

SERVICE QUALITY AND ITS LINK TO STUDENT PILOT RETENTION IN
GENERAL AVIATION FLIGHT TRAINING: A PILOT STUDY

by

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AUTHOR INTRODUCTION

The author, Gil Aguilar, holds a commercial airplane certificate with single and multi-engine land, single engine sea ratings, and a flight instructor certificate with airplane single engine and instrument airplane ratings. In addition, Mr. Aguilar holds both advanced and instrument ground certificates and a dispatcher certificate. Mr. Aguilar has been employed at several flights schools and currently specializes in student first flights, mentoring, and flight simulation.

Mr. Aguilar has been employed since 2000 by a Fortune 200 company where he currently serves as their Supervisor of Flight Operations. Prior to 2000, Mr. Aguilar was employed by Boeing Aerospace Operations serving in the company's flight training organization. Mr. Aguilar is an accredited IS-BAO (International Standard for Business Aviation Operations) auditor and specializes in Safety Management Systems with an emphasis on Aviation Risk Management. In addition, Mr. Aguilar holds both a bachelor's degree in Aviation Business Administration and master's degree in Aeronautical Science.

Principally this study was undertaken as partial fulfillment toward the attainment of a master's degree. Various topics were considered toward the author's goal of attaining an advanced degree; however, considering that the author is a flight instructor, it was decided that a topic from the pilot training industry would make a logical choice.

The author's early exposure to flight instruction was magical. As a student pilot the author was mentored and taught by an inspiring flight instructor. After a truly enjoyable private pilot certificate experience, subsequent flight instruction experiences never quite measured up to the author's primary flight instructor's gift of teaching.

As the author moved through the various ratings, he kept asking himself what factors made his flight instruction experience positive or negative. There are dozens of interacting factors that influence a student's evaluation of the total flight instruction experience. This study is about quantifying just one of those factors – service quality.

This study should be read and evaluated in proper context. First, is that the study is an attempt at scholarly work with a heavy emphasis on statistical analysis. Second, is that the scope of study was limited by economics. It was funded by a single individual with no attempt to monetarily profit from the work. As such, there are inherent limitations based on the depth of the survey, the methodology at which the samples were collected, and the statistical tools utilized in the analysis. Further, honest attempts were made to ethically execute this study - lapses, gaps, and omissions are purely unintentional.

The author is open to thoughtful feedback and/or questions relative to the content of this study as well as the continuing the discussion on the role of service quality and other factors that may influence student pilot retention. The author may be emailed at: cfii.airplane@gmail.com

ABSTRACT

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Title: Service Quality and its Link to Student Pilot Retention in General Aviation Flight Training: A Pilot Study

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A continuing decline in the general aviation pilot population has been attributed to several factors such as financial pressures, family obligations, loss of the lure of flight romance, and a decrease in the perception of the value of general aviation (Monroe, Chase and Associates, 1995). Scholars, however, have proven service quality is an important determinant in a business' success. The quality of service offered by flight training schools and instructors has not been considered as a variable in the successful completion of general aviation pilot training. This study determined if service quality is a factor. Two groups, student pilots that completed flight training and students that terminated flight training, responded to a SERVQUAL (service quality) survey to determine if there is a significant difference between each group's experiences with service quality during their flight training. Statistical analysis of the survey data supports this paper's hypothesis that there is a significant statistical difference in service quality between groups.

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CHAPTER 1

INTRODUCTION

Background of the Problem

A review of the Federal Aviation Administration pilot population statistics reveals the general aviation pilot population has been decreasing steadily for twenty years. The drop has been attributed to student financial pressures, family obligations, loss of the lure of flight romance, or a decrease in the perception of general aviation's value (Monroe, Chase and Associates, 1995). The flight training industry has no influence over many of the external factors that can plague it; however, some experts cite other problems. For example, Greg Brown, a Master Flight Instructor and 2000's Federal Aviation Administration (FAA) Flight Instructor of the Year, declared that customer service apathy is a problem in many flight-training organizations (Brown, 1997).

