6	7
Train							
departure location	1	2	3	4	5	6	7
fare prices	1	2	3	4	5	6	7
schedules	1	2	3	4	5	6	7
travel time	1	2	3	4	5	6	7
comfortable travel	1	2	3	4	5	6	7
safety	1	2	3	4	5	6	7
Economy Airline							
departure location	1	2	3	4	5	6	7
fare prices	1	2	3	4	5	6	7
schedules	1	2	3	4	5	6	7
travel time	1	2	3	4	5	6	7
comfortable travel	1	2	3	4	5	6	7
safety	1	2	3	4	5	6	7
Quality Airline							
departure location	1	2	3	4	5	6	7
fare prices	1	2	3	4	5	6	7
schedules	1	2	3	4	5	6	7
travel time	1	2	3	4	5	6	7
comfortable travel	1	2	3	4	5	6	7
safety	1	2	3	4	5	6	7

4. ***Please circle the appropriate number indicating your overall evaluation of the passenger service alternative.***

	Excellent						Poor
bus	1	2	3	4	5	6	7
train	1	2	3	4	5	6	7
economy air	1	2	3	4	5	6	7
quality air	1	2	3	4	5	6	7

Please read the following information carefully. Cases A and B are two <u>separate</u> situations. Please answer questions 5 and 6 for both cases A and B.

Imagine you are planning a trip to *City X* from *City K*. The distance between the two cities is approximately 500 km *(e.g Montreal to Toronto)*. You must leave on a Sunday. You are asked to consider two *separate* cases; Case A (7 day advance booking, stay restrictions) and Case B (no advance booking, no stay restrictions). Suppose your travel options consist of the following; quality airline service *(e.g Air Canada)*, economy airline service *(e.g Nationair)*, train service *(e.g VIA Rail)*, and bus service *(e.g Voyageur)*.

CASE A: Advance booking, stay restrictions regular return fare prices (taxes not included)		**CASE B: No advance booking, no stay restrictions** regular return fare prices (taxes not included)	
quality airline	$200	quality airline	$370
economy airline	$150	economy airline	$200
train	$150	train	$150
bus	$100	bus	$100

5. ***Which type of passenger service would you most likely choose? (circle <u>one</u> for each case)***

CASE A		CASE B	
1. bus	2. train	1. bus	2. train
3. economy airline	4. quality airline	3. economy airline	4. quality airline

6. ***Please circle the appropriate number corresponding to how likely you are to choose the passenger service type for cases A and B.***

CASE A			CASE B		
	Extremely Likely	Extremely Unlikely		Extremely Likely	Extremely Unlikely
bus	1...2...3...4...5...6...7		bus	1...2...3...4...5...6...7	
train	1...2...3...4...5...6...7		train	1...2...3...4...5...6...7	
economy air	1...2...3...4...5...6...7		economy air	1...2...3...4...5...6...7	
quality air	1...2...3...4...5...6...7		quality air	1...2...3...4...5...6...7	

Assume that as you are planning your trip to *City X* from *City K*, the quality airline company offers a price discount of 20%. Your options now are the following:

CASE A: Advance booking, stay restrictions regular return fare prices (taxes not included)		CASE B: No advance booking, no stay restrictions regular return fare prices (taxes not included)	
quality airline $200 ->	$160	quality airline $370 ->	$296
economy airline	$150	economy airline	$200
train	$150	train	$150
bus	$100	bus	$100

Please consider cases A and B separately. Answer questions 7 and 8 for both cases A and B.

7. ***Which type of passenger service would you most likely choose? (circle one for each case)***

CASE A		CASE B	
1. bus	2. train	1. bus	2. train
3. economy airline	4. quality airline	3. economy airline	4. quality airline

8. ***Please circle the appropriate number corresponding to how likely you are to choose the passenger service type for cases A and B.***

CASE A			CASE B		
	Extremely Likely	Extremely Unlikely		Extremely Likely	Extremely Unlikely
bus	1...2...3...4...5...6...7		bus	1...2...3...4...5...6...7	
train	1...2...3...4...5...6...7		train	1...2...3...4...5...6...7	
economy air	1...2...3...4...5...6...7		economy air	1...2...3...4...5...6...7	
quality air	1...2...3...4...5...6...7		quality air	1...2...3...4...5...6...7	

Please answer the following demographic questions. All answers are kept confidential.

