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Cross-national segmentation

An application to the NAFTA airline passenger market

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Abstract

Purpose – The aim of this paper is to propose an approach to international market segmentation that identifies meaningful cross-national consumer segments, which focuses on airline passengers in the NAFTA market.

Design/methodology/approach – A conjoint analysis is used to evaluate consumers' preferences for six flight attributes: price, in-flight service, number of stops before destination, on-time performance, frequent flyer programme, and country of airline. A cluster analysis based on the relative importance scores of each of the six flights attributes then identifies five segments that prioritize similar product attributes within each country.

Findings – A representative sample of 4,787 airline passengers from the three countries reveal that price is the most important attribute for consumers from the USA and Canada, while on-time performance is the most important attribute for Mexican consumers. A cluster analysis identifies five segments that prioritize similar product attributes within each country. It is also found that there are five cross-national consumer segments in the NAFTA market that are homogeneous in terms of consumer preferences but heterogeneous in terms of relative group size and demographic variables.

Research limitations/implications – The study is based on a purposive sample, which limits the ability to generalize to the whole population with any known degree of precision.

Practical implications – The research produces practical operational information on each segment that is translatable into strategy, specifically in terms of positioning, promotion, and targeting of the airline service.

Originality/value – The paper sheds light on the nature of cross-national segmentation in the NAFTA air passengers market and the resulting cross-national segmentation will be highly relevant for international marketing management.

Keywords Free trade, Airlines, International marketing, United States of America, Canada, Mexico

Paper type Research paper



Introduction

International market segmentation, an important issue in marketing, has become more and more pressing as international competition has intensified and regional unification (e.g. EU, NAFTA, and ASEAN) has been realized (Bolton and Myers, 2003). In an

increasingly global market, consumers in different countries may have more in common with one another than with other consumers in the same country (Hofstede *et al.*, 1999). Therefore, a major challenge facing international marketers is to identify cross-national market segments and to reach them with tailored marketing programmes (Hassan and Katsanis, 1991).

International market researchers have proposed different approaches to segment the global or regional market. Several studies have focused on the criteria used to group target countries (Hassan *et al.*, 2003; Helsen *et al.*, 1993; Hofstede *et al.*, 1999; Nachum, 1994) while other studies have focused on using behavioral bases to identify target consumer segments (Bolton and Myers, 2003; Crawford *et al.*, 1988; Dawar and Parker, 1994; Hassan and Katsanis, 1991; Souiden, 2002). Although different alternatives are proposed to implement international market segmentation strategies, there are still unsolved issues related to the way that international market segmentation can be applied. For example, should marketers segment the market at the country level or at the consumer level? Should they use macro variables (e.g. macroeconomics factors, cultural factors, geo-demographic factors) or micro-individual variables (attribute evaluations, attitudes, and values)? The efficiency of using either country or consumer variables or both has to be examined more closely.

The answers to these questions will aid marketers in determining the extent to which the product or service offerings must be customized or standardized within and across national borders. Our study proposes an approach to international market segmentation that identifies meaningful cross-national consumer segments. We examine the approach by focusing on airline passengers in the NAFTA market.

The contribution of this paper is threefold. First, international segmentation studies have used a wide variety of segmentation bases; however, there is an overrepresentation of studies using characteristics of countries and few studies employing responses from individual consumers (Steenkamp and Hofstede, 2002). The lack of available cross-national consumer data has discouraged researchers to study international consumer segments. Therefore, there exists a need to integrate cross-border consumer data into international segmentation research. Our study will contribute to this area of research by analyzing cross-national consumer segments based on 4,787 individual consumers.

Second, we propose an international segmentation approach derived from Steenkamp and Hofstede's (2002) study with a slight modification. According to their study, a two-stage segmentation approach utilizes different types of segmentation bases. In the first stage, countries are grouped on general bases to identify clusters of countries that are similar in socio-economic and cultural characteristics. In the second stage, individual consumers within country clusters are grouped into cross-national segments, which will be more responsive to marketing efforts. In our study, both country segmentation and cross-national consumer segmentation will be determined based on same segmentation bases. In the first stage, the countries grouping is not based on macro-characteristics, such as demographic, political, and economic development, but based on individual consumers' preferences. This country level segmentation plays an important role when firms seek a geographic differentiation strategy. In the second stage, consumers in different countries are grouped based on consumers' preferences. Cross-national segments formed in this way consist of consumers from different countries that are similar on the segmentation basis

employed. Therefore, the resulting cross-national segmentation will be highly relevant for international marketing management.

Third and finally, the current study will enhance our understanding of cross-national segments of NAFTA airline passengers. In particular, we study the extent to which there are cross-national versus country-specific segments based on individual consumers' preferences. This research produces practical operational information on each segment that is translatable into strategy, specifically in terms of positioning, promotion, and targeting of the airline service.

This article first provides an overview of the existing literature on international market segmentation and follows with a discussion that identifies specific segmentation variables and research objectives of our empirical study. Second, we report the methods and procedures of conjoint design and cluster analysis as applied in our case. Third, the results of the conjoint experiment and cluster analysis are reported. We conclude the paper with a discussion of the results and the managerial implications of our findings.

Literature review

International market segmentation

Market segmentation is the process of classifying customers into homogeneous groups with similar demand or preferences (Beane and Ennis, 1987; Dickson and Ginter, 1987; Tynan and Draton, 1987; Wind, 1978). In most cases, it is almost impossible to satisfy all customers in a single market with a single marketing strategy. Therefore, market segmentation is the basis for market strategy development (Kale and Sudharshan, 1987). Recent research findings indicate that segmentation strategies are key competitive factors in successfully entering international markets (Bijmolt *et al.*, 2004; Hassan *et al.*, 2003; Hofstede *et al.*, 1999; Steenkamp and Hofstede, 2002).

In the context of international markets, segmentation can be viewed as the process of identifying unique consumer groupings, whether they are country groups or individual buyer groups (Hassan *et al.*, 2003). A challenge for international marketers is determining how best to identify international market segments and how to reach targeted segments with tailored goods or services. For two reasons, the international market segmentation technique seems to be crucial for multinational companies. First, international market segmentation provides a meaningful resolution to the age-old standardization-adaptation debate, where companies attempt to explore international markets by offering a standardized versus customized product (Souiden, 2002). Second, international market segmentation enables companies to reduce operational costs and effectively allocate resources to a firm's target markets (Bolton and Myers, 2003). A close examination of the international consumer segmentation literature points out a number of issues related to determining the scope of international market segmentation.