General aviation is defined by the FAA as "That portion of civil aviation which encompasses all facets of aviation except air carriers" (NASA, 1999, p. 4). The general aviation industry provides support for nearly 185,000 aircraft, 600,000 pilots, and 18,000 airports across the United States (U.S.) (Wells, 1994). A segment of the general aviation industry is the general aviation flight school. These specialized service businesses provide pilot flight training as their product to their customer. The U.S. is home to approximately 2,700 of these service businesses (Pennington, email, October 5, 2003). The manner in which flight schools approach their business is great; in addition, their complexity and sophistication can range from a one-person, one-aircraft operation to a manufacturer-sponsored chain. Regardless of their sophistication, they share a common mission: providing flight instruction to certificated and student pilots.

Seeking flight instruction is a simple process that is no more foreign than locating a professional photographer. Conventional methods for locating a service provider include the following: telephone directory, Internet, and word of mouth. Finding a flight school is as simple as locating a telephone number and making an appointment with a flight instructor. Flight schools have relatively common processes for scheduling, instructing, and paying for services. While the precise execution will vary, implementation is similar to most service-related businesses.

Flight instruction is regulated by Title 14 of the Code of Federal Regulations. Stated within these regulations are the minimum requirements and standards to be followed by flight schools, flight instructors, and pilots in order to exercise the privilege of piloting an aircraft in the National Airspace System. Flight instruction addresses three learning domains: 1) cognitive, 2) psychomotor, and 3) affective (FAA, 1999). Based on regulatory requirements, a flight instructor is required to ensure that student pilots can competently exercise new skills learned within these three domains while meeting the minimum standards for pilot performance.

There is a significant range of literature available to flight instructors to enable a proper transfer of knowledge and skill to the student pilot. Much of this literature is found in government and commercially produced publications. In general, these publications address a flight instructor's responsibilities (e.g. proper flight instruction so the student can safely pilot an aircraft), legal requirements (e.g. minimum age of 18 years), how people learn (e.g. perception and insight), student's levels of learning (e.g. application), effective instruction techniques (e.g. integrated instruction method), and an instructor's personal considerations (e.g. integrity). A review of the common training publications

used in flight instructor training revealed that the term “customer” is not used in describing the relationship between the student pilot and instructor. As a result of this review, it can be suggested that flight instructors are not typically exposed to the concepts of customer service or service quality as part of their training. This may lend support to William Kershner’s (a nationally recognized and award-winning flight instructor with six decades of aviation experience) comment in the fourth edition of his book *The Flight Instructor’s Manual* (2002):

One of the biggest sources of gripes by flight students is for them to come to the airport at the scheduled time only to find that the flight instructor has departed on a more lucrative charter flight. Nobody bothered to contact the student, who may have driven many miles and changed his own schedule to be there at that time. (p. 5)

Business experts have long recognized that quality customer service is a significant requirement to business success (Albrecht, 1992; Carlzon, 1989; Gale, 1994; Zemke, 1994). According to Zemke, only 10 percent or less of dissatisfied customers will give a business the opportunity to “make things right” (p. 17). Zemke points out that a dissatisfied customer will “bad-mouth you to everyone who mentions your company within ear shot” (p. 17). The Strategic Planning Institute analyzed the Profit Impact on Market Strategy (PIMS) database from thousands of businesses and found that high quality service leads to financial and strategic success (Gale, 1994). Further, research linked high customer satisfaction with high customer retention (Fornell, 1992).

Annually, the FAA and the General Aviation Manufacturers Association (GAMA) publish a statistical databook on various dimensions within the general aviation

industry. One dimension that is cataloged in the databook is the pilot population.

Analysis from the period between 1983 and 2001 revealed that there was an 8% net loss in the total population of certificated pilots and a 42% net loss in the total population of student pilots (GAMA, 2002). Historically, student pilot retention is an unknown rate; however, Diette (Flight School Business, 2002) estimated that some flight schools have student retention rates of only 20%. According to Diette, the primary reason that a student no longer patronizes a flight school is the failure of the student/instructor relationship.

Problem Statement

Studies are available that address service quality's effects in industries such as airlines, communications, and information technology; however, empirical research is unavailable that specifically links the effect of service quality on student pilot retention in general aviation.