9. ***What is your age?*** 1. Under 20 2. 20-24 3. 25-34 4. 35-44 5. 45-54 6. 55-64 7. 65 & above

10. ***Are you male or female?*** 1. male 2. female

11. ***Are you single or married?*** 1. single 2. married

12. ***Which of the following categories includes your household's total annual income? (circle one please)***

1. Under $19,999 2. $20,000-29,999 3.$30,000-39,999 4. $40,000-49,999

5. $50,000-59,999 6. $60,000-69,999 7. $70,000-79,999 8. $80,000-89,999

9. $90,000-99,999 10. $100,000 & above

Partial Questionnaire for Treatment Group 2

Assume that as you are planning your trip to *City X* from *City K*, the economy airline company offers a price discount of 20%. Your options now are the following:

CASE A: Advance booking, stay restrictions regular return fare prices (taxes not included)		CASE B: No advance booking, no stay restrictions regular return fare prices (taxes not included)	
quality airline	$200	quality airline	$370
economy airline $150 ->	$120	economy airline $200 ->	$160
train	$150	train	$150
bus	$100	bus	$100

Please consider cases A and B separately. Answer questions 7 and 8 for both cases A and B.

7. ***Which type of passenger service would you most likely choose? (circle one for each case)***

CASE A		CASE B	
1. bus	2. train	1. bus	2. train
3. economy airline	4. quality airline	3. economy airline	4. quality airline

8. ***Please circle the appropriate number corresponding to how likely you are to choose the passenger service type for cases A and B.***

CASE A	Extremely Likely	Extremely Unlikely	CASE B	Extremely Likely	Extremely Unlikely
bus	1...2...3...4...5...6...7		bus	1...2...3...4...5...6...7	
train	1...2...3...4...5...6...7		train	1...2...3...4...5...6...7	
economy air	1...2...3...4...5...6...7		economy air	1...2...3...4...5...6...7	
quality air	1...2...3...4...5...6...7		quality air	1...2...3...4...5...6...7	

Please answer the following demographic questions. All answers are kept confidential.

9. ***What is your age?*** 1. Under 20 2. 20-24 3. 25-34 4. 35-44 5. 45-54 6. 55-64 7. 65 & above

10. ***Are you male or female?*** 1. male 2. female

11. ***Are you single or married?*** 1. single 2. married

12. ***Which of the following categories includes your household's total annual income? (circle one please)***

1. Under $19,999 2. $20,000-29,999 3.$30,000-39,999 4. $40,000-49,999
5. $50,000-59,999 6. $60,000-69,999 7. $70,000-79,999 8. $80,000-89,999
9. $90,000-99,999 10. $100,000 & above

Partial Questionnaire for Treatment Group 3

Assume that as you are planning your trip to *City X* from *City K*, the train company offers a price discount of 20%. Your options now are the following:

CASE A: Advance booking, stay restrictions regular return fare prices (taxes not included)		CASE B: No advance booking, no stay restrictions regular return fare prices (taxes not included)	
quality airline	$200	quality airline	$370
economy airline	$150	economy airline	$200
train $150 ->	$120	train $150 ->	$120
bus	$100	bus	$100

Please consider cases A and B separately. Answer questions 7 and 8 for both cases A and B.

7. ***Which type of passenger service would you most likely choose? (circle one for each case)***

CASE A		CASE B	
1. bus	2. train	1. bus	2. train
3. economy airline	4. quality airline	3. economy airline	4. quality airline

8. ***Please circle the appropriate number corresponding to how likely you are to choose the passenger service type for cases A and B.***

CASE A	Extremely Likely ... Extremely Unlikely	CASE B	Extremely Likely ... Extremely Unlikely
bus	1...2...3...4...5...6...7	bus	1...2...3...4...5...6...7
train	1...2...3...4...5...6...7	train	1...2...3...4...5...6...7
economy air	1...2...3...4...5...6...7	economy air	1...2...3...4...5...6...7
quality air	1...2...3...4...5...6...7	quality air	1...2...3...4...5...6...7

Please answer the following demographic questions. All answers are kept confidential.

