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The Use of Electronic Ticketing - A Case Study

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- A CASE STUDY -

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This thesis was prepared under the direction of the candidate's thesis committee chairman, Dr. Thomas Tacker, Department of Aviation Business Administration, and has been approved by the members of his thesis committee. It was submitted to the Office of Graduate Studies and was accepted in partial fulfillment of the requirements for the degree of Master of Business Administration in Aviation.

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ABSTRACT

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This thesis will look at the impact of electronic ticketing travel on the behavior and acceptance trends by airline customers, its effects on revenue generation and cost-cutting opportunities, and the implications in the established transaction flow processes. This form of ticketing is becoming increasingly popular among U.S. and European airlines due to the reduced costs in different areas of passenger and transaction flow handling when compared to the current paper-based ticketing method. While at first glance this new ticketing technology application seems like a move in the right direction for airlines, there is no evidence as to the views from customers. To this effect, the researcher will collect and analyze data from customers that have used the electronic ticketing approach and identify key areas where customer needs must be addressed or revisited. The subjects will voluntarily complete and return a survey which focuses on this subject matter.

The Airline's[1] customers will be the subjects under this study. The results will be separated and classified according to multiple criteria. These results may provide a defined sequence and classification for passenger reaction and adaptation to the new ticketing process. This will allow The Airline to revise particular areas where customer needs are not being met or are improperly addressed. Ultimately, those carriers that are considering implementing this system, may use this study's conclusions to provide their customers with a product that better fits their "adjusting patterns" and their traveling needs.

[1] "The Airline" refers to the specific carrier that offered assistance in the data collection efforts. The purposes of this thesis do not require disclosure of the cooperating carrier. This carrier will hereafter be addressed as "The Airline."

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INTRODUCTION

Ticketing distribution, either directly from the airline or originated from a travel agency, has been the standard way to deliver travel documents since scheduled air transportation commenced. In today's environment a passenger must have a "paper" ticket in order to travel (excluding carriers that currently offer electronic ticketing as an option[2]). The public has been conditioned and continuously reinforced that a travel document receipt, commonly referred to as an "airline ticket" is the only way to obtain the transportation service desired. That is, there will not be service provided without it. The public has found comfort in the possession of these tickets when traveling by air. The question is: Will these passengers' comfort remain the same when an airline decides to suddenly eliminate this positive reinforcement? In essence, an airline is asking for the passenger's trust as it guarantees to "hold" the "ticket" until the time of travel.

The speculation levels are running high with this issue. Airlines are confident that the transition to a different ticketing system will be uneventful and smooth. Streamlining the ticketing process will reduce human contact and manual handling, providing a simpler and more convenient system for the customers. Among the speculated benefits, the airlines expect to enhance their passengers' travel experience by providing them with a

[2] United Airlines, Continental Airlines, ValuJet Airlines and Southwest Airlines.

"one stop shopping" concept. Others, mainly the travel agencies, are pessimistic about the whole issue since they view ticketless travel as a tactic by airlines to circumvent them and their commissions.

The researcher views this conflict between airlines and travel agencies as an issue of change. The roles that each party plays in the travel industry will remain the same; airlines will continue to fly and travel agencies will continue to partially "feed" these carriers with passengers. However, the processes that forge this relationship are changing, and naturally this period of adjustment is going to be marked by friction. The way each carrier handles this friction period may seriously impact, and possibly damage, the business relationship with the travel agency community in the long run.

In this array of change, has the customer been left out? The airlines may seem too concerned about their distribution costs and their delicate relationship with travel agencies, to the point that the customer might have taken on a secondary role. Among other concerns, this thesis will primarily concentrate on analyzing the effects of electronic ticketing travel on the passenger, in an attempt to fill the "gap" that airlines may have overlooked.

Statement of the Problem

This thesis will study the effects on airline passengers of a ticketing method put in practice by several airlines. Electronic ticketing is yet another attempt, by new and established airlines, at reducing their own domestic distribution cost structure. This ticketing method may rapidly become more widely used in the industry. However, there

are mixed opinions, depending on which organization responds, on passenger adaptation trends to this ticketing method. None of these responses are backed by conventional market analysis or sound academic research.

Among the variant forms of ticketless systems, this study will focus on one type, referred to in this project as "electronic ticketing." This form of ticketing, as defined by The Airline, allows the customer to purchase transportation at the time of reservation, lock in the fare and eliminate the process of obtaining a conventional paper ticket. The electronic ticket replaces the paper ticket and allows customers to purchase, change and refund transportation transactions over the telephone, eliminating the need to visit the airport ticket counter, an airline city ticket office, or a travel agency. A receipt/itinerary will be provided if requested. Prior to departure, the customer will proceed to the baggage counter or directly to the gate for check-in, whichever is appropriate. Upon verification of the passenger's identity, a boarding pass will be printed, which will be collected by the gate agent when boarding the aircraft. Additionally, a Self Service Device (SSD) similar to a bank's automated teller machine (ATM), will support the electronic ticketing service by allowing customers the ability to select seats, check-in baggage, and print their boarding passes. The SSD is linked to The Airline's internal reservation system.

The implications of this ticketing method are multiple. However, the purpose of this research is to test the hypothesis:

H_o: 50% or more of the customers that use the E-Ticket product for the first time will *not* choose it again for their next trip.

H_1: More than 50% of the customers that use the E-Ticket product for the first time will choose it again for their next trip.

The change in travel behavior in this study is defined, measured, and classified using several criteria: 1) the change in booking patterns, that is through a travel agency or directly through the airline; 2) the time effort required by the passenger to use the new ticketing process; 3) the anxiety level produced by different ticketing systems; 4) the perceived change in services (agent friendliness, improvements in boarding procedures, etc.), and 5) the perception that the new ticketing method has changed the value of the product.

The conclusions will provide some valuable insights that may allow a specific airline to differentiate this seamless ticketing service from competitors while adequately meeting the passengers needs and demands.

Review of Related Literature

Current Paper Ticketing Environment

Ticketing is literally up in the air,[3] especially after the DOT's ruling that computer reservation systems (CRS) should allow for other independent ticketing products and services. The next one or two years are going to be decisive in determining the type of ticketing procedures that will dominate during the remainder of this decade and into the 21st century.

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[3] Bruce Caldwell, "Ticketing is up in the Air," Informationweek, 23 May 1994, 80-84.

The electronic ticketing approach seems to have some major effects on the current CRSs. Air Fares and Ticketing[4] provides a good understanding of the information provided by the CRSs. The processes for ticketing are the same regardless of which system the travel agent is using. However, the current electronic ticket procedures vary depending on the carrier. The challenge will be creating a standard electronic process across all CRSs.

While the concept is not new to the industry, it has not been used to this extent. Therefore, there is some rivalry among carriers to have their own system become the most accepted. The Airline Reporting Corporation's (ARC) role as the clearing house between airlines and travel agencies will have to be modified if the electronic ticket approach is to succeed.

ARC's main functions currently provide:[5]

1. Standards for travel agencies on the requirements to sell airline tickets.
2. Printing and distribution of airline ticket stock to travel agencies.
3. Standards for reservations, air fare calculations and ticket writing.
4. Distribution of sales revenue from travel agencies to the corresponding airlines.

Moreover, the CRSs will also have to adapt to this new approach. The process of ticketing through a CRS is explained very clearly under Foster's[6] and Guntner's[7]

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[4] Philip G. Davidoff and Doris S. Davidoff, Air Fares and Ticketing, 2nd ed. (Englewood Cliffs, NJ: Prentice-Hall Inc., 1992), vii-2.

[5] Jeanne Semer-Purzycki, A Practical Guide to Fares and Ticketing, 2nd ed. (Albany, NY: Delmar Publishers Inc., 1994), 2.

handbooks for the SABRE® and APOLLO® reservation systems respectively.

It is also relevant to consider the effects on manual ticketing. As stated in Domestic ticketing and Air Fares: "The ability to utilize a computer reservation system is not enough to keep a travel agency in business."[8] This publication focuses on manual ticketing; however, it provides a thorough comparison with automated ticket processes. It provides some arguments that favor the manual process. Some of these arguments are outlined:

1. High computer equipment maintenance and leasing costs.
2. Ordering of equipment can be a lengthy process.
3. Malfunctions with the system, power lines, telephones, etc. can leave an agency inoperative.
4. Many forms must be done manually even if access to a CRS is possible.

Naturally, it is the common believe in the travel industry that outfits of this kind will slowly disappear as they cannot remain competitive with the more advanced and technologically efficient agencies which can spread their cost over a wider range of services.

Regardless of the ticketing methods used by agencies, they are uncertain as to the new ways of distributing their product. Distribution costs for the airlines are tremendous,

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[6] Dennis L. Foster, Reservations and Ticketing with SABRE®, (New York, NY: Macmillan/McGraw-Hill Company, 1990), ix-13.

[7] Learning APOLLO®: Basic and Advanced Training, (Cincinnati, OH: South-Western Publishing Co., 1994), 3-6.

[8] Linda R. Hood and Robert M. Coates, Domestic Ticketing and Air Fares, (Cincinnati, OH: South-Western Publishing Co., 1994), 8-9.

usually accounting for one of their top three cost areas with 13% of the operating expenses in the financial statement.[9] Carriers would like to reduce their dependence on agencies, so long as they could keep the same customer base. However, this is unlikely to occur, and airlines have grown "comfortable" with this dependence.

A survey of travel agents aimed at measuring the effects of airline deregulation and changes in industry competition provides some guidance as to the acceptance of an electronic ticketing system. The survey data results were compared with industry estimates of the same nature, which further validated the data. There were several findings that can be extrapolated to today's environment: 1) 26.5% of those interviewed believed the market was predictable, and 2) 74.1% saw the airline-travel agency relationship as poor and deteriorating.[10] Travel agencies are relying more and more on other forms of travel distribution such as hotels and car rentals instead of airline bookings, and diversifying into new areas such as convention management. Moreover, the recent commission caps established by several of the major carriers is contributing to the already existing animosity.[11]

Regardless of the agencies' position, this dynamic aspect of the travel industry will take on a new approach. According to the study's conclusion, "agents generally agreed that two strategies are important: marketing and operational changes". The travel

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[9] "Consolidated Statements of Operations." Continental Airlines 1993 Annual Report, 1993: 27.

[10] Jeffrey C. Dilts and George E. Prough, "Travel Agent Perceptions and Responses in a Deregulated Environment," Journal of Travel Research, 29, (Winter 1991): 37-42.

[11] James S. Hirsch, "Cuts Hit Travel Agents; Customers May Suffer," Wall Street Journal, 14 February 1995, B1.

agent will initially be against electronic ticketing because this system allows the passenger to bypass the agent since there is no ticket needed. Passengers will be able to book their reservations from their place of convenience. However, this will depend on the customer need for other services such as travel consulting and the agency's ability to provide this service.

The competitiveness of the travel market is further reduced due to the preferred relationship that exists between airlines and certain travel agencies. According to a report from the General Accounting Office (GAO) on airline competition, "passengers frequently leave the choice of airline for their travel up to their travel agency."[12] The survey performed showed that 51% of the agents picked the carriers for their customers at least half of the time. Another study done by Louis Harris and Associates[13] shows that travel agents pick the airline 41% of the time for business travelers and 55% of the time for leisure travelers. Many times agents will book these undecided customers on the agency's preferred airline which supplies them with incentives based on the booking volume. These incentives include VIP club memberships, override commissions and free tickets.

In an effort to get customers to book directly with the carrier, new entrants are more likely to use an electronic ticketing approach, especially considering the level of incentives needed to become a preferred carrier among travel agencies. This is further

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[12] U.S. General Accounting Office, Airline Competition: Industry Operating and Marketing Practices Limit Market Entry, (Washington, D.C.: GAO, 1990), 64-65.

[13] Louis Harris and Associates, "The 1987 Travel Agency Market," Travel Weekly, July 1988, 28 and 45; quoted in U.S. General Accounting Office, Airline Competition: Industry Operating and Marketing Practices Limit Market Entry, (Washington, D.C.: GAO, 1990), 64-65.

affirmed by Stephen Shaw when he states: "A further way of securing control of distribution is to develop alternative channels of distribution which involve direct dealing with the customer and which thus obviate the payment of commission."[14]

A clearer way to illustrate this statement maybe achieved through a comparison of the airline's distribution cost through a travel agency and directly with the carrier.

Item	Travel Agency	Airline
Commission	10%	0%
Override	1.7%	0%
Incentive	Varies	0%
Segment Fees	2.6%	0%
Paper Printing	0%	0.01%
Mailing	0%	0.1%
Reservations cost	0%	0.33%
Total	**14.3%**	**0.44%**

The travel agency percentages when applied to an average ticket value of $300 yield a distribution cost of $42.9 or 14.3% of the tickets face value, in comparison to a distribution cost of $1.32 or 0.44% when sold directly through the carrier.

The option of tying into a CRS is not a very attractive proposition for a start-up carrier, mostly due to the required set-up costs, maintenance fees, booking fees, etc. Additionally, a new entrant cannot fully justify this expense since it does not have its own historical data to predict demand. There is a concern, although not fully confirmed, after

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[14] Stephen Shaw, Airline Marketing and Management, 3rd ed. (Malabar, FL: Krieger Publishing Company, 1993), 211.

a study by the General Accounting Office on the impact of CRS's, that the incremental revenue of CRS-owning airlines reduces the level of competition in the market. "Justice is concerned that the CRS-owning airlines might use their market power over other carriers to charge excessive fees for booking through their systems."[15] This can have significant anticompetitive effects in two forms: 1) keeping new carriers out of the market, 2) indirectly stealing the market out of an existing carrier. While the data collected by the Justice Department did not prove these concerns, it has influenced new entrants to avoid the CRSs, and to develop their own product distribution methods through ticketless travel.

Another organization that will be affected is the International Air Transport Association (IATA) and their multilateral interline traffic agreements. These agreements allow "parties to operate scheduled air transportation services and desire to enter into arrangements under which each party may sell transportation over the routes of the others. The parties mutually desire to agree upon the terms and conditions relating the handling or interline baggage."[16] The agreement spells out especifically the procedures to issue tickets and Miscellaneous Charge Orders (MCOs) (Article 2), baggage acceptance and handling (Article 3), mishandled baggage (Article 4), claims and indemnities (Article 5), interline service charge (Article 6), general (Article 7), interline billing and settlement

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[15] U.S. General Accounting Office, Airline Competition: Impact of Computerized Reservation Systems, (Washington, D.C.: GAO, 1986), 10-11.

[16] International Air Transportation Association, Multilateral Interline Traffic Agreements Manual, 40th ed. (Montreal, Quebec: International Air Transport Association, 1994), 1-8.

(Article 8), arbitration (Article 9), and administrative provisions (Article 10).[17]

As a complement to electronic ticketing, IATA has been advocating the use of the ATB2 technology. According to Michael Feldman, IATA's Director of Passenger Services, the ATB2 ticket is "extremely flexible in terms of what can be printed on it and coded into the magnetic stripe on the back of each ticket."[18] International travel requirements differ widely between countries. Electronic ticketing might not be possible in many of these countries as many times proof of departure and return documents are required at the time of check-in, customs, security check points, etc. ATB 2 technology might easily solve this hurdle that the global airline industry must overcome.