The choice of segmentation basis is one of the most crucial factors in cross-national segmentation research. According to Steenkamp and Hofstede (2002), the segmentation basis is a set of characteristics used to assign consumers to segments. The traditional approach establishes international segments based on macro variables, such as geographic, political, economic, cultural variables (Kale, 1995; Kotler, 1986; Wind, 1986). According to Steenkamp and Hofstede (2002), information at the country level has often been used to aggregate across consumers to the country level. This approach

classifies countries into different segments based on their homogeneity in consumption patterns or market characteristics. Countries that are similar to one another, or are relatively homogeneous within the group, are defined as a segment that is distinct from other, more heterogeneous, segments. It is argued that segmentation based on macro variables has several limitations. First, it ignores within-country heterogeneity, which is the basis for identifying domestic segments (Hofstede *et al.*, 1999). Second, it overlooks cross-country market similarities (Hassan and Blackwell, 1994; Helsen *et al.*, 1993). Consequently, the resulting country clusters do not always provide relevant information for international marketing managers to make effective managerial decisions (Nachum, 1994; Steenkamp and Hofstede, 2002).

To overcome the limitations of macro segmentation, marketing researchers have utilized an approach based on micro variables that focuses on buyer preferences (Hassan and Craft, 2005). Some studies have classified segments based on perceived product characteristic (e.g. Moskowitz and Rabino, 1994). Other studies have used consumer –specific variables, such as lifestyles and values, as the segmentation bases (Boote, 1983). According to Hofstede *et al.* (1999), international market segmentation based on consumers, instead of countries, will increase greatly the effectiveness of marketing strategies. It is also argued that in an increasingly consumer-oriented market the micro variables (market behavioral variables) are more dynamic and more useful to reflect the change of the global market (Hassan *et al.*, 2003).

Despite the importance of micro variables in shaping multinational companies' marketing strategies, only a few studies have employed responses from individual consumers as compared to the numerous studies using country level bases (Steenkamp and Hofstede, 2002). In part, the reason for the overwhelming use of country segmentation schemes is that it is relatively easier to collect information on countries through published secondary data sources while it is difficult and expensive to collect cross-national consumer data. To fill this gap, this study attempts to analyze cross-national consumer segments based on individual consumer data.

Of the different segmentation approaches that are discussed in the literature, the two-stage approach/hybrid approach is argued to be the most innovative and promising approach (Hassan *et al.*, 2003; Steenkamp and Hofstede, 2002). In the first stage, countries are identified, selected, and grouped by using general bases, such as geographic locations, economic indicators, political characteristics, and demographic profiles. At the second stage, consumers are analyzed in terms of their responses to certain product/service attributes. Consumers who indicate a high degree of homogeneity along key dimensions (e.g. wealth, age, gender, etc.) can be grouped into a single cross-national segment and thus targeted with a largely standardized marketing strategy (Souiden, 2002). In this study, we propose that, by using country as natural segmentation unit, segmentation at both the country and consumer levels can be accomplished based on individual, domain-specific behavioral variables. Bijmolt *et al.* (2004) followed this procedure using a single key basis variable, financial product ownership. For our study, six key basis variables are analyzed simultaneously. At the first stage of the segmentation process, consumers from different countries may have similar product attribute preference and thus may belong to the same country segment. At the second stage, segments within each country are further aggregated across the countries based on similar characteristics. Domain-specific segments derived from

these two stages are easy to identify, given that they are typically based on a limited number of well-researched variables (Moskowitz and Rabino, 1994).

Research objectives

Based on the literature review, our study is directed by three main research questions that pertain to international market segmentation: first, are “natural” segments still appropriate for international market segmentation (e.g. segmentation at the country level)? Second, should consumer preference-based segments be used to augment the natural segments? To answer this question, we identify different customer segments for each individual NAFTA country based on the relative importance scores derived from the conjoint analysis. Third, do preference-based cross-national segments vary across countries? The objective of our research therefore is to identify similarities that exist between air travel consumers from different NAFTA countries that might be targeted by a similar marketing program that transcends national boundaries. In order to reach the above-mentioned objectives, in next section, the segmentation basis variables are first identified, and then the methodology and procedures are proposed.

Identify segmentation base variables in NAFTA airline consumer market

The success of any market segmentation scheme depends heavily on the choice of variables by which to perform the segmentation (Souiden, 2002). Previous empirical research has examined the importance weights consumers place on various airline attributes (Bruning, 1997; Bruning and Hu, 1984; Green and Wind, 1975). In a recent study, Rhoades and Waguespack (2004) discovered that airline satisfaction is driven by on-time performance, post-flight services, food service, and frequent flyer programs. Suzuki (2000) suggests how an airline’s on-time performance could affect future market share in competitive markets. Mayer and Sinai (2003) perform an extensive empirical evaluation of on-time performance of airlines. American customers consider service reliability, in-flight comfort, and connections as key factors determining satisfaction with airline service, whereas Korean passengers generally regard reliability, assurance, and risk factors as predictors of satisfaction (Cunningham *et al.*, 2004). In our study, along with the aforementioned flight factors, country of airline is also included as one of the important attributes. Bilkey and Nes (1982) have shown that country of origin received considerable attention even by the early 1980s, and that considerable evidence attests to the impact of country of origin on consumer evaluation and choice products. A recent review of the marketing literature (Al-Sulaiti and Baker, 1998) also confirms both the extensive research on the topic and the fact that there is very strong, widespread evidence that the country of origin effect is real. It is apparent that country of origin plays an important role in consumer preference orderings, as well as purchase intentions. Few studies have examined the country of origin effect in a service domain and simultaneously investigated the importance of an airline’s country of origin effect relative to other attributes in consumers’ preference. Bruning (1997) reported a strong national loyalty effect in his study of international air travel choice, although price and service features were of primary importance to air travelers. Based on his findings, country of airline is employed in this study as a proxy for the relative importance of the country of origin effect for airline services from each of the NAFTA countries.