9. ***What is your age?*** 1. Under 20 2. 20-24 3. 25-34 4. 35-44 5. 45-54 6. 55-64 7. 65 & above

10. ***Are you male or female?*** 1. male 2. female

11. ***Are you single or married?*** 1. single 2. married

12. ***Which of the following categories includes your household's total annual income? (circle one please)***

1. Under $19,999 2. $20,000-29,999 3.$30,000-39,999 4. $40,000-49,999
5. $50,000-59,999 6. $60,000-69,999 7. $70,000-79,999 8. $80,000-89,999
9. $90,000-99,999 10. $100,000 & above

Partial Questionnaire for Treatment Group 4

Assume that as you are planning your trip to *City X* from *City K*, the bus company offers a price discount of 20%. Your options now are the following:

CASE A: Advance booking, stay restrictions regular return fare prices (taxes not included)		**CASE B: No advance booking, no stay restrictions** regular return fare prices (taxes not included)	
quality airline	$200	quality airline	$370
economy airline	$150	economy airline	$200
train	$150	train	$150
bus $100 ->	$80	bus $100 ->	$80

Please consider cases A and B separately. Answer questions 7 and 8 for both cases A and B.

7. ***Which type of passenger service would you most likely choose? (circle one for each case)***

CASE A		CASE B	
1. bus	2. train	1. bus	2. train
3. economy airline	4. quality airline	3. economy airline	4. quality airline

8. ***Please circle the appropriate number corresponding to how likely you are to choose the passenger service type for cases A and B.***

CASE A	Extremely Likely ... Extremely Unlikely	CASE B	Extremely Likely ... Extremely Unlikely
bus	1...2...3...4...5...6...7	bus	1...2...3...4...5...6...7
train	1...2...3...4...5...6...7	train	1...2...3...4...5...6...7
economy air	1...2...3...4...5...6...7	economy air	1...2...3...4...5...6...7
quality air	1...2...3...4...5...6...7	quality air	1...2...3...4...5...6...7

Please answer the following demographic questions. All answers are kept confidential.

9. ***What is your age?*** 1. Under 20 2. 20-24 3. 25-34 4. 35-44 5. 45-54 6. 55-64 7. 65 & above

10. ***Are you male or female?*** 1. male 2. female

11. ***Are you single or married?*** 1. single 2. married

12. ***Which of the following categories includes your household's total annual income? (circle one please)***

1. Under $19,999 2. $20,000-29,999 3.$30,000-39,999 4. $40,000-49,999
5. $50,000-59,999 6. $60,000-69,999 7. $70,000-79,999 8. $80,000-89,999
9. $90,000-99,999 10. $100,000 & above

Partial Questionnaire for Treatment Group 5 (Control Group)

4. ***Please circle the appropriate number indicating your overall evaluation of the passenger service alternative.***

	Excellent						Poor
bus	1	2	3	4	5	6	7
train	1	2	3	4	5	6	7
economy air	1	2	3	4	5	6	7
quality air	1	2	3	4	5	6	7

Please read the following information carefully. Cases A and B are two <u>separate</u> situations. Please answer questions 5 and 6 for both cases A and B.

Imagine you are planning a trip to *City X* from *City K*. The distance between the two cities is approximately 500 km *(e.g Montreal to Toronto)*. You must leave on a Sunday. You are asked to consider two *separate* cases; Case A (7 day advance booking, stay restrictions) and Case B (no advance booking, no stay restrictions). Suppose your travel options consist of the following; quality airline service *(e.g Air Canada)*, economy airline service *(e.g Nationair)*, train service *(e.g VIA Rail)*, and bus service *(e.g Voyageur)*.