Current Electronic Ticketing Environment

The airline industry has taken a shift to provide a lower cost, higher frequency product. The success of this electronic ticketing product with smaller carriers, coupled with the exhorbitant distribution costs, has "forced" the major airlines to seriously consider the change. Representatives of the CRSs, IATA, and the airlines have discussed the viability of its implementation and currently, several carriers are offering their electronic ticketing products through the CRSs.[19] The travel agencies fear this strategy will reduce their booking activity. However, airlines have been careful to point out that while this type of service (shuttle, high frequency) will shift the ticketing distribution

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[17] Note: The current US airlines currently using ticketless operations are not members of IATA, or are members but have a portion of their operations providing online travel, thus avoiding interlining.

[18] "Electronic Ticketing, ATB 2 and IATA," Airlines International, May/June 1995, 37.

[19] "E-Ticket Goes National," TravelAge East, 4 September 1995, 4.

towards the airline, it will only account for a very small percentage of the carrier's total activity. This effect, as explained by USAir's marketing and distribution vice president Rita Cuddihy, is not due to the carriers desire to eliminate their travel agency dependence, but rather as a result of marketplace demand and the design of the product.[20] This high-frequency, shuttle type service, can easily accommodate a ticketless environment. The growth of this program has been limited due to the novelty of the technology and the need to run test programs. Dick Burdette, senior staff analyst at United Airlines, agrees with the industry's position by stating that the problems with electronic ticketing in the international arena will be due to legal issues, the Warsaw Convention and the need to provide paper information to the customer as they travel from one country to another.[21]

Several carriers are already operating under the electronic or ticketless travel process.[22] ValuJet, a low-cost carrier operating out of Atlanta, does not issue or accept paper tickets. Customers can book directly with the carrier and pay with a credit card or through a travel agency and pay cash. ValuJet does not participate with ARC, or any interline agreements. Its CEO, Mr. Lewis Jordan, confirms that "when passengers were surveyed, 98% were happy flying ticketless."[23] Southwest Airlines offers ticketless travel throughout their network. Consumers and travel agencies book directly with Southwest over the phone and can pay with credit cards only. Morris Air, who was

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[20] Isae Wada, "Airline Executives Dispute Direct Bookings Motivation," Travel Weekly, 25 July 1994, 27-29.

[21] Will, Goodhart, "Ticketless Takes Root in Europe" Airlines International, July/August 1995, 45-47.

[22] Facts obtained from The Airline's own research work.

[23] Del Jones, "Airlines Want to Cut the Paper Trail," USAToday, 30 December 1994, B-1.

acquired by Southwest Airlines, offered the same ticketing program. United Airlines and Continental Airlines offer electronic ticketing in their California and Texas shuttle markets respectively and in portions of their domestic network. American Airlines, Delta and USAir are testing their own electronic ticketing versions with plans for a systemwide (domestic) access.

The passenger reactions are varied when confronted with electronic ticketing travel. Their behavior has not been researched at this time; however, there are indications that passengers feel insecure without a ticket in their hands. According to airline industry executives,[24] the ticket is a security blanket for passengers, as well as for travel agents, who also view the ticket as the necessary link with the carriers. Regardless of the type of document being used, the ticket always provides the date of travel, the origin and destination, intermediate stops, and the fare value, which in turn can be used as a receipt of services rendered. A ticket, after all, is a contract between the passenger with his/her baggage and the carrier who undertakes the transportation of passage and baggage.[25] This contract was the result of the Warsaw Convention, an accord signed on October 12, 1929 for the Unification of Certain Rules Relating to International Carriage by Air, later amended at The Hague on September 28, 1955. On the airline's side, the only real benefit to providing tickets is the ability to track interline activity. This allows for the distribution of revenues when combined services have been provided to the

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[24] "Airlines Investigate Potential of Ticketless Passenger Flights," Aviation Week & Space Technology, 4 November 1991, 30-31.

[25] Air Traffic Conference of America, Trade Practice Manual: Passenger Traffic Resolutions, (Washington, D.C.: Publication Services, 1984), Resol. 20.03, 1.

passenger.

Industry representatives are quick to point out the numerous benefits to the customers and travel agencies. Ponder Harrison, ValuJet's V.P. of Marketing and Sales, is enthusiastic about the electronic ticketing benefits. He adds: "Once they [the customers] fly us and realize how easy it is, they really are quite taken with it and don't quite understand the necessity for all the documentation that is required for the traditional process."[26] The issue of customer acceptance has not proven to be a deterrent for further expansion. Carriers implementing this system are more concerned with the impact to their distribution expenses and the potential backlash from the travel agency community. To a certain degree, airlines are promoting an electronic ticketing system to recapture business surrendered to travel agencies.

Regardless of the standards the airline industry adopts, if any, after this ticketing distribution "revolution," the challenge for airlines is to make the transition to the new environment as smooth, easy, and uneventful as possible, especially for both the customer and the travel agent. Skip Barnette, Director of Marketing Technologies and Distribution Planning at Delta Air Lines, states that the message from their own frequent flyer customers has been very clear: customers do not want to do anything that they do not have to do today. He adds: "We don't want to cause them [customers] concern - we want to make them feel more comfortable."[27] The solution is thus to find and measure the customers' concerns and expectations and meet these during the transition process. In

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[26]Perry Flint. "The electronic Skyway," Air Transport World, January 1995, 43.

[27]"Embarking on the Ticketless Journey" Airlines International, May/June 1995, 36.

order to succeed in this effort, the departments in charge of customer service, distribution, marketing, technology, training, etc. must work in concert taking full ownership of their piece of the project.

Travel Weekly magazine gives a detailed summary of the benefits and disadvantages of a ticketless approach:[28]

1. Benefits:

- Itinerary changes and refunds can be handled through the telephone eliminating the wait for the mail.
- Expedient reservations, check-in and boarding.
- Significant time reduction per passenger from booking to boarding.
- Reduction of ticket stock, printing hardware cost, inhouse storage of tickets as it automates much of the sales reporting functions at the airport.
- Opportunity to improve passenger service.
- Eliminates passenger anxiety from losing the ticket.
- Reduces human interaction, something the business passenger appreciates.
- Streamlines passenger document processing throughout the company.
- Improves accuracy and timeliness of accounting and credit card systems.
- Automates the sale transaction.
- Improves audit trails and reduces fraud.
- Reduces paper waste, thus comforming with ecological advocated practices.

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[28] Rik Fairlie, "Carriers Examine Ticketless Travel," Travel Weekly, 25 July 1994, 37-38.

2. Disadvantages:

- Implementation will be difficult for full service carriers.
- Interline accounting difficulties.
- Security risks when crossing national borders (international travel).
- Passenger mistrust due to the absence of a tangible travel document.

A strong argument in favor of a ticketless system is the decrease in time "wasted" by the passenger at the airport. The real benefit is for business travelers, as found by Reuben Gronau in his study of the monetary value of time for passengers,[29] where he concludes: 1) the price of time will determine the mode of transportation to use, and 2) business travelers price their time according to their hourly earnings, along with other factors such as the length of the trip, the time of the day, etc. Given the proven time reduction with a ticketless system, all of these factors contribute to time-value savings for the traveler.

A survey done by the International Airline Passengers Association (IAPA), measuring the features that users view as needing improvement at airports includes "quick and easy check-in" among the top four areas. Of the surveyed passengers, 37.7% named this category on one of the top three of concern in 1981 and 40.0% in 1984. Additionally, 43.2% of users considered improvement necessary, which increased to 44.2% in 1984.[30] A second passenger survey study carried by the Air Travel Consumer

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[29] Reuben Gronau, The Value of Time in Passenger Transportation: The Demand for Air Travel, (New York, NY: Columbia University Press, 1970), 7.

[30] International Airline Passengers Association, North American Results, (Dallas, TX: International Airline Passengers Association, 1984/85), 73-74.

Report, places the ticketing/boarding category as third in the ranking of consumer complaints. The percentage of this category against total complaints remained the same for May 1993 and 1994 at 13%.[31]

A survey carried out by USA Today provides some early information as to customers' adaptation of ticketless travel. While the data is not scientifically valid, it shows some encouraging results. The survey was placed on the Business Travel section, and asked readers to mail it back at their own expense. Based on two thousand responses received, 44% preferred paper tickets, 19% preferred ticketless flying, and 37% had no preference. Respondents were 83% male, 90% white, and 50% had accumulated 100,000 frequent flyer miles per year.[32]

The Airline in case conducted organized focus groups to explore barriers to the electronic ticketing program, understand the perceived benefits, and compare passengers' perspective of the electronic ticketing program vis-a-vis current options.

The study used airline frequent travelers (3-6 trip/year), both leisure and business, between the ages of 30-45, with an equal male/female distribution. There were several revealing and important conclusions gathered relevant to the current ticketing methods:

1. Travelers rarely look at their tickets, but they refer heavily to the accompaning itinerary.
2. On their way to the airport, travelers conduct quick "ticket checks" to verify

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[31] U.S. Department of Transportation, Air Travel Consumer Report, (Washington, D.C.: DOT Department of Consumer Affairs, July 1994), 23-25.

[32] "Frequent Flier Survey," USA Today, Section E-Business Travel Bonus Section, (April 11, 1995): 11. Survey data obtained from a telephone conversation between the researcher and USA Today Money Section reporter Dell Jones.

possession of the ticket (document), sometimes up to three or four times.

3. Business passengers get their secretaries or in-house travel bureaus to arrange their travel, and the ticket "magically" appears on their desk.
4. While some consumers also go through travel agents for personal flights, most felt they get better information and lower fares when contacting the airlines directly.
5. Consumers feel they will not get bumped from full flights if they have a boarding pass with an assigned seat in their hands.

Finally, The Airline has leveraged their electronic ticketing product with the Electronic Ticketing Machine, an ATM-like self-service device used for check-in, ticket purchase, etc. at the airport. This product support will greatly contribute to increasing the rate of acceptance and use of electronic ticketing. However, expected productivity increases due to reductions in transaction processing costs might not be as large in reality as The Airline might like to believe. A study published on the National Productivity Review journal, reports that "although the ATM has apparently failed to achieve the potential productivity expected with respect to transaction processing, it has been instrumental in shaping the public's acceptance of computerized delivery mechanisms." Of more importance and critical to the subject at hand, the study concludes that "the ATM may not truly be a casual factor in the trend toward a paperless environment, but it must be considered a positive influence on the information-based society of the future."[33]

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[33] Ray M. Haynes, "The ATM at Age Twenty: A Productivity Paradox," National Productivity Review, 9(3), (Summer, 1990): 273-280.

Consumer Behavior with New Products or Services

Most consumers are initially uncomfortable with the idea of "ticketless" systems and raise many questions, such as:

1. What if the computers go down?
2. What if the airline loses my reservation record?
3. What if I do not have a fax machine to receive my itinerary from the airline?
4. Do I get charged on my credit card when using the Ticketing Machine at the airport to obtain my boarding passes?
5. What if they do not get it right?
6. What do I turn in if I have to switch to another airline?

Many passengers feel comfortable with the current ticketing method and see no need to change to another method. Others like the security of having their ticket in their hands and do not "trust" the carrier to hold their record for them. Finally, some others think that they have more leverage to get onto their flight having physical evidence of their reservation.

From a customer service standpoint, The Airline's focus groups research provided the following perceived requirements for the electronic ticketing program:[34]

1. A hard copy of the customer's travel arrangements (i.e. itinerary) is critical. This requirement satisfies the customer needs for reference purposes, verification that their travel arrangements have been made accurately, and it is their tangible proof to the airline of their travel reservations.

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[34] Facts obtained from The Airline's own research work through a focus group method.

2. Assure the customer that the reservations are in the "system," by being able to retrieve the records with the passenger name, phone number, frequent flyer number, etc.
3. Require an identification check at the time of check-in, requesting preferably a driver's license. Customers want to feel confident that no one else can use their ticket.

Chester R. Wasson defined consumer behavior as "the way people act in an exchange process."[35] Wasson summarizes this process by noting several characteristics:

1. There are different choices for the consumer: products, brands, suppliers, etc.
2. Consumers that are affected by the same influences choose differently.
3. The choices are influenced by external and internal (personal) factors.
4. Individual choice patterns must be stable in order to predict the future behavior for niche and mass markets.

The key to understanding consumer behavior is in defining the kinds of internal and external forces that affect people in their purchasing patterns. The fields of individual psychology, social psychology, anthropology, sociology, communications research and economics would have to be visited to obtain a complete explanation.[23]

Henry Assael provides a simple model of consumer behavior which allows for an easy understanding of the process flow (Figure 1): [36]

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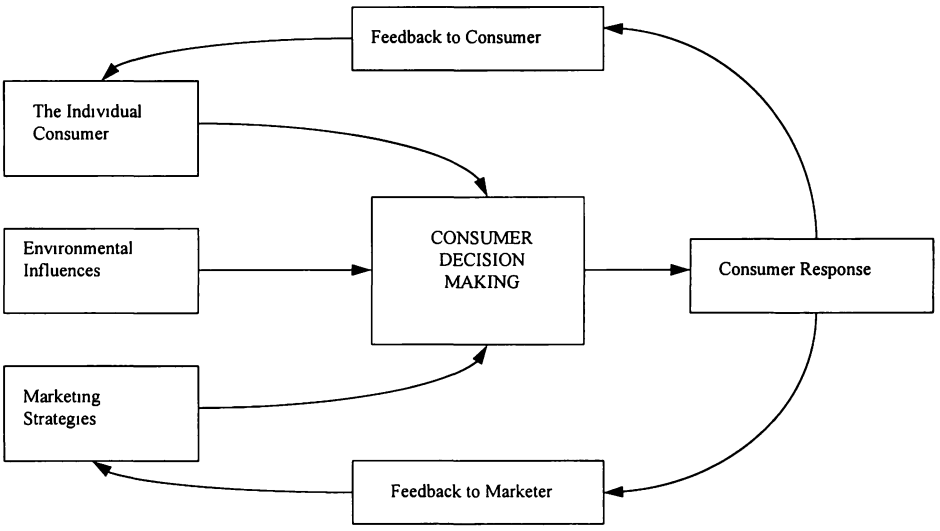
[35] Chester R. Wasson, Consumer Behavior: A Management Viewpoint, (Austin, TX: Lone Star Publishers, Inc., 1975), 28.

[36] Henry Assael, Consumer Behavior and Marketing Action, 3rd ed. (Boston, MA: Kent Publishing Company, 1987), 11.

Figure 1 - Consumer Behavior Model



Francese and Piirto describe the process for product or service analysis in an effort to find an imbalance between customer needs and product attributes. This analysis uses demographics, purchase behavior, and psychographic research to determine who will or will not buy.[37] A marketing study done at Arizona State University concludes that an evaluation of a service firm often depends on evaluation of the service encounter or the

[37] Peter Francese and Rebecca Piirto, Capturing Customers, (Ithaca, NY: American Demographics Press, 1990), 38-39.

period of time when the customer interacts directly with the firm.[38] Part of their model was tested among 145 airline passengers who rated the effects of the physical surroundings and employee responses in a service failure situation.

The marketing of new products has changed to focus on individual unique groups of consumers (niche markets), rather than on the market as a whole. The amount of information available on each consumer is sufficient to allow for this kind of strategy. A combination of customized products, customized communication, and customized service and delivery is, in effect, treating each consumer as a unique segment of one.[39]

The introduction of a new product or service involves two processes, as explained by David F. Midgley. There is a cognitive process (internal to the individual) where the consumer goes through an acceptance routine of the product, and a social process which produces acceptance by means of communication with the social system. Additionally, it was demonstrated that interpersonal communications and not the mass media, contributed to the acceptance rate. The media was more influential during the cognitive stage whereas "word-of-mouth" was present in the social stage.[40]

The Automated Teller Machine (ATM) is an adequate example of a product that has been rapidly accepted by "today's" society. ATMs are "unmanned teller devices located on or off bank premises, which provide cash and handle routine financial

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[38] Arizona State University, "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses," Journal of Marketing, 54, (April 1990): 62-82.