Specifically, this study considers consumers' preferences regarding a comprehensive set of variables, such as price, in-flight service, number of stops, on-time performance, flyer program, and country of airline as the critical factors in the airline choice decision. Using conjoint analysis, each flight attribute is then assigned a weighting value that represents the attributes relative importance in the consumers' airline choice decision. Next, we construct segments based on relative importance of attributes. Profiling homogeneous segments by the relative importance of different airline flight attributes will assist international airlines identify service packages that are more compatible with air travelers' needs.

Methodology and procedures

Conjoint analysis is an appropriate tool to use to accomplish our research objectives because it allows us to experiment with different combinations of airline attributes that a consumer may be confronted with in real life. It also allows us to ascertain the relative importance of each flight attribute, which is contained in the consumer's preference set. In conjoint analysis, respondents provide overall preference evaluations for a set of stimulus profiles; that is, alternatives described in terms of the levels of specific product (in our case flight) attributes. These evaluations are then used to derive the importance associated with each attribute (Green and Rao, 1971). Since air travelers consider all factors simultaneously, the approach provides a more realistic, ecologically valid approach for studying consumer preferences and decision-making (Green and Srinivasan, 1978). This use of conjoint analysis has been employed successfully in prior consumer preferences research (Keen *et al.*, 2004), in market segmentation research (Green and Krieger, 1991), and in the study of airline preference choice (Bruning, 1997).

Conjoint design

Relevant product attributes, those influencing consumers' preferences (among different airlines for international travel), should be included in a conjoint analysis (Cattin and Wittink, 1982). For our study, these attributes are determined through previous research in marketing and transportation (Bruning, 1997; Bruning and Hu, 1984; Green and Srinivasan, 1978). As mentioned earlier, the important differentiating attributes identified are: price, in-flight service, number of stops, on-time performance, country of airline, and frequent flyer program, as follows:

(1) *Price:*

- Low = \$560.
- Medium = \$685.
- High = \$779.

(2) *In-flight services:*

- Low = Poor selection of magazines; no newspapers; no meals; too-few attendants for satisfactory service; poor music quality; noisy aircraft.
- Medium = At least one interesting magazine; no newspapers; a cold sandwich and dessert; satisfactory speed of service; several reasonable radio stations; aircraft not too noisy; attendant staff congenial.

- High = Good selection of magazines; current newspapers; a hot meal; quick and effective service; music and movie; very quiet aircraft; and excellent staff.
- (3) *Stops before destination:*
 - Two stops.
 - One stop.
 - Non-stop.
- (4) *On-time performance:*
 - 70 percent on time.
 - 85 percent on time.
 - 95 percent on time.
- (5) *Frequent flyer program:*
 - Yes.
 - No.
- (6) *Country of airline:*
 - Mexico.
 - Canada.
 - USA.

In constructing the price levels for the conjoint exercise, we used prevailing prices on a sample of international flights of the distances used in the scenarios. As a check on the veracity of our price manipulation, we pre-tested the levels with a sub-sample of air passengers prior to conducting the conjoint analysis. The results indicated travelers felt the price levels for the hypothetical trip were highly realistic. Thus, our price levels reflect prevailing market prices for international flights and are not distorted by regional or national pricing factors. Levels for the in-flight service factor were based on the amenities included in the offerings during the flight such as complementary food, beverages, magazines, movies, etc. The low level contained few amenities while the medium and high levels offered increasing value to customers. Levels for the number of stops were non-stop, one-stop or two-stops to the final destination. For the on-time performance factor, levels were represented as percentage the carrier was on time at the destination (i.e. 95 percent, 75 percent, and 50 percent). The country-of-residence for the international carriers contained in the scenarios represented country of airline factor (i.e. Canada, the USA and Mexico). Finally, the frequent flyer factor designated whether or not the airline in the conjoint scenario offered a loyalty program. All factors were pre-tested with population elements prior to conducting the conjoint analysis. In the instruments used to collect the data, vivid descriptions of the various attributes were provided. Furthermore, since an interviewer conducted the exercise, respondents were allowed to clarify the meaning of the attributes and their levels.

We employed a scenario approach in our analysis that had the respondent focus attention on a hypothetical international flight between two non-specified points. The respondent only knew the trip exceeded two thousand miles and could be serviced from the departing location by several international carriers. We also instructed

respondents to consider only the six flight-specific attributes (i.e. price, service, frequent flyer program, etc.) that were identified in the conjoint manipulation. They were instructed not to think of other factors in assessing the various flight scenarios. In our debriefings, the research team quizzed respondents about their perceptions of the nature of the trip and the factors they used in rating the various trip scenarios. In every case, respondents indicated they recognized the length of the international trip, the fact that they were not told the origin and destination of the flight, and judged the scenarios with the six flight attributes only.

Having established the relevant attributes and their levels, hypothetical scenarios with different combinations of attributes were presented to individuals throughout North America. The conjoint study gives rise to 486 possible combinations ($3^5 \times 2$). To reduce the number of profiles to a manageable size, while at the same time maintaining orthogonality, a fractional factorial design was used. This reduced the number of profiles to be evaluated to 16.

Data analysis

Two steps were taken in analyzing the data. First, conjoint analysis was used to estimate utility (part-worth) values for each level of each flight attribute, and, second, the relative importance score associated with each flight attribute was calculated using SAS PROC TRANSREG (SAS Institute, Cary, North Carolina USA, 2007). The second step in the analysis was to employ cluster analysis (SPSS 11.5) in order to identify consumer segments based on the preferences weightings of the several airline attributes. Cluster analysis has been found to be an appropriate technique to use to segment conjoint analysis' utility values (Green and Krieger, 1991). We employed a two stage clustering approach to gain the benefits of each stage (Hair *et al.*, 2005). In the first stage, a hierarchical technique was used to establish the number of clusters, profile the cluster centers, and identify any obvious outliers. In the second stage, nonhierarchical method segmented air travelers into unique clusters based on attribute importance (weights) scores.