Purpose of the Study

Business research has determined that quality customer service leads to higher customer satisfaction, greater customer retention, and higher profitability in many industries. This study investigates if a student's evaluation of service quality is different between student pilots that complete training and those that terminate their training. Specifically, is there a statistically significant difference in service quality scores between student pilots who complete training and those who terminate?

If student pilots make a departure decision based on service quality, flight schools could decide to invest in service quality training programs for its employees to improve student retention rates and boost profitability. Should the service quality not be a factor in

a student's decision to depart, other studies would be warranted to determine what is required to improve the retention rates of student pilots.

Assumptions

It is assumed that a survey instrument and quantification of the survey data is a meaningful and appropriate methodology to answer the research question in this study.

Delimitations

The sample population for this study was limited to pilots and student pilots who could access a Web-based survey instrument, and as a result, the ability to generalize the results to the entire pilot population is limited.

Limitations

Flight students seeking commercial pilot certificates or higher ratings were not included in this study.

Definition of Terms

The following terms are defined for the purposes of this study:

1. *Departure* is the separation from flight training, initiated by the student prior, to successful completion.
2. *Flight Training* is the primary phase of general aviation flight training, which is a process regulated by the FAA and tailored for the student pilot. Once successfully completed, the FAA certifies the student pilot to act in the capacity of a recreational or private pilot.
3. *Pilot Survey* is a small-scale, preliminary research study. The primary effort is to determine if the subject is creditable for further study. This involves a minimum sample size.

4. *Retention* occurs when a student successfully completes a flight-training program and is certified by the FAA to exercise the privileges of a pilot certificate.

5. *Student Pilots* are those individuals who have not reached a level of certification. A pilot who has been certified by the FAA is no longer considered a student pilot.

6. *Termination* results in separation from flight training prior to successful completion - either self-initiated or directed.

CHAPTER II

REVIEW OF RELEVANT LITERATURE AND RESEARCH

Framework Summary

The importance of service quality and its impact on the long-term success of a business has long been of interest to business managers and researchers (Fornell, 1996). Review of the relevant literature revealed that a body of scholarly research has been accomplished on the impact of service quality across various industries. Many studies addressed specific industries such as airlines, communications, and information technology; however, scholarly research is unavailable that specifically addresses the effect of service quality on student pilot retention in general aviation.

The framework for this literature review outlines: (a) describes the dimensions that make up customer satisfaction, (b) describes a nationally recognized customer satisfaction survey, (c) explores the relationship between customer satisfaction and customer retention, (d) reviews the profit rationale for customer satisfaction, (e) provides a definition of customer service and service quality, (f) investigates the relationship of customer service to customer satisfaction, (g) describes the dimensions of service quality, (h) explores the SERVQUAL survey instrument, and (i) presents the customer-service suppositions of selected experts within the flight training industry. This chapter concludes with a description of the expected value of this pilot study to the general aviation flight training industry and poses this paper's research question.

Dimensions of Customer Satisfaction

Customer service is a broad concept that contains multiple components. Zeithaml and Bitner (1996) proposed a model of customer satisfaction utilized by other researchers

(Natalisa and Subroto, 2003) in conducting studies in customer satisfaction. Oliver (1997) defined the term “satisfaction” as “the consumer’s fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment” (p. 13). According to the Zeithaml and Bitner model, customer satisfaction is driven by five components: product quality, price, situational factors, personal factors, and service quality. Simply, customer satisfaction is driven by meeting or exceeding the expectations of the customer in each of the model’s dimensions proposed by Zeithaml and Bitner.

Jones and Sasser (1995) provided two examples of research conducted by Xerox and Opinion Research Corporation. Xerox research indicated that “totally satisfied customers were six times more likely to repurchase Xerox products over the next 18 months” (p. 91) and Opinion Research found that completely satisfied customers were nearly 42% more likely to be loyal than merely satisfied customers” (p. 91). Heskett, et al. (1994) describes the value of a loyal customer: “...the lifetime value of a loyal customer can be astronomical, especially when referrals are added to the economics of customer retention and repeat purchases of related products.” That is, customers are significantly more likely to remain loyal to a company when they rate their satisfaction between satisfied and very satisfied. Additionally, Bolton (1998) determined: (a) that the purchasing relationship term is longer for customers with high levels of satisfaction, (b) the effect of individual service failures is limited in magnitude due to a customer’s historical high satisfaction levels, (c) and the effect of an individual service transaction is

greater in magnitude for customers who have had long-term satisfying relationship with the company than those customers with short-term relationships.