[39] Michael Winkleman, Don Schultz, David C. Edelman and Michael Silverstein, "Up Close and Personal," Journal of Business Strategy, 14, (July/August 1993): 22-31.

[40] David F. Midgley, Innovation and New Product Marketing, (New York, NY: Halsted Press, 1977), 78-79.

transactions."[41] Consumers, by choice, are increasingly using this technology as part of their normal daily activities. The acceptance rates have been tremendous due to the logical benefits to the user, who might prefer using the ATM than interacting with a bank employee. Transactions require minimal involvement, thus little or no customer training is required. Users accept ATMs due to their demonstrated security, accessibility, functionality, and quickness. It is a product that is self-marketed.

Nonetheless, there is still a portion of the population that has not incorporated this technology for their benefit. When the electronic ticketing product is leveraged with ATM-like devices, ETMs, for ticketing and check-in purposes, the psychographic characteristics of ATM nonadopters can then be extrapolated to potential "would-be" users of ETM technology. An ETM is a self-service device that looks, feels, and works just like an ATM.

Studies by the Akron Business & Economic Review [42] and the Journal of Retail Banking [43] have shown that ATM active users tend to be less concerned about safety and are less likely to enjoy going to the bank to conduct financial business than nonusers. Users are more likely to be highly educated, and have above-average incomes, also be younger, male, and married. Therefore, it was concluded that the marketing strategy of

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[41] Allen H. Lipis, Thomas R. Marshall and Jan H. Linker, Electronic Banking, (New York, NY: John Wiley & Sons, 1985), 2.

[42] Robert E. Stevens, William E. Warren and Rinne T. Martin, "Nonadopters of Automatic Teller Machines," Akron Business & Economic Review, 20(3), (Fall 1989): 55-63.

[43] Robert E. Stevens, Rinne T. Martin, Pamela S. Carter and Disck Cogshell, "A Comparative Analysis of Users and Non-Users of Automatic Teller Machines," Journal of Retail Banking, 8(1/2), (Spring/Summer 1986): 71-78.

ATMs should focus on the following five areas: location (preferably in upper scale areas), security, convenience and accessibility, instructions, and quickness in service. The studies also concluded that between 10.2% and 17.4% of consumers fall into the nonadopter category.

The characteristics that inhibit nonadopters from using ATMs can be supressed by introducing an incentive program aimed at increasing ATM usage. A cash payoff game was implemented for this purpose by the Union National Bank of Little Rock, Arkansas. ATM users could win either $5 or $100 by playing; however, the probabilities of winning were higher for customers with low ATM usage rates. The game caused an increase in: the number of cards used, the frequency of use, and the percentage of transactions carried out on ATMs. More importantly, card use remained high after the game expired.[44]

The introduction of new products can have measurable effects on the consumers. These effects are a factor of the target market, the time the product is introduced, the nature of the product, the consumer characteristics, the rate of product acceptance, the communications channel used to broadcast the product, etc.

Of particular interest to the research of an electronic ticketing environment is Thomas S. Robertson's classification of technological innovations:[45]

1. Continuous innovation: The extension of an existing product.

2. Dynamically continuous innovation: A new product with minor technological

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[44] Kathleen A. McNally and William B. Abernathy, "Effects of Monetary Incentives on Customer Behavior: Use of Automatic Teller Machines (ATMs) by Low Frequency Users," Journal of Organizational Behavior Management, 10(1), (1989): 79-91.

[45] Thomas S. Robertson, "The Process of Innovation and the Diffusion of Innovation," Journal of Marketing, 31, (January 1967): 14-19.

advances.

3. Discontinuous innovation: The introduction of a major technological product which will set new behavior patterns.

An understanding of the diffusion process will also be essential in the implementation of an adequate marketing strategy. This process is defined as "the adoption of an innovation spread by communicating to members of a target market over a period of time."[46] The decision is therefore considered more important as well as more risky. The communication from the marketer will provide awareness of the innovation and information. Studies done in the area of innovation adoption have found that the decision to adopt or reject a product by consumers was highly influenced by friends and relatives, only after awareness of the product had reached the market.[47]

As mentioned earlier, time is essential because it measures the rate of diffusion and classifies the market by time of adoption groups: innovators, early adopters, early majority, late majority, and laggards.[48] Product improvements have been measured as more effective when these innovations are spread out through time. Adrian Fairhurst sees a much less risky environment when product modifications are balanced, rather than large and sudden changes. This applies to both the users and the providers of the product.

Research has been more focused on the innovator's classification since it is the

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[46] Hubert Gatingnon and Thomas S. Robertson, "A Propositional Inventory of New Diffusion Research," Journal of Consumer Research, 11, (March 1985): 849-867.

[47] Jagdish N. Sheth, "Word-of-Mouth in Low-Risk Innovations," Journal of Advertising Research, 11, (June 1971): 15-18.

[48] Everett M. Rogers, Diffusion of Innovation (New York, NY: Free Press, 1984); quoted in Henry Assael, Consumer Behavior and Marketing Action, 3rd ed. (Boston, MA: Kent Publishing Company, 1987), 451.

first group to adopt the products. Leon Schiffon and Leslie Lagar Kanuk provide a profile on the innovator compared to the noninnovator. Their classification characteristics are based on personality, life style, demographics, and media characteristics.[49]

The results of all studies on consumer behavior have the common objective of providing better marketing strategies for the introduction of new products into the market.

Statement of the Hypothesis

H_0: 50% or more of the customers that use the E-Ticket product for the first time will not choose it again for their next trip.

H_1: More than 50% of the customers that use the E-Ticket product for the first time will choose it again for their next trip.

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[49] Leon G. Schiffman and Leslie Lazar Kanuk, Consumer Behavior, (Englewook Cliffs, NJ: Prentice-Hall, Inc., 1983), 526.

METHOD

Subjects

The area of research concerns a method of ticketing distribution currently used by several U.S. airlines and which will possibly soon be the standard form of ticketing for a majority of the domestic carriers. This ticketing method, referred to here as "electronic ticketing" can be investigated for any airline that uses such a method; however, the researcher felt that these airlines might be reluctant to cooperate given the sensitivity of the subject. Fortunately, The Airline welcomed the project given their interest in the research matter, and their confidence in the researcher based on an already established professional relationship. The researcher expected to obtain sufficiently valid data from their passengers to test the hypothesis and provide additional data of immediate use for The Airline.

The researcher allowed a three week period, from September 1, 1995 to September 22, 1995, for customers to respond to the survey that was mailed on September 1, 1995.

Instruments

The instrument used for data collection was a customer survey questionnaire.

The purpose of the survey was to provide the researcher with sufficient data, externally unavailable otherwise, to test the hypothesis that an electronic ticketing system will change the travel behavior of airline customers.

The survey questionnaire was chosen as the means of data collection due to the reduced time commitment for both the researcher and the subjects, and the reduced cost when compared to personal interviews or a phone survey option. The survey was divided in two sections. One section was reserved for direct questions related to The Airline's electronic ticketing impact on the customer, and the second part was dedicated to demographic questions necessary for the data classification and identification of the different user groups and their characteristics. The questionnaire provided the data required following the established criteria as outlined in the design section.

The length of the survey was kept to a manageable level in order to maximize the response rate. The survey would take up to, and no more than, ten minutes of the subject's time to complete at a normal reading speed and average comprehension level. The survey contained a combination of direct questions, rating questions, where the subjects rated their preferences when confronted with two choices, fill in the blanks questions, and open ended questions.

Initially, there were other methods of data gathering suggested, such as distributing the questionnaire to a selected group of customers in specific flight segments during the flight, or physically surveying customers while they waited for their flights at the airport, etc. This survey method would have been identical to that used by Mr. Houston B. Smith's in his study titled: Leisure Travel Market Research Potential for a

High Speed Civil Transport. Mr. Smith surveyed 213 adult airport visitors and passengers via an interview questionnaire method.[50] However, since only a very small portion of U.S. passengers have experienced the electronic ticketing method, all of the above mentioned options jeopardized the probability for a high success ratio. That is, the researcher would have had to survey a tremendously large population to obtain adequate, useful, and valid data. These other options would have posed a considerable financial risk, and an intensive and laborious burden during the data procuring and tabulation process.

Instead, a direct mail survey method was used. The Airline's test markets or shuttle markets were used as the network for data collection. The Airline has had the electronic ticketing option available for customers traveling in the shuttle markets since April 1995. When the customer makes a booking and pays with a credit card, he/she receives an itinerary and receipt via the U.S. mail or via fax, depending on the date of travel. The electronic ticket is prepared at The Airline's reservation center, and the itinerary/receipt is sent separately by a contracted outfit. This latter company had on record all addresses for customers that have traveled using the electronic ticketing option. It was deemed appropriate by The Airline and the researcher to mail the questionnaire directly to those customers on the electronic ticketing address database that had traveled between April 20, 1995 (date of the electronic ticketing program launch) and July 31, 1995. A total of 6,570 unique address records were found.

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[50] Houston B. Smith, "Leisure Travel Market Potential for a High Speed Civil Transport," The Journal of Aviation/Aerospace Education & Research (JAAER), 5 (1), (Fall 1994): 8-12.

While the researcher was hoping to complete the data gathering process much sooner than the mentioned dates, there were several constraints that did not allow for the project to begin. One, The Airline postponed several times the launch of the electronic ticketing product due to last minute glitches, and two, electronic ticketing was not the company's main priority in the list of events. Once the product was turned on, the researcher had to wait a certain period to allow the eligible electronic ticketing customer database to expand. Since the expected rate of survey response was estimated at 5%, and the number of required respondents was calculated at approximately 400 (95% confidence interval and 0.05 precision), the researcher had to wait until the database totaled 8,000 or more customers. However, given other constraints, one to finish this study, and two, the researcher's time limitations to the company's generous resources, the project was approved with only 6,570 customers on the database. At a 5% response rate, 6,570 surveys would yield 328 returns, well below the necessary number for the predetermined criteria.

An incentive, such as bonus frequent flier award miles or free drink coupons was considered as a means to boosting the expected survey return numbers. However, given the cost requirements (i.e. alcoholic drink coupons at $2.00 ea. times 6,570 mailers = $13,140) of such incentives, they were not approved.

The questionnaire package and organization followed the same structure outlined in The Survey Research Handbook. It included a cover letter, and a postage paid return envelope. As suggested in this handbook, the questionnaire itself was divided in

three main parts: the introduction, the body, and the conclusion.[51]

Design

The objectives of the project were to:

1) Classify the population sample according to the rate of acceptance by obtaining an appropriate measurement of the time lapsed between use of the new ticketing method and acceptance by the population. The researcher was especially interested in identifying the innovator group or early adopters (the first group to accept the product when first exposed to it).
2) Identify the factors (external and internal to the individual) that influence the rate of acceptance patterns with electronic ticketing travel.
3) Classify the consumer groups by their level of preference (i.e. leisure, business and other) of the electronic ticketing method.
4) Suggest the customers' future behavior in response to continued use of electronic ticketing travel.

The data required came from the voluntary participation of The Airline's passengers on a survey questionnaire. The analysis of the survey data provided a measurement of the effect of electronic travel on passenger behavior as a function of several criterion:

1) Ticketing patterns: The change in how passengers book and ticket their

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[51] Pamela L Alreck and Robert B. Settle, The Survey Research Handbook, (____: Irwin Professional Publishing, 1995), 144.

reservations; that is, from travel agency to directly with the carrier's reservation center or vice versa.

2) Time: The change in time invested by the passenger from using a paper-based ticketing method to an electronic ticketing system as measured by:
   A. Processing time comparison while ticketing via The Airline.
   B. Processing time comparison while ticketing via a travel agency.
   C. Processing time comparison prior to check-in during check-in, and boarding.
3) Anxiety: The level of stress, based on individual comments, of using a paper-based ticketing system when compared to using an electronic ticketing approach.
4) Services: Perceived change in the level of service quality from one method to the other as measured by:
   A. Customer service agent friendliness rated on a scale by the passenger.
   B. Difficulty or easiness of understanding the new system.
   C. Perceived improvements in the airport procedures.
5) Value: The perception that a change in the ticketing procedures has changed the value of the service (increase or decrease) in the customer's mind as measured by the:
   A. Identification of prior expectations.
   B. Degree to which those expectations are being met.

Data Availability

The researcher asked for cooperation from The Airline in order to use its customers as the population base to obtain the required project data. The researcher directly asked the Senior Director of Distribution Planning and the Director of Marketing Research, for permission to survey the passengers according to the method outlined earlier. Their aid was also critical in the design and organization of the research instruments.

Given the mutual benefit from the results of this project, the author requested additional help in the funding of the research, and in providing travel freedom within The Airline's route structure during the investigation and analysis phases of the project.

If in the unfortunate event that The Airline rejected this proposal, the researcher would have opted to request cooperation from other proponents of electronic ticketing or ticketless approach. The second choice would have been ValuJet Airlines, based in Atlanta, followed by a third option of United Airlines, currently under an electronic ticketing environment in parts of their domestic network.

Procedures

The research problem is presented in the form of a hypothesis. The researcher and individuals in the airline field have stated, in very general terms, the perceived benefits of an electronic ticketing system; however, there is no factual information available to conclude on the benefit of one system over the other. The project was thus set up for a deductive research approach. The opinion strategy was chosen as the preferred domain as

a data source. The opinion of selected individuals, those who have been exposed to a pure electronic ticketing system, will be chosen for further analysis. However, these individuals are also part of a larger group, which is airline passengers. This form of grouping, one for passengers that have used electronic ticketing before and another for those who have not used it, lends itself to meeting both requirements for population classification under agglomeration: mutual exclusivity and exhaustiveness.

The problem allowed for the use of formal techniques, that is the data was collected first hand through the use of survey questionnaires under a cluster sampling design. The researcher felt that The Airline customers departing from the already mentioned shuttle markets were a well-defined subgroup of The Airline's total systemwide population. The only apparent difference between this subgroup and the rest of the population was the departure point, which in theory, should not have caused them to respond any differently to the survey.

The researcher proceeded to test the hypothesis by analyzing the responses to provide evidence of the acceptance of this electronic ticketing approach by passengers who had already used it, as well as the potential acceptance by passengers who had not been exposed to such a system.

Once the evidence was evaluated, the hypothesis would have been supported. The only other outcome could have been an inconclusive result due to insufficient data or mixed results.

Analysis Presentation

The results of the data analysis for each question on the survey are presented using a combination of graphs and tables where the data will be depicted. Additionally, each question is supported by textual analysis, where relationships, and independent conclusions are thoroughly explained. Once all survey questions are analyzed, the researcher combines the results to obtain a "global perspective" of the survey results. This is composed of one or multiple conclusions, which are then used to test the hypothesis.

Expenses

A total of 6,850 survey packages composed of the following: an outer envelope (two color), a cover letter (two color), a survey (three color), and a business reply envelope (one color):

1. Typesetting and Printing	$1,554.00
2. Packaging, labeling, sorting, and mailing (6,570)	No Charge
3. Mailing surveys - Postage charge (¢28.22/ea.)	$1,853.95
3. Returned "Business First Class" envelopes charge (¢34/ea.)	$433.00
TOTAL	**$3,840.95**

QUESTIONNAIRE ANALYSIS

Background

The following is a clear explanation of the survey and its structure. While initially the questionnaire totaled seven pages, the final version totaled only four. This latter one, focused on the essentials of the information required by The Airline and the researcher respectively (refer to Appendix A for questionnaire).