For hierarchical clustering, Ward's method was used to maximize within cluster homogeneity. The dendrogram pattern and the increase in the agglomeration coefficient both indicated a five-cluster solution as the most appropriate for our sample of air travelers. Subsequently, the centroids of the five-cluster solution were used as starting points for our nonhierarchical clustering procedure. In the second stage, the K-means procedure was conducted for the five-cluster solution. For each country, it is appropriate to choose the proper number of clusters based on the number of respondents per cluster (Moore and Semenik, 1988). The final cluster analysis indicates that five clusters were the most appropriate for the data.

Sampling

Interviews were conducted at 14 major international airports throughout North America for a total of 4,975 participants from Canada, Mexico, and the USA. In total, six airports in Canada (Vancouver, Calgary, Saskatoon, Winnipeg, Quebec City, Montreal and Halifax) and eight airports in the USA (Seattle, Denver, Houston, Miami, Corpus Christi, Birmingham, Columbus and New York) served as sampling sites. Mexican respondents were interviewed in Houston and Miami as they arrived from their Mexican city origins. In our selection of airports we sought to minimize regional

effects. Thus, several cities are clearly major international hubs, while others are second level or “feeder” centers to these hubs. Each airport is either a major or minor international travel centre. The use of multiple regional airports within each country ensures the representativeness of each sample in a country.

A purposive sample design was employed to identify and collect information from the sample units. Based on Canadian, Mexican, and American air traveler statistics, efforts were made to balance the sample according to gender, age, departure times and days. Interviewers were instructed to randomly select passengers from the participating airports based on seat locations within departure areas.

Instrument

In order to accommodate respondents from all three NAFTA countries and regions, our questionnaire was prepared in English, French and Spanish languages. The English version was translated to French and Spanish, and then back translated to English. Adjustments were made to the translated versions until differences between them and the English version were minimal.

The first section of the questionnaire presented a conjoint exercise where respondents were asked to indicate their preferences with regards to each of sixteen travel scenarios. The response scale for consumer preference ranged from 0 = very low preference to 9 = very high preference. A decompositional conjoint analysis was used to break down respondents’ stated preference for the airline service into a set of part-worth utilities that showed the relative importance of each level of each attribute. Finally, a variety of demographic data were also collected.

Results

One of the objectives of this study is to identify different customer segments at the country level based on the relative importance score derived from our conjoint analysis. Therefore, it is important to determine how different consumers from each individual country trade-off among the various airline flight characteristics. Table I presents the relative importance scores of the various flight attributes for Canadian, American, and Mexican air travelers. Three natural segments at the country level are identified. Pair-wise *t*-tests show that all the averages of the relative importance scores of different airline attributes are statistically significantly different across the three countries at $p < 0.05$ level. In general, price, in-flight services, number of stops, on-time performance, and country of airline variables play a critical role in terms of consumers’

Table I.
Relative importance
scores (%) of each airline
attribute for Canada,
USA and Mexico

Attribute	Total sample ^a	Canada ^b	USA ^c	Mexico ^d	<i>F</i>	Sig.
Price	21.54	20.79	23.18	17.29	52.50	0.000
In-flight service	18.23	19.13	17.14	19.82	31.43	0.000
Number of stops	20.05	19.81	20.52	18.90	5.31	0.005
On-time performance	16.57	15.96	15.67	22.24	116.10	0.000
Country of airline	14.94	15.39	14.82	13.99	5.57	0.004
Frequent flyer programmes	8.66	8.92	8.67	7.76	7.46	0.001

Notes: ^a $n = 4,878$; ^b $n = 1,901$; ^c $n = 2,392$; ^d $n = 585$

preference ranking. For Canadian consumers, the results indicate that price is the most important attribute, while the number of stops and in-flight services are second most important. For American consumers, price is also the most important attribute, and the number of stops is viewed as the second most important attribute, followed by in-flight services. For both Canadian and American consumers, on-time performance is rated as the fourth most important attribute. In contrast, Mexican consumers report that on-time performance is the most important attribute to them. In-flight service is the second most important followed by the number of stops. It is interesting to note that the frequent flyer attribute is viewed as the least important attribute across all the three countries, while the COA (country of airline) attribute is slightly more important (ranked fifth of all attributes) for all three countries.

Our analysis suggests that three natural segments have been successfully identified; however, consumers' heterogeneities within each country are not taken into consideration in this stage of the analysis. To further explore the heterogeneity within each country, cluster analysis is conducted to group each country's consumers into homogeneous segments based on consumers' preferences of airline attributes.

Identifying and profiling consumer segments in Canada, the USA and Mexico

Attribute importance scores are used to profile travelers into homogeneous groups. Five very strong clusters are identified based on the level of importance for each of the flight attributes. The five clusters are named according to the product attributes significantly influencing consumer's preference of airlines. The results of the profile analysis for Canada, the USA, and Mexico sample are shown in Tables II-IV.

One-way ANOVA and the univariate F tests are used to identify the attributes that are significant in differentiating among the five clusters. As can be seen in Tables II-IV, the results suggest that each of the clusters could be identified as different based on the importance level of each flight attribute.

In the first cluster, termed the "price sensitives", price is the determinant for why consumers would make a choice. Air travelers in this group seek the lowest price when selecting an international airline. For the second cluster, the "quality seeker", in-flight service is the most important factor in consumer decision-making. Consumers in this cluster place a premium on service quality. In the third cluster, termed the "convenience oriented" segment, number of stops before destination is the dominant driver as to why consumers prefer one airline to another. For the fourth cluster, the "punctuallers", on-time performance is the most important attribute. In the fifth and final cluster, the "country of airline (COA) oriented" segment, country of airline is the defining reason why these consumers chose to travel with a particular air carrier.

In terms of the relative composition of each cluster, Canadian consumers are heavily represented across four segments – the "price sensitive", "quality seekers", "convenience oriented", and "country of airline oriented" consumers – but the least represented in the "punctuallers" group (only 11 percent). For the US sample, "price sensitive", "quality seeker", and "convenience oriented" consumers are the three largest groups, similar to Canadian travelers, while the "punctuallers" and "COA oriented" segments comprise the smallest number of consumers. For the Mexican sample, "quality seeker", "convenience oriented", and "punctuallers" consumers are dominant clusters – "price sensitives" and "COA oriented" segments account for the smallest segments among Mexican travelers.