CASE A: Advance booking, stay restrictions regular return fare prices (taxes not included)		**CASE B: No advance booking, no stay restrictions** regular return fare prices (taxes not included)	
quality airline	$200	quality airline	$370
economy airline	$150	economy airline	$200
train	$150	train	$150
bus	$100	bus	$100

5. ***Which type of passenger service would you most likely choose? (circle <u>one</u> for each case)***

CASE A		CASE B	
1. bus	2. train	1. bus	2. train
3. economy airline	4. quality airline	3. economy airline	4. quality airline

6. ***Please circle the appropriate number corresponding to how likely you are to choose the passenger service type for cases A and B.***

CASE A	Extremely Likely						Extremely Unlikely
bus	1	2	3	4	5	6	7
train	1	2	3	4	5	6	7
economy air	1	2	3	4	5	6	7
quality air	1	2	3	4	5	6	7

CASE B	Extremely Likely						Extremely Unlikely
bus	1	2	3	4	5	6	7
train	1	2	3	4	5	6	7
economy air	1	2	3	4	5	6	7
quality air	1	2	3	4	5	6	7

Please answer the following demographic questions. All answers are kept confidential.

7. ***What is your age?***	1. Under 20	2. 20-24	3. 25-34	
	4. 35-44	5. 45-54	6. 55-64	7. 65 & above
8. ***Are you male or female?***	1. male	2. female		
9. ***Are you single or married?***	1. single	2. married		

10. ***Which of the following categories includes your household's total annual income? (circle one please)***

1. Under $19,999	2. $20,000-29,999	3.$30,000-39,999	4. $40,000-49,999
5. $50,000-59,999	6. $60,000-69,999	7. $70,000-79,999	8. $80,000-89,999
9. $90,000-99,999	10. $100,000 & above		

APPENDIX B

SPSS-X Program Output

B-1. Passenger Services Used in the Past 12 Months

Service(s)	Frequency	(%)
none	46	30.7
High Quality Airline	34	22.7
Low Quality Airline	20	13.3
Train	12	8
Bus	8	5.3
HA and LA	7	4.7
HA; Train	4	2.7
HA; Bus	1	.7
LA; Train	1	.7
LA; Bus	2	1.3
Train; Bus	4	2.7
HA; Train; Bus	2	1.3
LA; Train; Bus	2	1.3
All	2	1.3
Missing	1	.7
	150	100.0

Note: HA = high quality airline; LA = low quality airline

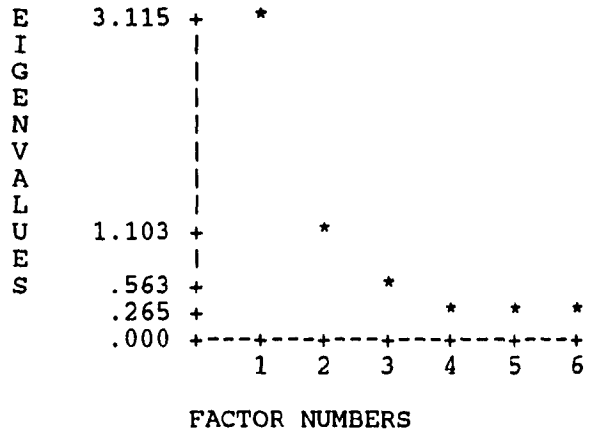
B-2. Correlation Matrix for Service Attributes

	Serv. evaltn	Depart. Location	Fares	Schedules	Travel Time	Comfort	Safety
Serv. evaluation	1.000	.466	.195	.392	.686	.651	.519
Depart.location	.466	1.000	.392	.494	.418	.440	.433
Fares	.195	.392	1.000	.392	.080	.128	.255
Schedules	.392	.494	.392	1.000	.421	.420	.505
Travel Time	.686	.418	.080	.421	1.000	.644	.469
Comfort	.651	.440	.128	.420	.644	1.000	.666
Safety	.519	.433	.255	.505	.469	.666	1.000

B-3. Factor Analysis SPSS Output

VARIABLE	COMMUNALITY	*	FACTOR	EIGENVALUE	PCT OF VAR	CUM PCT
DEPART	.60358	*	1	3.11466	51.9	51.9
FARES	.82440	*	2	1.10255	18.4	70.3
SCHED	.62627	*				
TIME	.70750	*				
COMFORT	.79856	*				
SAFETY	.65690	*				