The structure of each question is very clear, direct, and extremely objective. The request for information is presented with a minimal amount of words. All but four of the questions are answered by a set of choices for which the respondent could check the most applicable answer. Additionally, an *"other"* category was added to those questions for which an alternative answer could be included. It can be argued that by providing check-off boxes for each question, the results could be biased to the researcher's intentions; however, by including the *"other"* or fill in the blank option, this argument can no longer be valid.

Three of the four open ended questions requested a specific number to be written. Thus, only one question allowed for "at will" writing, so long as the respondent remained within the parameters of the subject at hand (electronic ticketing). The last section included space for additional writing. This area, titled "General Comments," was not

bound to the subject, and allowed the customer to express any feelings towards The Airline in general.

The survey questions can be classified into four main areas or topics:

1. Generic ticketing behavior	2 questions
2. Electronic Ticketing	7 questions
3. Electronic Ticketing machine	2 questions
4. Demographics	10 questions

The first three topics occupied two thirds of the survey space, while the demographics was left with the remaining one third. By strategically placing the electronic ticketing questions first, when the respondent is highly motivated, the researcher obtains more accurate data on the more critical questions which require additional thinking. It was argued that the demographics section should be left as the last section since responding to these is somewhat of an automatic reflex. Once committed to responding, the reader immediately expects questions regarding electronic ticketing. They are introduced with two soft generic ticketing questions that lead directly to the E-Ticket specific questions.

There are several key points in the survey package that are of great importance and contributed greatly to the overall success of this project. The cover letter recognizes the customers for using the product and invites them to contribute with their suggestions. The data is guaranteed as confidential, and solely for internal use. A return by September 22 date is given. Considerable room is provided for additional comments. And finally, the customer is thanked, both in the cover letter and survey for participating, and is given

a prepaid envelope to respond. While at first glance these points might be considered trivial, the researcher views them as key to warrant the respect from the customer and guarantee an adequate return ratio.

Overall Survey Analysis (see Appendix B for results summary)

1. Rate of Response - Table I

There were a total of 6,570 survey packages mailed to The Airline's customers that had used the electronic ticketing product in one or more of the shuttle markets where the product was offered. However, 103 surveys were returned to the sender due to a change of address or erroneous address. Thus, the absolute number of surveys received by the customer was 6,467. Of these, there were 1,287 surveys returned, or 19.9%. However, only 1,176 surveys, or 18.2%, were returned by the given limit response date, Friday, September 22, 1995. The researcher considered all surveys up until Friday, September 29, 1995. Thus, some of the surveys were accepted even though they were mailed after the due date. Finally, a total of 1,142 surveys, or 17.7%, were deemed usable for tabulation and analysis. The difference of 34 surveys were considered invalid due to incomplete sections (i.e. demographics) or blank returns.

Table I - Rate of Response

	Number	Percentage
Surveys Mailed (Absolute)	6,467	100.0%
Surveys Returned	1,287	19.9%
Surveys Returned on Time	1,176	18.2%
Usable Surveys	1,142	17.7%

2. Sample Attributes Table II

The statistical attributes have been greatly modified given the extraordinary and unexpected response number. Initially, the number of responses were expected to be between three and four hundred. Thus providing a 95% confidence interval and a 5% precision level.

The new numbers allowed for a much better set of attributes. Following are the calculations:

Population and sampled group: $N = 6,570$

Usable sample size: $n_o = 1,142$

Conservative probability of occurrence: $P = 0.5$

Conservative probability of non-occurrence: $Q = 0.5$

Z-score (dependent on confidence interval): Z-score

Degree of precision: $d = ?$

Formula:

$$n_o = [(z^2)(P)(Q)] / (d^2)$$

Table II - Sample Attributes

Confidence Interval	Z-score	Degree of Precision
95%	1.96	2.90%
96%	2.06	3.04%
97%	2.17	3.21%
98%	2.33	3.44%
99%	2.58	3.81%
100%	6.00	8.88%

3. Origin of Returned Surveys Table III

Surveys were returned from multiple cities across the United States; however, the majority originated in the four markets where the electronic ticket product is available. For classification purposes, the researcher grouped the responses in five main areas: Houston, San Antonio, Dallas/Fort Worth, New Orleans, and other.

These numbers indicate that there is no one city that dominates in participation. Naturally, Houston's numbers are well above all other cities, since the number of enplanments and point of purchase is greater in this city and there might also be a sense of "duty"given that The Airline is local home carrier. It is clear, however, that the impact of electronic ticketing is equal no matter the point of origin.

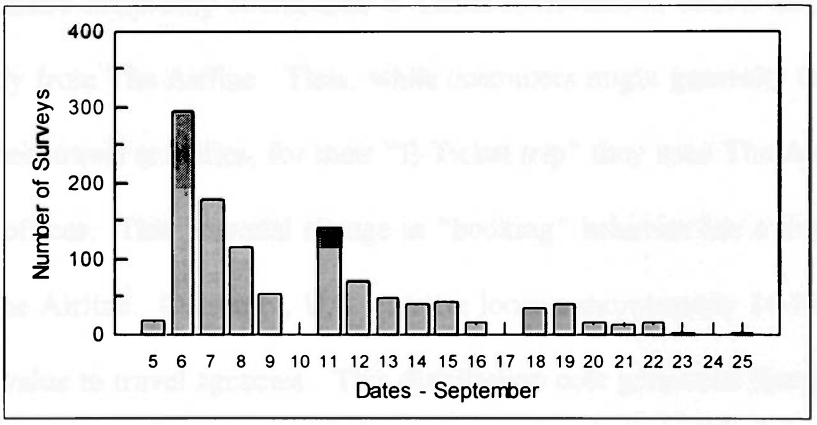
Table III - Origin of Returned Surveys

CITY	SENT	RECEIVED	RETURN %
Houston	3909	781	20.0%
Dallas/Fort Worth	424	41	9.7%
San Antonio	530	83	15.7%
New Orleans	460	62	13.5%
Other	1247	175	14.0%
TOTAL	**6,570**	**1,142**	**72.9%**

4. Date Returned Figure II

The survey return dates might be of significance to measure the sense of duty or urgency to contribute by customers to this new product. The numbers are surprisingly high for the first week, and they diminish on the second and third week.

Figure II - Date Returned



It is worth noting that the highest peak occurs only five days after the survey packages were dropped in the mail system, possibly indicating a very high level of importance and priority in the respondents' agenda. In the first three days, September 5th, 6th, and 7th, enough data was collected to justify the project all together and produce conclusions with a certain degree of confidence and precision. The empty marks corresponding to the 10th, 17th, and 24th, are Sundays when the Post Office does not deliver mail.

The return "curve" follows and exponential distribution, with an inmediate high return that progressively diminishes with time.

Individual Question Analysis

1. Question 1 - Table IV

Prior to The Airline's introduction of E-Ticket, how did you ***generally*** obtain your...
...reservations? ...tickets? ...boarding passes?

The value of this question is greater than meets the eye. At the time of this survey, customers could only obtain their E-Ticket reservations, tickets and boarding passes directly from The Airline. Thus, while customers might generally use a travel agency for their travel activities, for their "E-Ticket trip" they used The Airline's reservations offices. This potential change in "booking" behavior has a tremendous impact for The Airline. Currently, U.S. carriers loose approximately 14-15% of the ticket's face value to travel agencies. This distribution cost generated through travel agency commissions (10%), CRS segment fees ($3.14), and travel agency commission overrides (1-3%). Shifting a portion of customers that do business with a travel agency to book and purchase directly through The Airline presents a significant savings potential.

Example. Assuming an airline sells at least 10,000 tickets per day:

75% through travel agencies	7,500
Total Revenue @ average ticket value - $300	$2,250,000
Airlines' distribution cost through travel agencies:	
Commissions (10%)	$225,000
Overrides (1%)	$22,500
Segment fees (2.5 segm./tkt. @ $3.14 ea.)	$58,875
Total/day	**$306,375**

Electronic ticketing allows the customer to travel without the standard paper ticket. Thus, no longer does the customer have to pick up a paper document. Travel agencies, as a distribution center of these tickets, might see their customer base slightly reduced due to the electronic ticket product penetration rates.

The data displayed under Table IV is not representative of the airline travel population in general; however, it is representative of the customer population that ticket directly with The Airline. There is a difficulty in objectively analyzing this question, in that multiple respondents "checked" multiple boxes under each category. Thus, the percentages are not based on the total number of respondents, but on the total number of checked items.

The majority of the customers obtained their reservations, tickets, and boarding passes directly from the airline (reservations, ticket-by-mail, airport ticket office, or city ticket office). Electronic ticketing is also penetrating some of the travel agency market with an average of approximately 30% of the customers that responded. The other categories are necessary to complete the spectrum of distribution channels but are of no significant use to this particular study.

*Table IV - Distribution Breakdown**

	Reservation	Ticket	Boarding Pass
Reservation Center	763	331	--
%	*57.3%*	*26.4%*	--
Travel Agency	396	413	213
%	*29.7%*	*33.0%*	*29.7%*
Ticket-by-Mail	49	223	--
%	*3.7%*	*17.8%*	--
Secretary	90	79	45
%	*6.8%*	*6.3%*	*6.3%*
Airport Ticket Office	26	181	220
%	*2.0%*	*14.5%*	*30.6%*
City Ticket Office	6	23	--
%	*0.5%*	*1.8%*	--
Gate	--	--	240
%	--	--	*33.4%*
TOTAL	1330	1250	718
%	*100.0%*	*100.0%*	*100.0%*

**%s are based on # of responses to this question*

2. Question 2 - Table V

Prior to The Airline's introduction of E-Ticket, how did you ***generally*** pay for your tickets for...

...personal travel? ...business travel?

The purpose for this question is two fold. One, it is a confirmation that the great majority of The Airline's customers purchase via credit cards over the phone, which is also the only method of payment allowed for E-Ticket purchase. Two, it serves as a transitional question in the structure of the survey. The additional use for this data is internal to The Airline and does not concern the study at hand.

Table V - Method of Payment*

	Personal	Business
Cash	38	6
%	*3.3%*	*0.7%*
Check	47	18
%	*4.1%*	*2.1%*
C.Card	1069	808
%	*92.6%*	*93.0%*
Other	0	23
%	*0.0%*	*2.7%*
TOTAL	1,154	869
%	*100.0%*	*100.0%*

** %s are based on # of responses to this question*

Credit card payment overwhelms the other forms of purchase options in both the personal and business categories.

3. Question 3

For how many round trips have you booked/purchased an E-Ticket
a. through The Airline's Reservations?_____trip(s)
b. through The Airline's E-Ticket Machine?_____trip(s)

This is a very important question as it will allow the researcher to correlate the usage frequency with the adjustment factors to this new product. It is expected that the more the customers use the product, the more they will like it, and the more they like it, the more they will use it, and so on. The data discussed below, by itself, does not provide any indication of acceptance or rejection. It can only be concluded that on average, the people that have used the product, have purchased the product 2.12 times, or, 2,416 tickets were purchased by 1,142 people. Considering the span of time that is being studied here, approximately three months, this is a positive indicator. Alternatively, an average of 0.51 round trips per user were purchased at the E-Ticket Machine, that is, 586 tickets for 1,142 people. While this is in no way an indication of the rate of acceptance of this added product, they are encouraging numbers.

There is a danger with the latter part of question three, in that the customer might be confused as to what he/she is actually doing with the machine. The E-Ticket Machine serves multiple purposes, one of which is an instant ticket purchase mode. However, some users might confuse checking-in for a flight that has already been paid for, with purchasing a ticket.

4. Question 4

How many times have you checked-in for a flight using The Airline's E-Ticket Machine?_____time(s)

As with question three, the number by itself here is not a clear indication of the customer's level of adjustment and acceptance. It can be deduced that there is an average of 1.08 check-ins per person, 1,229 for 1,142 customers.

These numbers can be matched against the number of round trips purchased at an ETM. A customer that purchases a ticket through an ETM, is automatically checked-in for his/her flight. Tickets can only be purchased for same day flights at the ETM, and this one only issues boarding passes for that days travel. Therefore, the customer must check-in, either at the counter or at the ETM, prior to the return flight. It can then be assumed that a customer that has used the ETM once is likely to use it again. Since there were a total of 586 round trip tickets purchased at the machine, there are probably approximately double this number of check-ins, or 1,172, close to the earlier 1,229 check-ins number.

5. Question 5 Table VI

How did you first learn about The Airline's E-Ticket product?

This is a valuable question as it measures the benefit of using different customer communication channels. The Airline was concerned that since travel agencies did not have access to the E-Ticket product during the test period, a full blown marketing/advertising campaign should not be implemented. This avoided a potentially disastrous backlash from the powerful travel agency community.

The minimal customer communication tactics employed, proved to have also had a minimal impact. The majority of the customer communications has occurred at The Airline's Reservation centers, where 74.1% of customer product knowledge originated. An incentive program for the reservation agents to sell E-Tickets proved to be the most effective strategy to get the product in circulation.

Table VI - Product Knowledge*

	Number	**Percentage**
Reservation Agent	889	74.1%
Other Employee	**21**	1.8%
Travel Agency	**43**	3.6%
Airport Signs	**71**	5.9%
Frequent Flyer Mailer	**88**	7.3%
Media	**40**	3.3%
Inflight Magazine	**6**	0.5%
Friend, Associate, Relative	29	2.4%
Other	**13**	1.1%
Total	**1,200**	**100.0%**
* %s are based on # of responses to this question		

6. Question 6 - Table VII

Did you have any problems with your E-Ticket reservation or check-in? *(If yes, then check all that apply)*

The data from this question is critical in addressing the flaws and problems with the E-Ticket system. Currently, there is no running tally of the problems that are occurring in these principal areas. The only information available comes from this survey, and as can be clearly seen, there are many problems with E-Ticket.

A total of 46.2% reported no problems with the system; however, a larger share did have some type of problem. The two biggest problems are related to the airport agents, 16.4% of the complaints, and to the ETM, 15.4% of the complaints. These alarming percentages must be addressed immediately in order to win these customers back. Fortunately, a portion of these complaints are from customers that have had a problem during one of their many E-Ticket trips and these are reflected here with the same weight as a first time user.

A more thorough analysis of the written comments in the "other" category, still reveal the ETM as the biggest problem, followed by the baggage check-in problem (curbside or at the ETM), and trailed by the airport agent problems. The difficulty with this analysis lies in the classification of the written comments. The categories shown are not mutually exclusive since they are all interrelated. The researcher classified these, as shown on Table VII, according to the most emphatic problems presented in each comment.

*Table VII (A & B) - E-Ticket Problems**

Summary	Number	Percentage
No	604	46.2%
Yes:		
Confirmation	26	2.0%
Fax	69	5.3%
ETM	201	15.4%
Agent	214	16.4%
Other	193	14.8%
Total	1307	**100.0%**
* %s are based on # of responses to this question		

"Other" Category	Number	Percentage
Tickets	9	4.7%
Seat Assignment	8	4.1%
Instructions	24	12.4%
ETM	39	20.2%
Charge $	9	4.7%
Baggage	31	16.1%
Agent	26	13.5%
Phone/Fax	8	4.1%
Refund	6	3.1%
General	33	17.1%
Total	**193**	**100.0%**
* %s are based on # of responses to this question		

Table VII-A presents an overall summary of the problems according to the categories provided in the questionnaire. Table VII-B shows an itemized count of all the problems by category according to the written comments placed in the "Other" check box in question six of the survey. Please refer to Appendix C (Question 6 List of Comments and Related Facts) for a detailed list of each of the written problems classified by category.