Table II.
Profile analysis for
clusters in Canada

	Price-sensitives <i>n</i> = 452 24%	Quality seeker <i>n</i> = 449 24%	Cluster		COA-oriented <i>n</i> = 368 19%	<i>F</i>	Sig.
			Convenience-oriented <i>n</i> = 426 22%	Punctuallers <i>n</i> = 206 11%			
<i>n</i> = 1,901							
IMPRICE	39.04	14.59	14.46	14.42	16.82	778.191	0.000
IMSERVIC	14.72	32.71	14.44	16.01	15.12	579.109	0.000
IMSTOPS	14.14	16.21	35.60	13.70	16.33	605.506	0.000
IMPERFOR	12.30	14.19	13.99	35.91	13.72	487.632	0.000
IMCOUNTR	11.82	13.37	12.04	12.06	27.99	423.082	0.000
IMFLYER	7.99	8.92	9.46	7.91	10.02	6.935	0.000

	Price-sensitives <i>n</i> = 628 26%	Quality seeker <i>n</i> = 570 24%	Cluster			<i>F</i>	Sig.
			Convenience-oriented <i>n</i> = 588 25%	Punctuallers <i>n</i> = 358 15%	COA-oriented <i>n</i> = 248 10%		
IMPRICE	41.49	18.33	16.38	14.39	16.75	967.631	0.000
IMSERVIC	13.07	28.10	12.75	17.38	12.32	490.554	0.000
IMSTOPS	14.67	15.47	36.25	17.50	14.03	818.569	0.000
IMPERFOR	11.65	13.94	12.63	31.59	14.03	649.638	0.000
IMCOUNTR	11.33	13.62	12.23	12.49	35.92	730.968	0.000
IMFLYER	7.79	10.54	9.75	6.65	6.94	34.644	0.000

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Table III.
Profile analysis for
clusters in USA

Table IV.
Profile analysis for
clusters in Mexico

	Cluster					F	Sig.
	Price-sensitives <i>n</i> = 91 16%	Quality seeker <i>n</i> = 143 24%	Convenience-oriented <i>n</i> = 139 24%	Punctuallers <i>n</i> = 125 21%	COA-oriented <i>n</i> = 87 15%		
<i>n</i> = 1901							
IMPRICE	33.32	14.65	14.31	13.57	14.97	171.054	0.000
IMSERVIC	17.72	29.93	14.76	18.96	14.71	141.312	0.000
IMSTOPS	13.01	14.11	32.87	14.76	16.59	214.389	0.000
IMPERFOR	14.85	21.17	18.71	35.75	17.92	169.701	0.000
IMCOUNTR	12.56	13.11	12.13	10.06	25.54	107.403	0.000
IMFLYER	8.54	7.03	7.22	6.90	10.28	7.254	0.000

A two-way ANOVA with country and cluster as independent variables was used to detect differences along each of the six key dependent measures. Results are largely consistent with those shown in Tables II and III. *F*-statistics for clusters are highly significant while *F*-statistics for country and interactions between country and cluster are less significant (though all are significant at the 0.001 level). For the sake of brevity, two-way ANOVA results will not be represented.

Demographic profiling

In order to further examine the similarities and differences among segments within each country, we perform chi-square analyzes on the four demographic variables comparing the five segments: gender, age, income, and usage. Tables IV, V, and VI characterize each cluster based on a variety of demographic factors within each country. Significant differences between clusters are noted for the USA and Canada samples; however, no significant differences across clusters are noted for the Mexican sample.

For the Canadian sample, Table V reports that female travelers dominate three of the five clusters. The exceptions to this pattern are the “quality seeker” and “COA oriented” segments. Furthermore, consumers whose ages range from 20 to 50 years dominate all Canadian clusters. With respect to respondent income, the majority of air travelers in all clusters have an income of more than \$30,000. Specifically, more than 90 percent of air travelers of the “COA oriented” group have an income over \$30,000 while all the other four clusters have less than 90 percent of consumers with an income over \$30,000. With respect to usage, most of air travelers travel less than 15 times per year.

For the American sample, Table VI reports that the “quality seeker” segment is dominated by male consumers, while all the other four clusters are dominated by female air travelers. Approximately 84 percent of the “COA oriented” segment is older than 30 years of age and 94 percent of this group has an income greater than \$30,000, while only 70 percent of consumers from the other four clusters are older than 30 and less than 90 percent have an income over \$30,000. With regard to usage, the majority of consumers have a usage rate less than 5-to-9 times per year.

The demographic profiles of the several segments in the Mexican sample are reported in Table VII. As already indicated, however, no statistically significant differences are found across the four demographic variables for the Mexican traveler sample.

Identifying and profiling consumer segments across three countries

Another important objective of our study is to identify cross-national air travelers’ segments in NAFTA market. Five distinct cross-national consumer segments are successfully classified. They are as follows:

- (1) price sensitive;
- (2) quality seeker;
- (3) convenience-oriented;
- (4) punctuallers; and
- (5) COA (country of airline)-oriented.

Table V.
Demographic
characteristic of the
clusters for Canada

Characteristic	Price-sensitive <i>n</i> = 452	Quality seeker <i>n</i> = 449	Convenience-oriented <i>n</i> = 426	Punctualler <i>n</i> = 206	COA-oriented <i>n</i> = 368	Overall <i>n</i> = 1,901
<i>Sex</i>						
Female	62.6	53.8	59.6	64.4	54.2	58.4
Male	37.4	46.2	40.4	35.6	45.8	41.6
Test statistic	$\chi^2 = 13.11$	<i>DF</i> = 4	<i>p</i> = 0.011			
<i>Age</i>						
<20	5.53	8.04	7.78	3.41	3.00	5.91
21-30	23.89	28.57	21.70	17.07	18.53	22.73
31-40	23.01	28.35	23.35	27.80	20.98	24.47
41-50	26.77	19.87	27.12	30.24	28.61	25.95
51-80	13.27	11.61	14.86	15.61	17.98	14.40
60-70	6.19	2.46	4.01	3.90	7.63	4.85
>70	1.33	1.12	1.18	1.95	3.27	1.69
Test statistic	$\chi^2 = 69.305$	<i>DF</i> = 24	<i>p</i> = 0.000			
<i>Income</i>						
<9,999	3.33	1.45	2.26	2.12	3.22	2.49
10,000-29,999	11.40	9.42	8.77	7.94	7.60	9.24
30,000-59,999	32.54	31.40	26.07	25.93	28.95	29.41
60,000-89,999	29.93	26.81	25.81	34.39	28.36	28.44
>90,000	22.80	30.92	37.09	29.10	31.29	30.25
Test statistic	$\chi^2 = 39.363$	<i>DF</i> = 16	<i>p</i> = 0.025			
<i>Usage</i>						
Less than once	13.14	14.03	13.21	12.81	11.48	13.01
1-4 times	40.53	39.42	38.68	31.53	43.17	39.40
5-9 times	21.83	23.61	17.45	21.18	22.68	21.36
10-15 times	12.69	9.58	10.38	10.84	11.20	10.95
16-20 times	6.68	4.68	7.31	6.90	4.64	5.98
21-30 times	2.67	4.23	5.19	6.90	4.10	4.34
Over 30 times	2.45	4.45	7.78	9.85	2.73	4.97
Test statistic	$\chi^2 = 49.506$	<i>DF</i> = 24	<i>p</i> = 0.002			