Customer Satisfaction Surveys

It is common knowledge that businesses have long used surveys to direct their strategy and tactics. Companies use surveys to design and modify programs, discover product development opportunities, and position themselves among competitors for strategic and tactical advantage. Customer satisfaction surveys rose to national recognition in the U.S. with the 1994 establishment of the American Customer Satisfaction Index (ACSI). The purpose of the ACSI is to “track trends in customer satisfaction and provide valuable benchmarking insights of the consumer economy for companies, industry trade associations, and government agencies” (ACSI Web site). Fornell, et al. (1996) said that customer satisfaction has three roots: perceived quality, perceived value, and customer expectations. The ACSI model integrates these roots into an overall customer satisfaction score and considers that overall customer satisfaction drives both customer voice (complaints) and customer loyalty. Increasing customer satisfaction reduces customer complaints, thereby increasing customer loyalty (Fornell and Wernerfelt, 1978, cited by Fornell, 1996).

Customer Satisfaction Leads to Improved Customer Retention

Reichheld's (2000) studies found a connection between customer retention and profits. Reichheld asserted that across a wide array of industries, small increases in customer retention led to dramatic increases in profits. Anderson and Mittal (2000) proposed that increased customer satisfaction leads to improved customer retention, and that through retention, profitability is driven higher. Their model proposes a satisfaction

profit chain that is based on the performance of key satisfaction attributes. Satisfaction attributes may be a customer's wait times for an oil change or a feeling of being valued.

Accordingly, different industries and different products may have different attributes, and their relationship to overall satisfaction may or may not be linear. Ralston (as cited in Anderson & Mittal, 2000) estimated that for service industries, a single point improvement in customer satisfaction results in a 6% increase in the likelihood of continued use. However, Anderson and Mittal pointed out that this relationship is, as Ralston claims, a non-linear function. They concluded that the gains in customer retention are the least for customers who describe their purchase experience as "somewhat satisfied." In other words, the rate of customer retention is greatest at the extreme of customer satisfaction.

Consequently, those customers who are extremely satisfied are most likely to ignore competing brands and to repurchase from the company. According to Jones and Sasser in *Harvard Business Review* (1995), a customer satisfaction rating between 1-2 (on a scale of 1 to 5) indicates that the customer is "dissatisfied," is "very disloyal," a 3-4 rating indicates that the customer is "satisfied." However, only a customer satisfaction rating of 5 produces a completely satisfied and loyal customer (p. 98). It is supported by the research that high levels of loyalty, and therefore retention, is maximized by the extreme end of customer satisfaction levels.

Customer Satisfaction Profit Rational

Managers, experts, and business researchers have tested and documented that high levels of customer service are a critical link to businesses success (Albrecht, 1992; Whiteley, 1991; Ranaweera & Prabhu, 2003). According to Zeithaml and Bitner (1996),

“...individual firms have discovered that increasing levels of customer satisfaction can be linked to customer loyalty and profits” (p. 80). They asserted that long-term customers positively affect profitability because of their higher probability to purchase additional services and their influence on others to patronize the firm. Heskett (2000) and Gale (1994) shared these views. Blodgett (1995) and Gummesson (1994) cited that the cost of acquiring a new customer is up to ten times more expensive than retaining an existing customer, yet most businesses dedicate their entire marketing efforts to acquiring new customers (Heskett, 2001). These efforts are rooted in the belief that in order for a firm to profit, an increase in market share must be the primary goal. Such concepts drive firms to waste valuable assets on the low probability of attracting a new customer. While attraction of new customers should be an activity of any marketing plan, increasing customer retention can increase the long-term profitability of a customer between 25 and 85 per cent in many industries (Dawkins & Reichheld, 1990).