7. Question 7 - Table VIII

Which of these statements agrees most with your opinion of the E-Ticket Machine?

The majority of the customers, 26.4% of the respondents, were surprised with the ETM functions, and 24.7% were not affected, for better or worse, by the machine. The challenge here is to identify and categorize the problems that occurred to those that were disappointed (13.9%), and improve the ETM service so that those that were unaffected by it (24.7%) will make better use of all the functions the next time they travel.

Table VIII - ETM Opinion

	Number	**Percentage**
Surprised	301	26.4%
Expected	282	24.7%
Disappointed	159	13.9%
Did not use the ETM	336	29.4%
No Answer	64	5.6%
Total	**1,142**	**100.0%**

8. Question 8 - Table IX

How do you feel E-Ticket affects the level of service The Airline provides to you? *(Please check one)*

The results from this question showed that 65.9% of the respondents believed E-Ticket increased or greatly increased the level of service provided, and only 12.6% thought it was a decrease or a great decrease in service. By comparing the results from question 6 and question 8, it can be deduced that while the problems caused by the new service affected over 53% of the users, only 12.6% believed it was a detrimental service. It is thus evident that while a customer might have had a problem with E-Ticket he/she might very well still think it is a useful product.

The customer understood that with any new product there are always some "kinks" that are resolved with time and experience, most stated their willingness to continue using the product because they expect these "glitches" to disappear with time. It is urgent that The Airline address these "kinks" so as to not abuse the customer's patience and understanding.

Table IX - E-Ticket Opinion

	Number	**Percentage**
Great Increase	276	24.2%
Increase	476	41.7%
No Change	182	15.9%
Decrease	77	6.7%
Great Decrease	67	5.9%
No Answer	64	5.6%
Total	**1,142**	**100.0%**

9. Question 9 - E-Ticket Experience

How did E-Ticket affect your travel experience? *(Your comments are extremely valuable)*

The question prompts the respondent to comment on any aspect of the E-Ticket experience. Three open lines were provided for written comments. Many respondents filled the line space and continued on other blank areas of the survey. The response here was truly overwhelming, with 959 written comments, which amounts to thirty two pages worth of written material. Again the comments were classified among seventeen categories, according to the content of each comment. Overall, there were 526 positive or of a complimentary nature, 54.8% of the total, and 343 negative or disappointed comments, 35.8% of the total, and 90 irrelevant or neutral comments, 9.4% of the total.

The same negative categories already determined from question 6 appear to reoccur in this question. The category "disliked" groups all those comments for which no detailed description of the problem was given, rather a general animosity towards the product was given. The "ETM," "agent," and "baggage" categories trail "disliked" in number. The comments under these three categories continuously describe a different version of the same problems.

*Table X - E-Ticket Experience Comments**

Summary	Number	Percentage
Agent Prob.	45	4.7%
Baggage Prob.	35	3.6%
Compliments	487	50.8%
Disliked	88	9.2%
ETM Prob.	66	6.9%
Phone/Fax Prob.	4	0.4%
General Prob.	18	1.9%
Instructions Prob.	31	3.2%
Kinks Prob.	17	1.8%
Lines Prob.	6	0.6%
No Effect	83	8.7%
Rat. Accept.	39	4.1%
Refund Prob.	6	0.6%
Receipt Prob.	9	0.9%
Security .Prob.	13	1.4%
Unrelated Prob.	7	0.7%
$ Charged Prob.	5	0.5%
Total	**959**	**100.0%**
* *%s are based on # of responses to this question*		

Overall Comments	Number	Percentage
Positive Comments	526	54.8%
Negative Comments	343	35.8%
No effect/Unrelated Com.	90	9.4%

10. Question 10 - Table XI

Below are a series of statements that compare E-Ticket with paper-based ticketing. For which ticketing method is each statement most applicable?

A list of six areas are presented to the respondent for his/her rating. Each compares E-Ticket with paper-based ticketing. Unfortunately, no "check box" was provided for those individuals that felt indifferent to either method. It was deemed appropriate to lump those that did not respond to one or more of the areas as indifferent to any method.

The results showed E-Ticket as the preferred form of ticketing in all categories. Additionally, the indifferent category was greater in all circumstances except for "secure" category where there was a larger portion that preferred paper ticket than those that were indifferent. Therefore, this was also the lowest popular category in the E-Ticket group, with only 42.9% of users preferring this method. The reason is simply due to the novelty of the product and the customer's fear of not being in possession of a "comfort document" similar to the paper ticket.

Approximately 80.6% of the respondents would always use E-Ticket or are not opposed to using it. This demonstrates a rapid customer adaptation to this new technology, indicating that E-Ticket is perceived as a valuable product, for the reasons given in question 10, and many other ones that are not currently evident.

Table XI - Ticketing Preference

	E-Ticket	Indifferent/No Answer	Paper
More Convenient	743	202	197
%	65.1%	17.7%	17.3%
Saves Time	707	246	189
%	61.9%	21.5%	16.5%
More Efficient	701	268	173
%	61.4%	23.5%	15.1%
More Secure	490	317	335
%	42.9%	27.8%	29.3%
More Fun	568	450	124
%	49.7%	39.4%	10.9%
Always Use	627	293	222
%	54.9%	25.7%	19.4%

11. Question 11 Table XII

Have you ever used another carrier's electronic ticketing or "ticketless" system?

It is very likely that if respondents have previously used another form of electronic ticketing, they will be more acceptant of the E-Ticket product. However, this previous knowledge can also be detrimental, since it provides the customer with a point of reference for comparison purposes. The data revealed that approximately 42.5% of the respondents had already used other versions of the product, with a large portion of these having used a local competitor's product.

The Airline must provide a product that exceeds the customer's preconceived expectations so that during a comparison evaluation, the E-Ticket product comes out ahead. A study of the opinion held by other airlines' ticketless users of The Airline's E-Ticket product, will provide a more accurate picture of The Airline's competitive standing (see also page 70).

Table XII - Previous Use of Other Airline's Electronic Ticket*

	Number	**Percentage**
Yes:		
United Airlines	13	1.1%
Southwest Airlines	457	39.9%
ValuJet Airlines	16	1.4%
Other	1	0.1%
No	658	57.5%
Total	**1,145**	**100.0%**
** %s are based on # of responses to this question*		

Demographics Overall Analysis

The purpose of the demographics section is to allow for the classification of electronic ticket users according to pre-established profiles using known parameters such as age, sex, or income. There were ten questions in this section of which only eight will be used for analysis of the subject at hand. These two other questions, F and G, asked the respondents about their experience with on-line services and the internet. They were inserted in the E-Ticket questionnaire given The Airline's interest in this subject. The Airline is considering the feasibility and economics of reaching out to its customers via this emerging communication and distribution channel.

It is of no analytical value to examine each of these questions individually, as they only give a bare and simple description of the responding population. However, it is worth providing an overall summary highlighting the largest categories (refer to Appendix B for a more detailed summary of the E-Ticket survey demographics).

About 78.9% of E-Ticket users ranged between the ages of twenty five and fifty four, with the larger portion being those between thirty five and forty four (32.4%). The larger portion of these users are male, 57.2%, versus 40.7% female. These users are mainly in a managerial, executive, or in a sales profession, confirming the necessity to travel in these business positions, otherwise known as "road warriors."

The education level is very high, as 72.2% claim a college or post graduate degree. This positively correlates with the reported household income, since 51% of the respondents claim more than $70,000 per year. Given the sensitivity of the income question, many respondents did not respond (10.2%) and many others might have

inflated their yearly intake. Fortunately, this is not a factor that was perceived as causing a favorable or deterrent effect on adaptation to electronic ticketing.

Conversely, the last three questions do have a large impact in the adjustment process. Frequent use of Automated Transaction Machines (ATM) will cause an ETM user to be more relaxed and understanding of the process. Fortunately, 50.9% of the respondents use ATMs on a high frequency basis. Surprisingly, 20.4% claim never using the bank machines.

The average number of trips per year per respondent is a stunning 14.41. A large portion of these, 46.1%, only travelled between one and nine trips per year. Interestingly, the combination of the total trips reported on the survey, yields 16,362 trips. The large majority of these travelers, 64.3%, were members to The Airline's frequent flier program.

General Comments Analysis - Table XIII

The last question of the survey is not a demographics question, rather it is a "catch all" where the customer is given the opportunity to write any comments related to The Airline in general. Surprisingly, most of the comments given were negative. A total of 385 comments yielded 91 positive ones, 23.6%, and 187 negative ones, 48.6%. Additionally, there were 107 comments relating to The Airline's service, not related to the electronic ticketing product in itself. It is conceivable that those dissatisfied . customers needed to "vent" out their frustrations, thus writing more comments than those that enjoyed the new ticketing system.

Table XIII - General Comments

Summary	Number	Percentage
Agent Prob.	41	10.6%
Baggage Prob.	7	1.8%
Compliments	73	19.0%
Disliked	37	9.6%
ETM Prob.	28	7.3%
General Prob.	24	6.2%
Instructions Prob.	23	6.0%
Kinks Prob.	14	3.6%
No Effect	11	2.9%
Rat. Accept.	18	4.7%
Receipt Prob.	3	0.8%
$ Charged Prob.	5	1.3%
Security Prob.	6	1.6%
Unrelated Prob.	95	24.7%
Total	**385**	**100.0%**
** %s are based on # of responses to this question*		

Overall Comments	Number	Percentage
Positive Comments	91	23.6%
Negative Comments	187	48.6%
No effect/Unrelated Com.	107	27.8%

Customer Behavior Analysis

In the following section the researcher analyzes the survey results according to the criteria previously defined in the design descriptions under the Method section. The criterion are the following:

1. Change in ticketing patterns from travel agencies to directly with The Airline or vice versa.
2. Time investment difference between using paper and electronic ticket..
3. Anxiety or level of stress difference between using paper and electronic ticket.
4. Perceived change in the level of service between paper and electronic ticket.
5. Perceived change in the value of service between paper and electronic ticket.

1. Ticketing Behavior Pattern Change

The act of purchasing an airline ticket can be divided in four phases. These phases can be resolved all at once or throughout different instances. First the customer must decide on an itinerary, a date, and a time of travel. Second, once all of these variables are determined, the customer makes a booking or reservation, either with a travel agency or an airline reservation center. Third, the customer confirms or secures the reservation by purchasing the ticket. Lastly, the customer obtains the boarding passes, either prior to arriving at the airport, by obtaining a document referred to as an "Advanced Boarding Pass" (APB), or at the day of travel at the airport.

The Airline is most concerned about the outcome of phases two and three as

they relate to electronic ticketing. During these instances the customer is most vulnerable or prone to commit to a purchase. It is in the carrier's best interest to secure the sale, not only to deter the customer from "shopping price" with competitors, but also to deter the customer from purchasing and ticketing with a travel agency.

Those price sensitive customers, by nature, will "shop price" before committing to a sale. This is a behavior that is very difficult for the airlines to curtail or even influence. However, once a fare is adequate to the customer's budget, it is important for that carrier to process the purchase and ticketing transaction, to avoid indirectly "spilling" the revenue to a travel agency. While the revenue will go to the carrier regardless of the distribution method chosen by the customer, the amount of that revenue will be approximately 14-16% less if the customer purchases through a travel agency.

Currently, the airline industry handles approximately 20% of the total customer ticketing activity, while the remaining 80% is processed by travel agencies. A large portion of the carriers' booking activity is handled at their reservation centers via telephone. Approximately 16% of these customer calls turn to actual bookings, of which only 50% are purchased and ticketed. The remaining 50% is lost to other carriers with better prices or frequencies, spilled to travel agencies, or lost due to the customer deciding not to travel. In summary, approximately 9% of the carriers' booking efforts, get ticketed at travel agencies.[52]

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[52] Data obtained from The Airline.

The reasons for this diversion of ticketing activity are multiple. The customer might prefer to ticket at a travel agency, or he/she might be traveling five days out or sooner, with insufficient time for the ticket to arrive via the U.S. mail, etc. It is expected that electronic ticketing will impact a portion of this diversion of ticketing traffic.

The electronic ticket survey respondents are not an accurate representation of the traveling population in general. Since respondents could only obtain an electronic ticket from The Airline directly, those customers that normally ticket through a travel agency are not represented here. Nonetheless, the data showed that a large portion of The Airline customers, 37% on average, normally do business with a travel agency (see Table XIV Distribution Breakdown). However, these customers chose to purchase and ticket via The Airline's reservation center instead of going to a travel agency.

Therefore, it can be concluded that electronic ticketing will shift a substantial portion of the customers that ticket through travel agencies to The Airline.

Table XIV - Distribution Breakdown

	Reservation	**Ticketing**	**Boarding Pass**
The Airline	63.5%	60.6%	64.0%
Travel Agency / Corp.	36.5%	39.4%	36.0%
Total	**100.0%**	**100.0%**	**100.0%**

The impact to the travel agency community will be tremendous. This early

study demonstrates that a large portion of the traveling population use travel agencies solely for the convenience of obtaining the ticket documents at the time of purchase. Since electronic ticketing eliminates the paper document, the customer will no longer have the need to go to a travel retail location to obtain these documents. Those travel agencies whose main activity is based on ticket distribution will slowly disappear or will change their activity to encompass other travel related services. Their role will change to some kind of a travel "consulting" center, providing the customer with additional services (i.e. hotel, car, and leisure travel reservations), and possibly charging a fee based on the services requested.

2. Time Investment

The customer time investment analysis when comparing paper ticketing versus electronic ticketing can be reviewed under three separate scenarios:

A) Processing time comparison while ticketing via the airline

B) Processing time comparison while ticketing via a travel agency

C) Processing time comparison prior to check-in, during check-in, and boarding

A) Processing time comparison while ticketing via the airline.

The transaction processing up to the ticketing phase will be the same as always. That is, the customer will continue to question price and frequency, and the agent booking commands will practically remain the same. However, the ticketing phase is

completely different, favoring electronic ticketing in many instances.

Paper ticketing requires the customer to wait three to seven days, depending on U.S. mail processing efficiency, to receive the documents. Given the monetary value of these documents, the customer will be anxious until these are in his/her hands. Electronic ticketing eliminates the wait period. The customer receives a confirmation number over the telephone and The Airline mails an itinerary/receipt. If the customer is traveling before the itinerary arrives, The Airline sends the same itinerary via fax. This itinerary is considered a mere "comfort document," as it is not necessary for the customer to produce such document during airport processing (baggage check-in, boarding, etc.).

In summary, the wait time required for paper ticket processing ranges between three and seven days versus no wait time required for electronic ticketing.

B) Processing time comparison while ticketing via a travel agency

The travel agency scenario is completely different. The customer, in most cases, is physically at the travel agency location working out the price and itinerary details. The time required for ticketing is negligible, since the agent can produce these virtually instantly. Therefore, electronic ticketing will not make a big difference when compared to paper ticketing, as far as time required. Just as with the airlines, it will only make a difference when the customer is making a purchase over the telephone.

The travel agency will greatly benefit from other features of the electronic ticketing technology. Since there are no tickets to be printed (only the agent and

auditor coupons are printed), there is no time spent ordering ticket stock, securing these accountable documents, loading the printer, walking back and forth to the printer, voiding printing errors, stamping and writing on tickets, stuffing tickets in ticket jackets, etc. From a processing stand point, electronic ticketing can easily save the travel agent one to five minutes per transaction.