B-4. Eigenvalue Plot for Scree Test Criterion



B-5. Pre- and Post- Promotion Service Choice Frequencies for Advance Booking

Choices	Before	After	Change
*HA	15	28	+13
LA	10	0	-10
HG	3	0	-3
LG	1	1	0

Choices	Before	After	Change
HA	13	4	-9
*LA	13	24	+11
HG	1	1	0
LG	3	1	-2

Choices	Before	After	Change
HA	10	10	0
LA	14	11	-3
*HG	4	9	+5
LG	2	0	-2

Choices	Before	After	Change
HA	13	8	-5
LA	13	11	-2
HG	3	4	+1
*LG	1	7	+6

* service offers a price promotion

B-6. Pre- and Post- Promotion Service Choice Frequencies for Immediate Booking

Choices	Before	After	Change
*HA	9	11	+2
LA	10	9	-1
HG	9	9	0
LG	2	1	-1

Choices	Before	After	Change
HA	0	3	+3
*LA	14	22	+8
HG	12	3	-9
LG	4	2	-2

Choices	Before	After	Change
HA	2	4	+2
LA	16	11	-4
*HG	11	14	+3
LG	1	1	0

Choices	Before	After	Change
HA	2	2	0
LA	17	11	-6
HG	7	7	0
*LG	4	9	+5

* service offers a price promotion

B-7. Sample SPSS Computer Program

```
TITLE 'THESIS'
SUBTITLE 'ONEWAY-PERCENTAGE SWITCHING'
FILE HANDLE INDAT/ NAME= 'THESIS.DAT'
DATA LIST FILE= INDAT RECORDS=4
     /1 GRID 4 CASEA 21 CASEB 22 CASEAP 26 CASEBP 27 INCOME 34-35
VALUE LABELS  GRID  1 'QA PROMO' 2 'EA PROMO'
     3 'TRAIN PROMO' 4 'BUS PROMO' 5 'CONTROL GROUP'
     /CASEA 1 'QA' 2 'EA' 3 'TRAIN' 4 'BUS'
     /CASEB 1 'QA' 2 'EA' 3 'TRAIN' 4 'BUS'
     /CASEAP 1 'QA' 2 'EA' 3 'TRAIN' 4 'BUS'
     /CASEBP 1 'QA' 2 'EA' 3 'TRAIN' 4 'BUS'
     /INCOME 1 'UNDER $19999' 2 '$20000-29999' 3 '30000-39999'
     4 '40000-49999' 5 '50000-59999' 6 '60000-69999'
     7 '70000-79999' 8 '80000-89999' 9 '90000-99999'
     10 '$100000 AND ABOVE'

COMPUTE SWITCHA=0
IF (ABS(CASEA-CASEAP) GT 0) SWITCHA=1
COMPUTE SWITCHB=0
IF (ABS(CASEB-CASEBP) GT 0) SWITCHB=1
ANOVA VARIABLES= SWITCHA SWITCHB BY GRID(1,4) WITH INCOME
     /STATISTICS
FINISH
```

B-8. Analysis of Variance for Switching Intention by Treatment Group for Advance Booking

Source	df	SS	MS	F	p
Groups	3	.681	.227	.988	.401
Error	115	26.410	.230		
Income	1	.501	.501	2.182	.142

B-8. Analysis of Variance for Switching Intention by Treatment Group for Immediate Booking

Source	df	SS	MS	F	p
Groups	3	1.834	.611	3.114	.029
Error	115	22.576	.196		
Income	1	.382	.382	1.947	.166