Characteristic	Price-sensitive <i>n</i> = 628	Quality seeker <i>n</i> = 570	Convenience-oriented <i>n</i> = 588	Punctualler <i>n</i> = 358	COA-oriented <i>n</i> = 248	Overall <i>n</i> = 2,392
<i>Sex</i>						
Female	58.95	46.26	56.14	52.11	52.03	53.52
Male	40.89	53.74	43.86	47.89	47.97	46.44
Test statistic	$\chi^2 = 24.468$	<i>DF</i> = 4	<i>p</i> = 0.0002			
<i>Age</i>						
<20	5.59	9.77	5.99	4.78	3.66	6.36
21-30	23.48	27.53	24.83	23.03	12.60	23.58
31-40	19.01	16.70	21.40	23.60	18.29	19.66
41-50	25.08	21.14	23.97	22.47	27.24	23.71
51-80	16.77	12.26	15.41	14.33	22.36	15.58
60-70	7.03	9.77	5.48	8.99	10.98	8.00
>70	3.04	2.84	2.91	2.81	4.88	3.12
Test statistic	$\chi^2 = 67.872$	<i>DF</i> = 24	<i>p</i> = 0.000			
<i>Income</i>						
<9999	3.70	2.44	2.36	3.34	1.31	2.77
10,000-29,999	8.75	13.91	7.99	9.42	4.80	9.49
30,000-59,999	27.44	32.89	26.68	33.43	32.75	29.98
60,000-89,999	30.30	24.06	23.23	25.53	24.89	25.82
>90,000	29.80	26.50	39.75	28.27	36.24	31.90
Test statistic	$\chi^2 = 58.162$	<i>DF</i> = 16	<i>p</i> = 0.000			
<i>Usage</i>						
Less than once	12.32	17.26	9.76	14.37	14.57	13.40
1-4 times	40.00	41.64	33.05	41.97	36.03	38.56
5-9 times	21.60	17.62	17.81	19.72	20.24	19.30
10-15 times	10.08	10.50	14.21	9.01	10.93	11.13
16-20 times	4.64	3.74	8.05	4.79	4.86	5.31
21-30 times	4.32	3.20	5.82	2.25	4.45	4.13
Over 30 times	7.04	5.87	11.30	7.89	8.91	8.13
Test statistic	$\chi^2 = 66.591$	<i>DF</i> = 24	<i>p</i> = 0.000			

Cross-national
segmentation

Table VI.
Demographic
characteristic of the
clusters for the USA

Table VII.
Demographic
characteristic of the
clusters for Mexico

Characteristic	Price-sensitive <i>n</i> = 91	Quality seeker <i>n</i> = 143	Convenience-oriented <i>n</i> = 139	Punctual <i>n</i> = 125	COA-oriented <i>n</i> = 87	Overall <i>n</i> = 585
<i>Sex</i>						
Female	51.81	46.92	59.06	62.71	60.98	56.11
Male	48.19	53.08	40.94	36.44	39.02	43.70
Test statistic	$\chi^2 = 12.317$	<i>DF</i> = 4	<i>p</i> = 0.138			
<i>Age</i>						
<20	14.46	16.28	21.43	14.29	14.63	16.51
21-30	34.94	35.66	22.22	35.29	25.61	30.80
31-40	27.71	23.26	21.43	26.05	21.95	23.93
41-50	8.43	14.73	23.02	12.61	23.17	16.51
51-80	10.84	7.75	8.73	5.88	7.32	7.98
60-70	2.41	0.78	1.59	5.04	4.88	2.78
>70	1.20	1.55	1.59	0.84	2.44	1.48
Test statistic	$\chi^2 = 28.935$	<i>DF</i> = 24	<i>p</i> = 0.244			
<i>Income</i>						
<9,999	33.33	25.66	16.19	24.75	27.14	24.84
10,000-29,999	21.79	24.78	20.95	26.73	28.57	24.41
30,000-59,999	16.67	24.78	22.86	24.75	18.57	22.06
60,000-89,999	15.38	13.27	17.14	10.89	14.29	14.13
>90,000	12.82	11.50	22.86	12.87	11.43	14.56
Test statistic	$\chi^2 = 17.314$	<i>DF</i> = 16	<i>p</i> = 0.366			
<i>Usage</i>						
Less than once	34.48	22.70	22.46	24.79	20.48	24.56
1-4 times	41.38	48.23	34.78	42.15	51.81	43.16
5-9 times	13.79	12.77	21.01	14.88	10.84	15.09
10-15 times	5.75	9.22	9.42	7.44	6.02	7.89
16-20 times		4.26	2.90	1.65	1.20	2.28
21-30 times	2.30	0.71	1.45	0.83		1.05
Over 30 times	2.30	2.13	7.97	8.26	9.64	5.96
Test statistic	$\chi^2 = 32.708$	<i>DF</i> = 24	<i>p</i> = 0.110			

Consumers within each segment are homogeneous across the three countries in terms of consumers' preference, and are likely to respond to similar marketing program. However, these cross-national segments are heterogeneous in terms of the relative size of each segment as depicted in Table VIII, and in terms of the demographic variables presented in Table IX.