C) Processing time comparison prior to check-in, during check-in, and boarding.

It is difficult to separate each of these three events for time comparison purposes. Initially, the survey included time comparison questions; however, it was decided against these since customers might not have an accurate reading on the time spent in each of these steps. Rather, they would be able to give a more educated answer by just checking off the one step which involved the least time.

The electronic ticketing as a product functions the same way as a normal paper ticket at the airport. That is, the customer still has to stand in line at the check-in counter if baggage needs to be checked. Otherwise, the customer can proceed directly to the gate to obtain a boarding pass. This is no different from the process the customer has to endure today. The Airline has leveraged the value of the electronic ticketing with an electronic ticketing machine (ETM). However, the ETM can only be used in conjunction with an electronic ticket. The customer uses a credit card to retrieve his/her record from the computer. The ETM reads the customer's name from the magnetic strip on the rear of the credit card. Once the customer is checked-in, the ETM provides a receipt and a boarding pass.

Question 10 on the survey, specifically asked the respondents to check-off the paper ticketing or E-Ticket boxes for each statement given. The second statement read: "It saves me the most time when I use..." The E-Ticket box was checked-off by 707 respondents, or 61.9% of the total, 21.5% were indifferent to either option, and only 16.5% thought the paper ticket saved them the most time.

In addition, a tally of the compliment comments written on question nine revealed 257 related to the time savings and speed obtained by using E-Ticket. In other words, 53% of the compliment comments were in reference to the time savings incurred. A large portion of these 257 comments were in reference to the lines that the customer was able to avoid, thus saving some additional time. Many of the other positive comments are short statements using very descriptive words such as: easier, no hassle, convenient, simple, short and less frustrating. These comments provide a slight indication that the customer also saved time; however, they were not included in the above calculations.

Again, the main reason that customers complimented the E-Ticket product as far as time savings is concerned was due to the functionality of the ETM. Otherwise, the product would have faired equally to the paper ticket processing in the time category.

There were a total of 1,815 transactions done at the machine, or an average of 1.59 transactions per survey respondent. Therefore, it can be assumed that just about every E-Ticket customer has used the ETM at one point or another. Their responses to question ten are thus directly correlated to their success with the ETM functionalities.

3. Anxiety

The simple fact that electronic ticket is a new product is bound to create a certain degree of anxiety and uneasiness in the customer. Additionally, any problems that they encounter along the process will likely cause them to distrust the product even more.

Again, it is difficult to isolate the instances that the customer feels uneasy about his/her electronic ticket. The travel experience is full of unplanned events that cause distress. Electronic ticketing is one of these multiple variables; however, finding when it is the sole variable, is almost impossible. In addition, the intensity of this anxiety varies depending on numerous factors, such as the customer's travel experience, the circumstances, the weather, the number of times having used an electronic ticket, etc.

There are two items on the E-Ticket survey that might serve as possible indicators to identify the amount of stress endured by the electronic ticketing respondents. One is the number of negative comments written on question nine; there were 343 negative comments, or 35.6% of the total comments. While this number is alarmingly large, it included all problems caused by the system when the customer was using E-Ticket. The anxiety endured by the customer in these circumstances was caused by the problem, not by the electronic ticket itself.

The second, and more accurate, "anxiety indicator" can be found in the answers provided in question ten under the statement: "my tickets are more secure with..." This question gets to the heart of the anxiety generator. The customer is leery about trusting The Airline with maintaining his/her tickets. The anxiety originates at the time

of purchase and escalates until the day of departure at the airport. This is not a problem created by the electronic ticket system, but it is an inherent problem in the product itself. Of all the statements under question ten, this one had the highest percentage favoring paper ticketing, with 29.3% of the respondents, versus 42.9% favoring electronic ticketing. Surprisingly, only thirteen respondents wrote specifically about their anxiety under question nine. This indicates that the anxiety, when related to the ticket itself, will only be temporary, and only exist the first few times the customer uses the product. This interpretation is clearly explained by the data shown under table XV below.

Table XV - Anxiety Progression

Level of Use	My tickets are more secure with...		It is more fun to use...		OA Use of E-Ticket
	Paper	E-Ticket	Paper	E-Ticket	
One E-Ticket & no OA E-Ticket Use	20%	20%	3%	28%	0%
One E-Ticket with OA E-Ticket Use	31%	39%	23%	48%	38%
More than One E-Ticket	27%	49%	9%	58%	49%

The numbers here are very valuable in proving the theory that electronic ticket users will progressively reduce their anxiety of the product the more they use it. Three different type of users are compared on Table XV, as marked by the "Level of Use" column heading.

All three customer types are reviewed under two different statements. The statement "It is more fun to use..." can be viewed as an opposite to anxiety or

frustration. Therefore, the more fun customers have with the product, the less frustrated they will be. In all three cases the level of acceptance increases significantly when reviewed under each statement.

In conclusion, the customer will initially be doubtful of the benefits of the product. The feeling of anxiety will be demonstrated as a distrust towards the carrier who "claims" to hold the tickets for the customer. Progressively, with continuous use of the product, the customers will become more acceptant until a point where they always prefer and request an electronic ticket. Unfortunately, it would be very difficult to determine the number of times a customer needs to use the product before they are fully convinced of its benefits.

4. Perceived Change in Service

The Airline intends not only to reduce the cost of distribution but also improve the service provided to the customer via electronic ticketing. In a sense, electronic ticketing is a re-engineering effort of the current airport processing flow. The intent is to reduce the customer's involvement in the process by reducing one or more steps.

Regrettably, electronic ticketing as it functions today has actually added a step to the process. Those customers that were able to obtain an advanced boarding pass (APB), will now have to stop at a counter or an ETM to claim such pass. Electronic ticketing has not achieved a reduction in the process steps. However, it has been able to reduce significantly the time spent at each of these steps.

The electronic ticketing perceived change in service will be reviewed under

three separate categories:

A. Customer agent level of service

B. Difficulty or easiness in understanding the new system

C. Perceived effect on level of service in general from using electronic ticketing

A. Customer agent level of service

There were no direct questions on the survey that asked the respondent to check the level of service based on a rating scale. The results of such a question would have been of little value since the answers would have been influenced by other external factors foreign to the electronic ticketing issue. Nonetheless, question six addressed the agent problems, if any, by simply providing the option to check: "The ticket/gate agent did not know what to do" box.

These options do not encompass all of the variables that contribute to the act of providing a service. However, it was assumed that knowledge of the product by the agent would have a direct correlation to the level of service provided. The analysis below confirmed this assumption.

Question six allowed the respondent to check one of five boxes if they encountered a problem at any point throughout the process. The first four options gave a specific description of a potential problem, and the last option allowed for a written explanation of other problems. Approximately 42% of those that responded to the first four categories, checked the agent problem box. Additionally, 13.5% of those that

wrote a problem in the "other" category, reiterated their problems with an agent. Overall, only 16.4% of the respondents to the question, checked the agent problem box.

Many customers pointed out the lack of education given to the airport agents, and naturally reminded The Airline of the importance of knowing the product before releasing it to the public. Those that encountered these types of problems voiced their discomfort in feeling they were being used as the "guinea pigs" before The Airline made a full commitment for a systemwide expansion. Employee training is critical if the product is to succeed. Complete familiarity with the benefits, functionalities, and use of the product by the employees are undoubtedly more important than the research and development of the product itself.

A more detailed review of the answers given by those that endured an "agent problem" revealed a higher percentage preference for paper ticketing when compared to the overall survey results. In each situation, for either form of ticketing, the agent problems column always showed a higher percentage of preference than the overall survey results column. This clearly indicates that lack of knowledge of the product by the front line employees will have a detrimental effect on service and cause the customer to prefer the paper ticketing option.

Table XVI - Agent Problems & Ticketing Preference

	E-Ticket		Paper Ticket	
	Overall Survey Results	**Agent Problem Results**	**Overall Survey Results**	**Agent Problem Results**
More Convenient	65%	50%	17%	29%
Saves Most Time	62%	46%	16%	30%
Most Efficient	62%	48%	15%	27%
More Secure	43%	29%	29%	42%
More Fun	50%	40%	11%	14%
Always Use	55%	40%	19%	32%

B. Difficulty or easiness in understanding the electronic ticketing system

Prior customer familiarity with the product from using similar products with other carriers will indirectly contribute to enhancing the quality of service. Approximately 43% of the respondents had already used other versions of electronic ticketing or ticketless systems. Additionally, only 41 customers of those that had used The Airline's product only, were first time users. It can be assumed that customer education is not a critical issue since the product by its nature is practically self explanatory. Nonetheless, there were several written comments on question nine referring to the lack of instructions and information given about the product and how to use it. These numbers however are not statistically significant to analyze.

In conclusion, customer education is critical in embracing the product, and in this case, there is no conclusive evidence that indicates that The Airline has lacked

effort in this area. Providing adequate instructions will positively affect the rate of acceptance while enhancing the overall level of service.

C. Perceived effect on level of service in general from using electronic ticketing

Electronic ticketing undoubtedly has increased the level of service provided by The Airline to its customers. Question eight clearly asks respondents to rate the level of service by checking one of five rating boxes. As already reviewed under Table IX, a large majority felt the service had increased (41.7%) or greatly increased (24.2%). Nonetheless, The Airline is challenged to address the percentage of respondents that felt a decrease (6.7%) or a great decrease in service (5.9%), along with converting those that are indifferent (15.9%). The following section will identify the particular factors that have contributed to increasing the value in the service provided via the electronic ticketing system.

5. Value

This section analyzes the perceived change in value through:

A. Identification of prior expectations and product characteristics

B. Degree to which expectations are being met

A. *Valuable product characteristics*

The only source available to analyze for an overall summary of the valuable features experienced by the customer can be found in the written comments under

question nine. A review of the compliments or positive responses provided the best descriptors and opinions. Rather than analyzing a random number of comments or grouping the comments by reason for compliments, the researcher performed a word count for several key words that give a simple and effective list of the most important benefits.

Table XVII - Descriptive Words

Word	Word Count
Easier (as in easy/ease)	115
Lines (as in no waiting in lines)	107
Fast (as in faster/quick)	103
Convenient	39
Hassle (as in hassle free/no hassle)	39
Worry (as in no worries)	30
Smooth	13
Simple	9

In summary, there were three critical items communicated here. One, simplicity is essential. The customer is saying "don't make it complicated for me." The fewer steps required, the less customer involvement in the process, the better the service. Two, time is of greatest value to the customer. This is communicated by words such as "fast," "quick," and most importantly "lines." The less time the system takes to process the customer, the more time the customer has to dedicate to other activities. And three, comfort must be maintained. That is, relieve the process of any

anxiety causing symptoms. This category is described by words such as "hassle free," "no worries," "smooth."

The combination of at least these three main "ingredients" will yield a successful product, and electronic ticketing encompasses all three of these. While this is not a statistically or quantitatively valid analysis, the researcher sees the issue of value as difficult if not impossible to measure. It is important to recognize that these words, in a sense, hold the structure for all of these comments. While they are described with different semantics that are difficult to group, the running theme is the same throughout the positive comments in question nine.

B. Degree to which expectations are being met

As already mentioned The Airline's E-Ticket product is leveraged with the Electronic Ticket Machine. This device allows the customer the opportunity to establish a set of expectations given its similarity with an Automated Teller Machine. Therefore, while it is difficult to determine and evaluate the expectations for the E-Ticket product, it is much easier and accurate to evaluate the expectations for the ETM as it relates to E-Ticket.

Question seven provides the opportunity to evaluate the functionality of the ETM as a whole. There are three primary choices given where the respondent can check how the ETM struck him/her. The results are encouraging, yet they allow plenty of room for improvement. There were 301 respondents (26.4%) who were surprised at the things the ETM could do, for 282 (24.7%) their expectations were met,

and 159 (13.9%) were disappointed.

When this data is combined with its effects on preference between E-Ticket and paper ticket, the results are tremendously educating. Table XVIII summarizes the results for each of the three options under question seven in combination with each statement under question ten.

Table XVIII - ETM Expectations Impact on E-Ticket

		Paper Ticket	E-Ticket
Convenient	Surprised	7%	86%
	What was expected	11%	77%
	Disappointed	56%	24%
Saves the most time	Surprised	6%	85%
	What was expected	9%	76%
	Disappointed	54%	22%
More efficient	Surprised	5%	80%
	What was expected	9%	74%
	Disappointed	53%	21%
More secure	Surprised	23%	54%
	What was expected	26%	52%
	Disappointed	58%	14%
More fun	Surprised	3%	74%
	What was expected	8%	55%
	Disappointed	35%	22%
Always use	Surprised	8%	76%
	What was expected	11%	65%
	Disappointed	56%	21%

In each of the six statements the trends are the same. E-Ticket is always preferred over paper ticketing when the respondent is surprised or the ETM meets his/her expectations. However, on every case where the respondent is disappointed, paper ticketing is the preferred option by a large difference. The data leads to the conclusion that the ETM functionality and consistency in performance is directly and highly correlated to having E-Ticket be the preferred choice of ticketing.

Survey Design Objectives

There were four objectives already reviewed and pre-established in the design section of the Method section. The following analysis accomplishes the requirements determined in this earlier section. The objectives are as follows:

1. Population classification according to the rate of acceptance
2. Identify internal and external factors that influence the rate of acceptance
3. Classify the consumer groups by level of preference
4. Suggests the customer's future behavior in response to continued use of electronic ticketing travel

1. Population Classification

The responding population was segmented out according to the answers given in question eight. The researcher felt that while this question might not cover all aspects that influence the rate of electronic ticketing acceptance, it is the one that best approximates to the objective. Question eight asks the respondent to rate the level of service that The Airline provides with E-Ticket, according to a scale that ranges from "greatly increases service" to "greatly decreases service."

The population can be divided according to the classification presented by Henry Assael in his Consumer Behavior and Marketing Action already reviewed in the literature review section. His classification segments the market by time of adoption groups: innovators, early adopters, early majority, late majority, and laggards. While question eight does not rely on any time factor as a consideration, the researcher felt

that there is a positive correlation between the acknowledgment of a "great service" and the adoption and frequency of its use.

Table XIX breaks down the consumer groups in the mentioned categories.

Table XIX - Classification by Rate of Adoption

Innovators	276	24.1%
Early Adopters	476	41.7%
Early Majority	182	16.0%
Late Majority	76	6.6%
Laggards	66	5.8%
No Answer	65	5.8%
TOTAL	**1,142**	**100.0%**

The breakdown shows the great majority of the population as "early adopters" or "innovators." Given the notion that the E-Ticket product had only been available for three months, the numbers are very encouraging. Opposite to what would have been expected, the product has had a surprising rate of acceptance.

Unfortunately, when trying to obtain some key characteristics of each consumer group, the researcher found these groups very similar in description. All five groups are characterized by the following demographic attributes:

a. Age: with the exception of the "late majority" group, all others groups count with the largest number of respondents between the ages of 35 and 45. The "late majority" group is a decade older, ranging between 45 and 55.

b. Sex: similarly, all groups have the largest numbers in the male category.

c. Occupation: all groups have the largest concentration under either the "executive or managerial" or "professional" division.

d. Education: the largest portion of customers are grouped in the "college graduate" option. However, the laggards category groups more respondents in the "college post-graduate."

e. Frequency of ATM use: the "many transactions" category shows the most number of respondents for all groups except the "late majority group, which is divided equally between the "almost all transactions" and "never" options.

f. Income: there is no differentiation in this category as the greatest number of respondents for all groups fall under the "$70,000 and above" range.

g. Travel activity: this characteristic has no impact on the level or rate of acceptance, as all groups total the greatest number of respondents in the "0-9 round trips" travel activity.

h. Frequent flier membership: the members of The Airline's frequent flier program numbered the most in all groups. Moreover, those with a "Bronze" classification were the largest of the frequent flier elite members, with the exception of the "late majority" classification who numbered most in the "silver" members category.