APPENDIX C

Data Sample and Coding

00111 10002 2533326 1233 1122 12109
2 3333444 34 33
3 4336635 34 33
4 4444534 54 33
00211 02044 2433222 2215 1212 42104
2 2433222 11 21
3 2444213 75 76
4 2334224 77 77
00311 12004 3522443 2256 1216 31002
2 3432442 24 41
3 3405433 42 44
4 3306434 66 77
00411 00003 2522321 2377 1317 32203
2 2423723 16 16
3 1233111 11 11
4 1224312 72 72
00511 10004 2611116 1310 1310 22102
2 7121112 00 00
3 1335112 03 00
4 6217712 00 03
00611 00003 3622121 2257 1217 32102
2 4136642 11 21
3 3112424 44 64
4 6114646 77 77
00711 00003 2633121 2377 1337 12106
2 2332312 27 35
3 3223424 21 52
4 1144436 74 77
00811 10003 3233222 4466 4466 32102
2 3333223 66 66
3 3333323 66 66
4 2332322 22 22
00911 00044 4433332 1111 1111 32209
2 3343333 44 44
3 3333453 34 44
4 2522333 44 44
01011 00006 6544334 1425 1122 31102
2 5344565 45 44
3 6655655 45 44
4 6637755 42 43
01111 10006 4533223 1234 1111 32102
2 4376754 43 24
3 3434335 57 66
4 4443347 77 77

Names and Location of Data

Column	Variable Description	
1-3	Respondent Number	
4	Treatment Group	'1'= high quality airline promotion '2'= low quality airline promotion '3'= high quality ground or rail promotion '4'= low quality ground or bus promotion
5	Record Number	'1'= high quality airline '2'= low quality airline '3'= rail service '4'= bus service
6	Blank	
7	High quality airline service used; '1'= used '0'= not used	
8	Low quality airline service used; '2'= used '0'= not used	
9	Rail service used; '3'= used '0'= not used	
10	Bus service used; '4'= used '0'= not used	
11	Reason for Choice;	'1'= convenient schedules '2'= comfortable travel '3' = fare prices '4' = travel time '5' = departure location '6'= safety
12	Blank	
13	Departure location;	1 - 7 where '1' = excellent '7' = poor
14	Fare Prices;	1 - 7 where '1' = excellent '7' = poor
15	Schedules;	1 - 7 where '1' = excellent '7' = poor
16	Travel Time;	1 - 7 where '1' = excellent '7' = poor

17	Comfort;	1 - 7 where '1' = excellent '7' = poor
18	Safety;	1 - 7 where '1' = excellent '7' = poor
19	Overall Evaluation;	1 - 7 where '1' = excellent '7' = poor
20	Blank	
21	Choice for Case A Before Promotion;	'1'= high quality airline '2'= low quality airline '3'= rail service '4'= bus service
22	Choice for Case B Before Promotion;	'1'= high quality airline '2'= low quality airline '3'= rail service '4'= bus service
23	Pre- Promotion Service Intention: (Advance Booking)	1 - 7 where '1' = likely '7'= unlikely
24	Pre- Promotion Service Intention: (Immediate Booking)	1 - 7 where '1' = likely '7'= unlikely
25	Blank	
26	Choice for Case A After Promotion;	'1'= high quality airline '2'= low quality airline '3'= rail service '4'= bus service
27	Choice for Case B After Promotion;	'1'= high quality airline '2'= low quality airline '3'= rail service '4'= bus service
28	Post- Promotion Service Intention: (Advance Booking)	1 - 7 where '1' = likely '7'= unlikely
29	Post- Promotion Service Intention: (Immediate Booking)	1 - 7 where '1' = likely '7'= unlikely
30	Blank	

31	Age	'1' = under 20	'4' = 35 - 44	'7' = 65 & above
		'2' = 20 - 24	'5' = 45 - 54	
		'3' = 25 - 34	'6' = 55 - 64	
32	Sex		'1' = male	
			'2' = female	
33	Marital Status		'1' = single	
			'2' = married	
34	Income		'1' = under $19,999	
			'2' = $20,000 -29,999	
			'3' = $30,000 -39,999	
			'4' = $40,000 -49,999	
			'5' = $50,000 -59,999	
			'6' = $60,000 -69,999	
			'7' = $70,000 -79,999	
			'8' = $80,000 -89,999	
			'9' = $90,000 -99,999	
			'10'= $100,000 & above	