Table VIII shows that the relative size of the five segments differs based on our chi-square test. For all three countries, "price sensitive", "punctuallers", and "COA oriented" groups are quite different in terms of the relative group size. "quality seeker" and "convenience seeker" groups, however, are not significantly different. The "price sensitive" segment consists of 24 percent of the Canada sample and 26 percent of the US sample, which makes it the largest of the five clusters in each of the two countries. Only 16 percent of Mexican travelers are contained in the "price sensitive" segment – the smallest proportion of all three-country samples. It is interesting to note that 21 percent of the Mexico sample is included in the "punctuallers" group, which is much higher than either the Canada (11 percent) or US samples (15 percent). We also find that

Cross-national segmentation

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Segments		Canada	Country US	Mexico	Total
Price-sensitive	Count	452	628	91	1,171
	% within country	23.78	26.25	15.56	24.01
Quality seeker	Count	449	570	143	1,162
	% within country	23.62	23.83	24.44	23.82
Convenience-oriented	Count	426	588	139	1,153
	% within country	22.41	24.58	23.76	23.64
Punctualler	Count	206	358	125	689
	% within country	10.84	14.97	21.37	14.12
COA-oriented	Count	368	248	87	703
	% within country	19.36	10.37	14.87	14.41
Total	Count	1,901	2,392	585	4,878
	% within country	100	100	100	100

Notes: Chi-Square test: $\chi^2 = 121.71$; DF = 8; $p < 0.05$

Table VIII.
Comparisons of the relative size of each segment across three countries

Segments	Price-sensitive	Quality seeker	Convenience-oriented	Punctualler	COA-oriented
<i>Gender</i>					
Test statistics	$\chi^2 = 4.697$	$\chi^2 = 5.988$	$\chi^2 = 1.286$	$\chi^2 = 14.533$	$\chi^2 = 1.982$
<i>p</i> -value	0.320	0.050	0.526	< 0.05	0.371
<i>Age</i>					
Test statistics	$\chi^2 = 36.898$	$\chi^2 = 61.855$	$\chi^2 = 43.318$	$\chi^2 = 51.965$	$\chi^2 = 41.066$
<i>p</i> -value	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
<i>Income</i>					
Test statistics	$\chi^2 = 146.699$	$\chi^2 = 163.437$	$\chi^2 = 75.162$	$\chi^2 = 113.518$	$\chi^2 = 130.990$
<i>p</i> -value	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
<i>Usage</i>					
Test statistics	$\chi^2 = 55.068$	$\chi^2 = 24.759$	$\chi^2 = 33.509$	$\chi^2 = 30.451$	$\chi^2 = 32.801$
<i>p</i> -value	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Table IX.
Demographic analysis within each segment across three countries

the US and Mexico samples account for the smallest proportion of travelers in the “COA segment” (10 percent and 15 percent, respectively). Canadian travelers (19 percent) are more highly represented in the “COA oriented” segment compared to either the US (10 percent) or Mexico (15 percent) samples. For “quality and convenience seeker” groups, however, the relative group sizes are not significantly different in each of the three country samples.

A closer look at Table IX indicates that, in general, age, income, and usage variables are quite different within each cross-national segment based on the chi-square test, while gender plays an important role in profiling only the “quality seeking” and “punctuallers” segments.

Discussions and managerial implications

The lack of empirical research on international segmentation issues is a matter of concern that deserves to be addressed seriously (Steenkamp and Hofstede, 2002). Our study is directed at filling the gap in current knowledge relating to cross-national segmentation practices. The cross-national segmentation of NAFTA air travel consumers presents a challenging but worthy task, particularly when little systematic research has previously been reported on the subject to date. The approach in this study, which combines country level segmentation and consumer level segmentation utilizing the same domain-specific variables as segmentation bases, is more pragmatic, realistic, and relevant for identifying cross-national segments. The result of our study contributes to the market segmentation and international marketing literatures by providing a meaningful explanation of international market segmentation and consumer behavior in an international air travel choice context.

One of the research objectives of our study is to identify consumer segments at the country level. The conjoint analysis for all 4,878 NAFTA consumers dramatizes the fact that the relative importance scores of air travelers across the three countries are quite different and enables us to identify three different natural country segments: US, Canada, and Mexico. Price, number of stops, and in-flight services are the most important attributes for US and Canada consumers, while on-time performance is identified as the most important flight attribute for Mexican consumers. Country of airline is the fifth most important attribute for all consumers in our sample, regardless of country of domicile, while the existence of a frequent flyer program is the least important attribute across the three countries. Price is the most influential attribute for American and Canadian travelers. The high importance score on the price attribute means that the higher priced airline is less likely to be the consumers’ choice. It is interesting to note that Mexican consumers place the most importance on on-time performance, but not on price. We believe that our study provides a realistic assessment of the role of on-time performance in Mexican consumers’ airline preference decisions. Our study also lends credence to the notion that international segmentation at the country level using natural segmentation variables (e.g. country, political, and ethnic) is necessary but may not be sufficient for establishing viable segments. Country level segmentations alone often ignore the heterogeneity within individual country or groups of countries. The traditional method of segmenting markets solely by country does not offer enough precision for airlines in developing marketing strategies across countries. Therefore, our study has dramatized the importance of conducting further segmentation within countries to account for similarities and differences, and then to

conduct a second-level of segmentation that identifies similarities across countries. Our study has presented a technique that identifies cross-country segments as well as individual country segments.

Travelers from the NAFTA area can be effectively segmented according to the relative importance of airline service attributes. Specifically, five distinct segments of substantial size, each consisting of consumers with similar preference, are identified. These segments are labeled as:

- (1) price-sensitives;
- (2) quality seekers;
- (3) convenience-oriented;
- (4) punctuallers, and
- (5) country of airline-oriented for each individual country.

Indeed, through further segmentation within each country, segments at the consumer level are grouped so that homogeneity within each cluster and heterogeneity within each country can be clearly identified. However, it is still a natural form of international segmentation that is based on a multi-domestic strategy where each country represents a separate segment (Jeannet and Hennessey, 1998). In such an approach, no coordination between countries is required (Steenkamp and Hofstede, 2002), and the similarities and commonalities among countries are ignored.