In summary, there is not a clear cut breakdown of characteristics for each customer group. They are all very similar in the type of attributes. Nonetheless, while the survey only covered the most common demographics descriptors, there are surely other traits that would allow for a more discriminatory differentiation. The similarities shown across all consumer groups give the understanding that The Airline's customers

are a fairly homogeneous and non-differentiated group. Future questionnaires will have to look for more specific demographic criteria in order to obtain the desired breakdown.

2. Influential Acceptance Factors

The factors that influence the customer's increased or decreased use of electronic ticketing, internal or external, are somewhat obscure, given the minimal effectiveness of the demographic classification. Through these demographics it has been possible to identify that external factors such as level of education, level of ATM usage, or income, have no noticeable or apparent impact on the acceptance or dislike of electronic tickets.

The reasons for these effects are varied. The type of technology being applied with electronic ticketing is already common in many other aspects of the travel industry. Hotels do not require proof of reservation at the time of check-in, nor do car rental companies. Therefore, the application of this technology in air travel is not strikingly surprising to the customer, who might actually take the attitude of "about time you followed suit." Given that the technology is not new, the customer no longer has to adapt to this it, rather the effort is reduced since the customer has only the option to just use it.

The critical factors that influence the customer's acceptance of E-Ticket are more internal than external. Factors such as advertising, communications, instructions, etc. have little and not measurable impact on the rate of acceptance. However, other

factors such as incentives, drawings, and most importantly, the customer's repeated use of the product, have a direct impact on such rates of acceptance.

While The Airline has not made an effort to increase the acceptance of the product by introducing incentives or other promotions, the benefits of such a strategy have proven to be of value to other implementors of similar technology.

Above all, the main reason for customer acceptance and repeated product use will be based on their individual experience while using the product. This experience is very qualitative yet specific as already seen on the "value" section under the customer behavior analysis chapter. The customer is influenced by external factors such as the easiness, convenience, and simplicity of the product. Additionally, smaller lines, and a reduction in the time required to process while at the airport will have an added positive impact in the customer adaptation. Ultimately, these are the factors that matter to the customer, and the ones that will determine the success of the product. The Airline must concentrate all efforts in addressing the customer needs in order to guarantee this success.

It is difficult, if not impossible, to perform any kind of correlation analysis using this demographics information as the data is, for the most part, qualitative rather than quantitative. Nonetheless, the researcher was still able to draw some patterns and conclusions by focusing on the simple relationships that the data presented.

3. Consumer Classification by Level of Preference

The question that provides the preferred data for this analysis is question ten, under the statement: "if given the choice, I would always use..." The statement asks the respondent to choose between paper ticketing and electronic ticketing. A demographic study for classification purposes for question ten revealed practically the same results as seen under the initial population classification already shown above.

There are no differences between customers that prefer paper ticket and those that would rather use electronic ticketing. The small differences that do exist are so subtle that they are not worth examining in detail. This difficulty in classifying the population might corroborate the earlier conclusion. The factors that influence the customer acceptance of the product are not dependent on the age, sex, level of education, frequency of ATM usage, income, or travel frequency. Rather the factors are, in a sense, more generic to the population. That is, a customer will continue to use the product if it works the first time it is used. Otherwise, the acceptance will be much more lengthy and the customer will require a greater number of "good" experiences before fully accepting the product.

4. Customers' Future Behavior in Response to Electronic Ticket

As an early conclusion to this study the researcher ventures to forecast several trends in customer travel behavior in relation to electronic ticketing. These conclusions can only be accurately applied to the sampled population. However, the results may be extrapolated to the general electronic ticketing population with a certain degree of

confidence of similar occurrences. These results can only be expected under the same set of circumstances experienced by the questionnaire respondents. The introduction of new variants, incentives, added functionalities, etc. to the product will greatly skew the expected results.

The expected behavior upon full systemwide domestic implementation of electronic ticketing are as follows:

- Increase in direct airline booking and purchase activity, consequently causing a decrease in the travel agency ticketing activity. The customer will tend to, use the carrier's ticketing services for simple domestic travel itineraries that require minimal additional arrangements such as hotel or car rental.
- Customer service expectations will increase, placing airlines with the challenge of corresponding with the adequate requested level of service.
- Short-term increase in the level of anxiety followed by a long-term reduction of this anxiety correlated with the customer's frequent use of the electronic product.
- A change in the customer's physical involvement in the process. Transactions will become more impersonal.
- Given the experienced decrease in time in airport processing, the customers will tend to arrive at the airport later than normal.
- The combination of all these conveniences will cause customers to demand this service with every carrier they fly.
- There is not an impact on customer behavior caused by socioeconomic

factors. The classification study already showed no differences in rate of acceptance or level of preference regardless of the social, economic, or demographic characteristics.

- Customers that have not used the product will become curious about the benefits of the product. In a way, they will become more educated about electronic ticketing given the coverage circulated by the media.
- There will be a minimal portion of the population that will continue to prefer paper ticketing, scientifically referred to as "the laggards." Airlines will continue to accommodate these customer's preferences, thereby continuing to support two different distribution processes.

HYPOTHESIS TEST

H_o: 50% or more of the customers that use the E-Ticket product for the first time will *not* choose it again for their next trip.

H_1: More than 50% of the customers that use the E-Ticket product for the first time will choose it again for their next trip.

Z-Test for a Proportion [53]

This test examines the significance of the difference between an assumed proportion p_0 and an observed proportion p, so long the sample size justifies the normal approximation to the binomial.

Method: $Z = (p - p_0) / [(p_0(1-p_0)/n]^{1/2}$

Data: $Z = ?$

$p_0 = \geq 50\% \approx \geq 0.5$

$p = 54.9\% \approx 0.549$

$Z_\alpha = 0.05 \Rightarrow 1.64$

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[53] Gopal K. Kanji, 100 Statistical Tests, (London: Sage Publications, Inc., 1993), 24.

Solution: $Z = (0.549 - 0.500) / [(0.500\ (1-0.500))/1{,}142]^{1/2}$

$Z = 3.31 \rightarrow 0.9995 \approx 99.95$ Confidence Interval

(if the Z-score is higher than the Z_{α}, then reject the H_0 hypothesis)

Result: Reject the Null (H_0) hypothesis.

CONCLUSION

The research data analyzed clearly validates and supports the stated H_1 hypothesis being tested in this thesis and demonstrates that electronic ticketing travel changes the travel behavior of domestic airline passengers. The analysis performed in each of the established criterion that defined this statement have all reinforced said hypothesis.

There were several categories that were of significant value to supporting this positive conclusion: change in customer ticketing purchase patterns, change in the time investment, change in anxiety, and change in the service and value provided. These changes are largely influenced by factors internal and external to the customer as well as previous use of electronic or "ticketless" products. Identifying these elements of change is key in understanding the effects on behavior and in controlling the variables that cause this behavior change. While the categories are important as a unit, they are not mutually exclusive or independent. That is, a change in the customer's anxiety is directly correlated to a change in the customer's perception of product value. Nonetheless, each change was analyzed within the parameters of the category affected.

One of the electronic ticketing impacts that most interests airlines, is the expected change in the travel booking and purchase behavior. The analysis has shown that a small percentage of the passengers are changing from ticketing through travel agencies to

booking directly with the airline, due in part to the convenience of electronic ticketing travel. It is difficult, if not impossible, to conclude on an exact shift percentage. The questionnaire is not representative of the systemwide population and it does not include customers that repeatedly book through travel agencies. Nonetheless, the researcher conservatively estimates that approximately eight to sixteen percent of the current travel agency transactions will be lost to direct airline ticketing. Airlines hope to at least win those passengers that shop and book their seats directly with the airline reservation center, but go to a travel agency to get ticketed. This pattern of "shopping behavior" accounts for approximately 9% of the major carriers' total ticket sales. As previously seen, these lost ticketing opportunities cost the carriers approximately 14.3% of the tickets' face value, as they have to financially support both for their own internal reservations efforts and the travel agency's distribution costs.

The time invested or "wasted" by the customer is clearly one the common sore issues in service complaints. The greatest majority of these "time" complaints are related to airport processing. In essence, ticketing and boarding. While it is difficult to determine the exact amount of time saved per customer due to electronic ticketing, it has been generally perceived and accepted as an effective and quick product. Electronic ticketing is a reengineering effort in the areas of reservation, purchase, and airport handling that has simply reduced the customer's involvement in the process, thereby providing the customer with a more efficient product.

The electronic ticketing "product" will generate some uneasiness for first time users. The public, which is used to carrying their airline ticket on hand, is now asked to

rely on a computer database which will maintain their travel information electronically until they complete their travel plans. It is expected that customers will be suspicious at first. The analysis has shown that with increased successful usage, customers become more acceptant of the technology and eventually they welcome the change.

Additionally, informal interviews held by the researcher with current users of electronic ticketing travel and reservation agents, revealed that this product is widely accepted and has not presented strong opposition. The researcher anticipates this trend to continue as electronic ticketing becomes more widely available; however, the attitude of new users will be marked by caution, mainly concerned about whether the "computer" will show them on the flight they booked. There may also be a small degree of curiosity, marked by those passengers that have a higher reliance on computer systems (ATMs, internet, robotics, etc.). It is expected that after the first trip using this ticketing system, passengers will be fully "adjusted." Furthermore, it is expected that customers will see the evident logic behind the change and purposely request electronic ticketing. A contributing factor in this adjustment is the minimal effort required from the passengers. Ticketing is a small part in customer's travel routine so the anxiety generated from the lack of possession of tickets will be lower than, for example, unexpected aircraft delays, canceled fights, overbookings, etc.

Electronic ticketing has increased the quality of service provided to the customer. Approximately 66% of the survey respondents believed it was an increase or great increase in service. Nonetheless, a key issue lays in the perception of value as it relates to service. At first glance, electronic ticketing does not provide customers with any

apparent added value. Unlike with frequent flyer programs, the electronic ticketing product does not radically improve the traveling routine or encourage repetitive use. It will be difficult at first to convey to passengers the increased convenience as they are not required to carry their airline travel documents when they travel. The principal factors that collectively make a ticketing product valuable were found to be simplicity, quickness, and comfort. The research demonstrated that electronic ticketing continues to meet or exceed customers' service expectations in these three critical factors.

Unfortunately, there will be a minimal portion of the population that will continue to prefer paper ticketing, the laggards. Airlines might accommodate these customers' preferences, thereby, continuing to support two separate distribution processes. Airlines must recognize early on the detrimental effect derived from maintaining antiquated distribution systems. The cost of business tied to preserving these older systems could "wash-out" the benefits obtained from advanced distribution applications.

The research has shown some tangible benefits to the airline industry's electronic ticketing movement. These benefits have been individually identified and proven to have and continue to cause changes in the behavior of the air transportation traveling population. However, the movement towards an seamless electronic environment has a much greater impact in the "accepted" course of business as it is known today. The researcher foresees this impact will be manifested in multiple trends. There will be a decrease in the customer's physical involvement in the process. Transactions will become more impersonal, where the service provider and customer will rely more heavily on supporting commerce technology such as the telephone,

facsimile, on-line services, and remote distribution units (i.e. reservation machines in shopping centers, etc.). Given the experienced decrease in time in airport processing, the customers will tend to arrive at the airport later than normal. This will cause customers to arrive at the airport closer to their time of departure. While customers will save in the order of 15 to 60 minutes due to electronic ticketing and its complementary technology, this is only considered to be a short-term effect. Once customers fully adopt this product, the airport processing time will only be slightly reduced in the long-term. Customers that will soon use ticketing machines and automatic check-in and boarding gates (via smart-card technology) will create the same lines and wait processing period. The time savings, if any, will be insignificant to be considered of value to the customer.

Electronic ticketing will increase airport efficiency which translates to a reduction in agent headcount and overhead expenses. The cost savings should in theory be transferred to the customer in the form of reduced travel fares. However, in practice, it will be unlikely that the customer will realize these monetary savings since airline pricing is based on competitive factors and not based on a cost-transfer-to-price principals.

The combination of all these conveniences will cause customers to demand this service with every carrier they travel. Potentially, The Airline might experience an increase of customers who would have otherwise flown with a competitor, but do not due to the electronic ticketing service (assuming same fare for origin-destination travel). The customer processing environment in the airline industry will be marked by

a more pervasive use of this technology.

Lastly, there is no evidence that would indicate an impact on customer behavior caused by socioeconomic factors. The classification study already showed no differences in rate of acceptance or level of preference regardless of the population social, economic, or demographic characteristics. The electronic ticketing product seems to appeal or not appeal invariably to undifferenciated customer profiles, therefore, The Airline and thus the industry in general, does not have to exert additional effort in obtaining acceptance from certain customer groups. The effort in bringing electronic ticketing service to the customer should be the same no matter the characteristics of the end user. The key factor to consider is the product functionality and how that affects the customer's travel experience.

More importantly, electronic ticketing sets the stage for continued expansion in the electronic world. On the front-end, the travel industry, including airlines, is rapidly moving towards a "point-and-click" environment. Customers will have access to a wide array of travel services at the touch of a finger. User-friendly applications will allow customers to arrange their travel itineraries from their office or home personal computers. The current back-end environment for sales reporting, flight post-departure closure, tracking of customer travel patterns, revenue matching and recognition, etc., will move to a front-end platform. Information that before took months to consolidate, analyze, and report, will now take seconds through intelligent automated systems that function according to real-time customized requests.

Airline internal processes will become more impersonal, with less human

interaction and higher system dependency. Results will be more effective and timely and marked by a direct one-to-one customer-airline relationship.

RECOMMENDATIONS

The airline industry must obtain consensus among its participating members in order to implement a seamless electronic understanding. It is in the airlines' best interest to combine their development efforts so as to avoid duplication of systems and creation of redundant technology. Airline systems must "talk" to each other, as this communication will be essential if and when the industry steps up the electronic ticketing functionalities to accommodate interline and international travel.

Airlines must understand and continue to respect the deserved "raison d'être" of travel agencies. Responsible for selling approximately 75% of the carriers' traffic, agencies should continue to be treated as the most important distribution channel. Nonetheless, given the high cost incurred from travel agency distribution, airlines must continue to find subtle ways to shift market share from these costly channels to the more economic distribution methods.

Given the reasons already examined here and others not considered but which will soon surface, the agency community will undergo a consolidation concurrent with a large exodus of unfit, weak, and noncompetitive agencies. Travel agencies must understand their role as middle man in the distribution channel between provider and consumer. However, the airline dependence in this channel has rightfully caused

friction. The challenge for both parties lies in the search for a continuous yet evolving path of cooperation.

Simply put, travel agencies must actively look for creative ways to continue to draw business travel activity to their locations. They must aggressively approach the marketplace in a proactive and direct one-to-one position, rather than remain in the current passive and comfortable "wait for the customer" attitude. Meanwhile, they must embrace and adapt to the electronic movement and learn to benefit from its functionalities.