Our study also identifies five cross-national segments based on consumers' preferences of six airline flight attributes. These five cross-border segments are:

- (1) price-sensitives;
- (2) quality seekers;
- (3) convenience-oriented;
- (4) punctuallers; and
- (5) country of airline-oriented air traveler segments.

Understanding the nature of these five well-classified segments allows international airlines the opportunity of using standardized marketing programs wherever cross-country similarities exist. Our study empirically verifies that micro-individual variables can be much more precise in grouping consumers into homogeneous segments, even across countries.

In summary, successfully profiling consumer segments, as we have dramatized in our study, allows the international airline to:

- obtain an in-depth view of the NAFTA airline consumer population;
- identify specific target segments within each country and across the three countries; and
- position effectively to reach and promote the targeted consumer segments.

Thus, our study has clear managerial implications for airline companies involved in NAFTA area. For exploring international marketing purposes, our findings indicate different types of international target market selection and differentiation strategies. First, the relative size of each consumer segment in each country signals the potential revenue in the segment. This serves as useful information for target market selection.

Given the differences in demographics across the countries, marketers are well advised to adapt their marketing strategies for a segment in each country. Firms may develop specific products for specific segments with each member country of NAFTA. It can be adapted easily to the case of domestic segmentation. Our data indicate females dominate most of the segments in Canada and the USA and are active air travelers. Furthermore, they account for a sizeable portion of total air travel. We also show statistically that wealthier people are more prominent in the country loyalty category in both the USA and Canada, but the opposite relationship is observed in Mexico. Therefore, promotional and pricing programs should emphasize the needs of female travelers in each of the five segments in both the USA and Canada. Advertising and promotional specials that emphasize price savings, quality aspects of the service and specials that appeal to loyalty should be positioned in media that appeals to women as well as men. Their decisions dominate or are important in each of the five air traveler segments.

Second, at the country level, airlines may group US and Canada as a common market since consumers from both countries have identified price as the most important service attribute, which is obviously different from preferences expressed by Mexican consumers. Furthermore, since the two countries, Canada and the USA, are almost identical in terms of the other four traveler segments – service based segments (i.e. quality seekers, convenience oriented and punctuals) are larger than the loyalty segment (COA oriented) – similarities across the two countries offer airlines the opportunity to standardize marketing programs. Price is a strong demand driver in both countries, which offers airlines the opportunity to establish identical price structures. Price discounting to increase demand and allocate traffic throughout city-pair segments can be practiced across national boundaries. For the Mexican segment, however, which is relatively less price-sensitive, marketing strategies may take advantage of the lower price sensitivities by creating differential pricing structures that absorb travelers' willingness to pay. But airlines are wise to cater to the Mexican traveler's demand for punctual service that are of good quality and convenient.

Third, considering the convergence of consumer needs within NAFTA, successful market segmentation presents both a challenge and opportunity for international airline companies. One way to penetrate the growing market is to target cross-national groups of consumer who share important characteristics, which will result in substantial cost reductions by allowing firms to employ similar service delivery, promotion and advertising strategies. Although travelers from the three NAFTA countries differ across several segments, they also display substantial similarities across others. For instance, quality seekers and convenience-oriented travelers are equally represented in the three countries. And in all three countries, quality and convenience are important demand drivers. Quality is expressed in a number of ways – booking flights, checking in at airports, lounge facilities within terminals, personal service prior to and after flights, on-board services, customs and immigration services, baggage handling, and customer service to handle complaints. Likewise, convenience can be expressed in terms of days and times of arrival and departure, direct or intermediate routing, ease of access to information – billing, scheduling, arrival and departure status, and interlining capabilities. Each of these elements of the air travel experience is judged as highly important to Americans, Canadians and Mexicans.

Therefore, airlines can develop standardized services that address the needs of travelers from each of the three countries. Not only will satisfaction levels increase with increased service quality, air carriers will be able to gain efficiencies by supplying identical services across the three national markets.

Limitations and directions for future research

The results of this study must be taken in light of several limitations. First, the study is based on a purposive sample, which limits the ability to generalize to the whole population with any known degree of precision. Researchers conducting international segmentation studies are suggested to strive to collect a representative sample of respondents (Steenkamp and Hofstede, 2002).

Second, while conjoint analysis provides advantages over other methodological approaches, we recognize that it also has its weaknesses. We recommend further research utilizing more sophisticated types of conjoint analysis to address the limitations of traditional conjoint approach as employed in our study. The conjoint analysis output was the input to the cluster analysis. Given this procedure, the limitations of conjoint analysis will condition the findings of the cluster analysis. For example, consumer preferences for certain service attributes or attribute levels relate to a specific point in time. As new attributes or levels of attributes come into play over time, consumer preferences and the related utility functions and weightings may shift. Thus, we may need to identify time-specific as well as cluster-specific importance attributes to employ in future conjoint-based segmentation projects.

Since the ultimate objective of international segmentation is to identify homogeneous consumers who respond similarly to marketing programs, scholars suggest that international segmentation processes should incorporate relevant marketing variables that help companies to tailor their marketing programs (Souiden, 2002). In our study, price and several service variables are included in the segmentation process. In future research, we suggest scholars include additional marketing as well as psychographic variables in segmentation analyzes to aid international marketing managers establish more actionable and effective marketing programs that are targeted to distinct cross-national consumer segments. Our results are acceptable as cross-section representations of cross-border segments for airline services; however, studies focused on other products or product categories, or on specific consumer characteristics (lifestyle, buying patterns, and behavioral predispositions) may require an altogether different set of segmenting factors.

Third, Wedel and Kamakura (1998) point to six criteria often used to evaluate segmentation bases:

- (1) identifiability;
- (2) substantiality;
- (3) accessibility;
- (4) stability;
- (5) actionability; and
- (6) responsibility.

In our study, identifiability (the extent to which different segments can be clearly identified) and substantiality (related to segment size) are explored; however, the other

four criteria should be implemented in the research design for analyzing international segments. Despite its importance, however, criteria for successfully identifying international segmentations have received little attention in the marketing or international business literatures. Therefore, future researchers should look into the issue of how to empirically evaluate the international segmentation bases.

Fourth, the focus of our study is limited to three member countries of NAFTA. Future research should consider using data from more countries and a larger set of product/service markets in order to examine and validate opportunities for international cross-national market segmentation.

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