The recent commissions cap established by several domestic carriers also make agencies vulnerable to "sell" themselves to a determined carrier in exchange for cash incentives or overrides bonuses. Airlines recognize that travel agencies, while resentful for the recent commission caps, will quickly become "preferred" agencies dedicating a greater portion of their distribution efforts towards one carrier. The airline industry must recognize these opportunities early on so that they can be ready to approach the bargaining table with a fair and mutually benefiting plan of action.

While this thesis has investigated the impact of introducing a reformed method of distribution, there are multiple implications that have not been considered here. Some due to the constraints imposed on the researcher, others due to the irrelevancy of their nature. The realm of possibilities is practically infinite. However, when looking for a topic to research, one must not look so far into the future that the chances of realizing ones conclusions are far fetched. The airline industry in particular, is marked by consistently demonstrating unpredicted behavior in the long run. Thus, while a

thesis conclusion might be of sound academic value and in agreement with accepted research methodology, it might likely be considered irrelevant if it provides predictions further than within the immediate five year time frame.

During the next five years, airline shopping behavior will undergo a radical change. Customers will have easier and faster access to travel services through the seamless network referred today as the Internet or the World Wide Web. Given the difficulty of differentiating the service on this technological platform, the airline product could possibly become a commodity, valued on its price and not its services. At first glance, the CRSs stand to be bypassed giving way to a more user-friendly, customer-direct form of distribution. The impact on this sector of the industry will be marked by the quickness and swiftness of all parties involved.

Intelligent search engines will be able to navigate airline, travel agency, consolidator, and wholesaler networks with a pre-specified travel profile. The search engine will be driven by simple criteria, such as price or time specific service, and quickly retrieve and download the information to the end-user. Conceivably, product marketing as known today, could likely change to some kind of "tactical electronic positioning," where the product gets marketed according to the simultaneous "electronic mood" of consumers and providers.

A second area where radical distribution reengineering will occur is in the corporate travel market. Large corporate accounts are obtaining preferential treatment under negotiated contracts for discounted travel with specific carriers. Airlines give cash kickbacks as a "commissions" incentive to draw direct company-to-company

activity. Soon airlines will treat these corporate travel departments as pseudo travel agencies, subjecting them to the standard Airline Reporting Corporation (ARC) revenue reporting process. In a sense a continuation of the commission rate punishment that airlines subject themselves to.

Ultimately the goal is to conceive and implement new electronic initiatives that provide plausible solutions that reduce distribution costs while providing the customer a competitively superior service that meets their needs.

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APPENDIX A

QUESTIONNAIRE

A What is your age?

- ❒ 18 - 24
- ❒ 25 - 34
- ❒ 35 - 44
- ❒ 45 - 54
- ❒ 55 - 64
- ❒ 65 or above

B What is your sex?

- ❒ Male
- ❒ Female

C Which of the following best describes your occupation?

- ❒ Executive or managerial
- ❒ Professional
- ❒ Government or military
- ❒ Teacher or professor
- ❒ Secretarial
- ❒ Airline/travel industry employee
- ❒ Sales
- ❒ Craftsman/mechanic
- ❒ Student
- ❒ Homemaker
- ❒ Not employed
- ❒ Retired
- ❒ Other *(specify)* _____

D What is the highest level of education you have completed?

- ❒ Less than high school
- ❒ High school graduate
- ❒ Some college
- ❒ College graduate
- ❒ College post-graduate

E How often do you use Automatic Teller Machines (ATMs) for banking transactions?

- ❒ Almost all transactions
- ❒ Many transactions
- ❒ Some transactions
- ❒ Few transactions
- ❒ Never

F Have you ever used an online computer service? for your travel reservations?

- ❒ Yes ❒ No
- ❒ Yes ❒ No

G Have you ever used the InterNet?

- ❒ Yes ❒ No

H What was your total household income (before taxes) for 1994?

- ❒ Under $9,999
- ❒ $10,000 - $19,999
- ❒ $20,000 - $29,999
- ❒ $30,000 - $39,999
- ❒ $40,000 - $49,999
- ❒ $50,000 - $59,999
- ❒ $60,000 - $69,999
- ❒ $70,000 or above

I How many round trips do you fly in one year? _____ round trip(s)

J Are you a frequent flier member? If you have attained Elite status, please check your level

- ❒ Yes
- ❒ No
- ❒ Elite
- ❒ Elite
- ❒ Elite

General Comments _____

_____

_____

TICKET

A Confidential Customer Survey on Ticketing Preferences

1. Prior to 's introduction of E-Ticket, how did you ***generally*** obtain your . . .

	. . .reservations?	. . .tickets?	. . .boarding passes?
Call the airline directly	❒	❒	N/A
Travel agency	❒	❒	❒
Ticket-by-Mail	❒	❒	N/A
Corp. Travel Depart./secretary	❒	❒	❒
Airport ticket counter	❒	❒	❒
City ticket office	❒	❒	N/A
At the gate	N/A	N/A	❒

Other *(please specify)* _____

2. Prior to 's introduction of E-Ticket, how did you ***generally*** pay for your tickets for . . .

	. . .personal travel?	. . .business travel?
Cash	❒	❒
Check	❒	❒
Credit card	❒	❒
UATP card	❒	❒
Other form of payment *(specify)*:	_____	_____

3. For how many round trips have you booked/purchased an E-Ticket . . .
   a. through Reservations? _____ trip(s)
   b. through the E-Ticket Machine? _____trip(s)

4. How many times have you checked-in for a flight using 's E-Ticket Machine? _____time(s)

5. How did you ***first*** learn about Airlines' E-Ticket product?
   - ❒ Airlines' reservation agent
   - ❒ Other Airlines employee
   - ❒ Travel agent
   - ❒ Signs at the airport
   - ❒ mailer/newsletter
   - ❒ Media (TV, radio, newspaper, etc.)
   - ❒ Inflight magazine
   - ❒ Friend, business associate, or relative
   - ❒ Other *(please specify)*: _____

6. Did you have any problems with your E-Ticket reservation or check-in? *(If yes, then check all that apply)*
   - ❒ No
   - ❒ Yes, please specify:
     - ❒ I did not get a confirmation number from reservations
     - ❒ I did not get a faxed or mailed itinerary/receipt from reservations
     - ❒ The E-Ticket Machine did not work properly
     - ❒ The ticket/gate agent did not know what to do
     - ❒ Other _____

7. Which of these statements agrees most with your opinion of the E-Ticket Machine?
   - ❒ I was surprised at the things it could do
   - ❒ It was what I expected
   - ❒ I was disappointed at the things it could do
   - ❒ I have not used the E-Ticket machine

8. How do you feel E-Ticket affects the level of service Airlines provides to you? *(Please check one)*
   - ❒ Greatly increases service
   - ❒ Increases service
   - ❒ No change in service
   - ❒ Decreases service
   - ❒ Greatly decreases service

9. How did E-Ticket affect your travel experience? *(Your comments are extremely valuable)*

   _____
   _____
   _____

10. Below are a series of statements that compare E-Ticket with paper-based ticketing. For which ticketing method is each statement most applicable?

	Paper Ticketing	v.	E-Ticket
It is more convenient and easier to use. . .	❒		❒
It saves me the most time when I use. . .	❒		❒
It is more efficient to use . . .	❒		❒
My tickets are more secure with. . .	❒		❒
It is more fun to use. . .	❒		❒
If given the choice, I would always use. . .	❒		❒

11. Have you ever used another carrier's electronic ticketing or "ticketless system"
    - ❒ Yes On which carrier(s)?
      - ❒ Airlines
      - ❒ Airlines
      - ❒
      - ❒ Other _____
    - ❒ No

Please turn page

APPENDIX B

SUMMARY OF RESULTS

E-TICKET SURVEY RESULTS
SUMMARY

Rate of return...

# Mailed	6570	
# Returned to Sender	103	
# Absolute Mailed	6467	100.0%
# Returned	1216	18.8%
# Returned on Time	1176	18.2%
# Usable	1142	17.7%

Mailed from...

IAH	781	68.4%
DFW	41	3.6%
SAT	83	7.3%
MSY	62	5.4%
Other	175	15.3%

Received on...

1st week	660	57.8%
2nd week	357	31.3%
3rd week	125	10.9%

Question 1 - Distrib. Breakdown*

		Res	Tkts	B.P.
Res.		763	331	--
	%	*57.4%*	*26.5%*	--
T.A.		396	413	213
	%	*29.8%*	*33.0%*	*29.7%*
TBM		49	223	--
	%	*3.7%*	*17.8%*	--
Secr.		90	79	45
	%	*6.8%*	*6.3%*	*6.3%*
ATO		26	181	220
	%	*2.0%*	*14.5%*	*30.6%*
CTO		6	23	--
	%	*0.5%*	*1.8%*	--
Gate		--	--	240
	%	--	--	*33.4%*

** %s are based on # of responses to this question*

*** Not included in %s*

Question 2 - Payment*

		Pers.	Bus.
Cash		38	6
	%	*3.3%*	*0.7%*
Check		47	18
	%	*4.1%*	*2.1%*
C.Card		1069	808
	%	*92.6%*	*93.7%*
UATP		0	7
	%	*0.0%*	*0.8%*
Other		0	23
	%	*0.0%*	*2.7%*

** %s are based on # of responses to this question*

Question 3 - E-Tkt usage

Res	2416
Avg.	*2.12*
ETM	586
Avg.	*0.51*

Question 4 - ETM Check-ins

ETM Ck-in	1229
Avg.	*1.08*

Question 5 - Knowledge of E-Ticket*

Reservat.	889	74.1%
Other Empl.	21	1.8%
Travel Ag.	43	3.6%
Signs ATO	71	5.9%
Mailer	88	7.3%
Media	40	3.3%
Inflight Mag.	6	0.5%
Friend	29	2.4%
Other	13	1.1%
Total	***1200***	***100.0%***

** %s are based on # of responses to this question*

Question 6 - E-Tkt. Problems*

No	604	46.2%
Yes:		
Confirm.	26	2.0%
Fax	69	5.3%
ETM	201	15.4%
Agent	214	16.4%
Other	193	14.8%
Total	***1307***	***100.0%***

** %s are based on # of responses to this question*

Question 6 - "Other" Categories*
Problems Summary

Tickets	9	4.7%
Seat Assg.	8	4.1%
Instruct.	24	12.4%
ETM	39	20.2%
Charge $	9	4.7%
Baggage	31	16.1%
Agent	26	13.5%
Phn/Fax	8	4.1%
Refund	6	3.1%
General	33	17.1%
Total	***193***	***100.0%***

** %s are based on # of responses to this question*

Question 7 - ETM Opinion

Surprised	301	26.4%
Expected	282	24.7%
Disappoint.	159	13.9%
Not used	336	29.4%
No Answ.	64	5.6%

Question 8 - E-Tkt Opinion

Gr. Increase	276	24.2%
Increase	476	41.7%
No Change	182	15.9%
Decrease	77	6.7%
Gr. Decreas	67	5.9%
No Answer	64	5.6%

Question 9 - E-Tkt. Experience*
Problems/Comments Summary

Agent	45	4.7%
Baggage	35	3.6%
Compliment	487	50.8%
Disliked	88	9.2%
ETM	66	6.9%
Phn/Fax	4	0.4%
General	18	1.9%
Instructions	31	3.2%
Kinks	17	1.8%
Lines	6	0.6%
No Effect	83	8.7%
Rat. Accpt.	39	4.1%
Refund	6	0.6%
Receipt	9	0.9%
Security	13	1.4%
Unrelated	7	0.7%
$Charged	5	0.5%
Total	***959***	***100.0%***

** %s are based on # of responses to this question*

Question 10 - Ticket Preference

	E-Tkt	Indif./NA	Paper
Convenient	743	202	197
%	*65.1%*	*17.7%*	*17.3%*
Saves Tm.	707	246	189
%	*61.9%*	*21.5%*	*16.5%*
Efficient	701	268	173
%	*61.4%*	*23.5%*	*15.1%*
Secure	490	317	335
%	*42.9%*	*27.8%*	*29.3%*
Fun	568	450	124
%	*49.7%*	*39.4%*	*10.9%*
Always Uz	627	293	222
%	*54.9%*	*25.7%*	*19.4%*

Overall Comments		
Positive Comments	526	54.8%
Negative Comments	343	35.8%
No effct/Unrel. Comm.	90	9.4%

Question 11 - OA Use of E-Tkt.*

Yes:		
UA	13	1.1%
WN	457	39.9%
J7	16	1.4%
Other	1	0.1%
No	658	57.5%
Total	***1145***	***100.0%***

** %s are based on # of responses to this question*

E-TICKET SURVEY - DEMOGRAPHICS

Question A - Age

18-24	51	4.5%
25-34	252	22.1%
35-44	370	32.4%
45-54	279	24.4%
55-64	121	10.6%
65 or abv.	64	5.6%
No Answ	5	0.4%

Question B - Sex

Male	653	57.2%
Female	465	40.7%
No Answ	24	2.1%

Question C - Profession

Exec	368	32.2%
Prof	388	34.0%
Gov/Mil.	23	2.0%
Teacher	38	3.3%
Secret.	27	2.4%
Travel	5	0.4%
Sales	123	10.8%
Craftsm.	6	0.5%
Student	28	2.5%
Homemak.	48	4.2%
Not empl.	2	0.2%
Retired	56	4.9%
Other	22	1.9%
No Answ.	8	0.7%

Question D - Education

< High Sch.	7	0.6%
High Sch.	59	5.2%
Some Coll.	248	21.7%
College	462	40.5%
Post Grad.	362	31.7%
No Answ.	4	0.4%

Question E - ATM Usage

Almost all	242	21 2%
Many	339	29.7%
Some	181	15.8%
Few	140	12.3%
Never	233	20.4%
No Answ	7	0.6%

Question F - On-line/Travel*

Yes	553	48.4%
No	566	49.6%
No Answ.	23	2.0%
Yes	107	9.4%
No	891	78.0%
No Answ.	144	12.6%

** Given this question's wording, those that did not answer part 2 , can be assumed as a "no" answer*

Question G - Internet use

Yes	411	36 0%
No	708	62 0%
No Answ	23	2.0%

Question H - Income ($000s)

< $9,999	17	1 5%
$10 - $19	24	2.1%
$20 - $29	39	3.4%
$30 - $39	88	7 7%
$40 - $49	72	6.3%
$50 -$59	100	8.8%
$60 -$69	105	9.2%
> $70, 000	581	50.9%
No Answ.	116	10 2%

Question I - Trips/Year

0-9	526	46 1%
10-19	288	25.2%
20-29	147	12.9%
30-39	63	5.5%
40-49	40	3.5%
>50	63	5.5%
No Answ.	15	1.3%
Total # of trips		*16,362*
Avg. # of trips		*14.41 trips/year*

Question J - Frequent Flier Member

Yes*	734	64.3%
Gold	*64*	*8.7%*
Silver	*81*	*11.0%*
Bronze	*148*	*20.2%*
Normal	*441*	*60.1%*
No	374	32.7%
No Answ.	34	3.0%

**Includes all Elites*

General Comments*
Problems/Comments Summary

Agent	41	10.6%
Baggage	7	1.8%
Compliment	73	19.0%
Disliked	37	9.6%
ETM	28	7.3%
General	24	6.2%
Instructions	23	6.0%
Kinks	14	3.6%
No Effect	11	2.9%
Rat. Accpt.	18	4.7%
Receipt	3	0.8%
Amount $	5	1.3%
Security	6	1.6%
Unrelated	95	24.7%
Total	***385***	***100.0%***

**** %s are based on # of responses to***

Overall Comments		
Positive Comments	91	23.6%
Negative Comments	187	48.6%
No effct/Unrel. Comm.	107	27.8%