Dimensions of Service Quality

The consumption of services offers an intangible foundation on which consumers base their evaluations of product quality (Gronroos, 1982). This difficulty has led researchers in a quest to understand and measure the dynamics of consumers' quality evaluations and to propose models in an attempt to measure service quality. Parasuraman, Zeithaml, and Berry (PBZ) (1985) began to integrate early research into a conceptual model of service quality in 1985. Their study evaluated and identified three premises of the existing service-quality literature: (a) consumer evaluation of service quality is difficult, (b) consumer evaluations of service quality are a comparison of their

expectations to the perceived service performance, and (c) the process and outcome of service delivery.

PBZ's (1985) research was the foundation for what has become a standard for measuring service quality. Based on their initial research, they attempted to identify the understanding of the following questions:

1. What do managers of service firms perceive to be the key attributes of service quality?
2. What problems and tasks are involved in providing high quality service?
3. What do consumers perceive to be the key attributes of quality in services?
4. Do discrepancies exist between the perceptions of consumers and service marketers?
5. Can consumer and marketer perceptions be combined in a general model that explains service quality from a consumer's standpoint? (p. 43)

Based on the above questions, PZB's research (1985) revealed that the following gaps exist between expectations and perceptions of service delivery:

1. Gap 1: The discrepancy between the customer's expectations and management's perceptions of those customer expectations.
2. Gap 2: The discrepancy between management's perceptions of customer expectations and service-quality specifications.
3. Gap 3: The discrepancy between service-quality specifications and service actually delivered.
4. Gap 4: Discrepancy between service actually delivered and what is communicated about the service to customers.

5. Gap 5: Discrepancy between the customer's expectations of the service provider and their perceptions of provider delivery. (p. 45-46)

A significant finding by PZB (1988) was that "...regardless of the type of service, consumers used basically similar criteria in evaluating service quality" (p. 16). Armed with this research, PZB (1988) developed a model for service quality and ultimately defined five dimensions of service quality. The definitions of these dimensions follow:

1. Tangibles - The appearance of physical facilities, equipment, personnel, and communication materials.
2. Reliability - The ability to perform the promised service dependably and accurately.
3. Responsiveness - The willingness to help customers and provide prompt service.
4. Assurance - The knowledge and courtesy of employees and their ability to convey trust and confidence.
5. Empathy - The caring, individualized attention the firm provides its customers.

Service Quality Measurement Instrument, SERVQUAL

The quality of tangible goods can be easily defined by quantitative means such as durability and defect measurements (Crosby, 1979; Gavin, 1983). According to PZB (1985), the measurement of service quality is hard to define because of unique dimensions of services: intangibility, heterogeneity, and inseparability of production and consumption. In 1988, PZB detailed their research and development of the SERVQUAL process in a quest to quantify and measure consumer perceptions of service quality. The

researchers evaluated earlier scholarly work of services literature and integrated such work into the development of the SERVQUAL study. They derived the general meaning of service quality from concepts proposed or defined by the services literature. The concepts were outlined and revealed by the SERVQUAL researchers with specific descriptions as required to facilitate understanding of the relationship of those concepts within the framework of both customer satisfaction and service literature. It is beyond the scope of this paper to detail all the facets of PZB's research; however, specific key concepts are worthy of notation to facilitate an understanding of SERVQUAL's reliability and validity in measuring service quality.

PZB (1989) cited Sasser, Olsen, and Wyckoff (1978), Gronroos (1982), and Lehtinen and Lehtinen (1982) as well as their own studies, which "unambiguously support the notion that service quality, as perceived by consumers, stems from a comparison of what they feel service should offer (i.e. from their expectations) with their perceptions of the performance of the firms providing the services" (p. 16). They concluded that: "perceived service quality is therefore viewed as the degree and direction of the discrepancy between consumer's perceptions and expectations" (p. 17).

PZB (1989) maintained that "perceived service quality is a global judgment, or attitude, relating to the superiority of the service..." and that "satisfaction is related to the specific transaction" (p.16). Citing Oliver (1981), PZB wrote that satisfaction decays into one's overall attitude toward purchasing products. Based on these researchers' work and the previous concepts, it appears that service quality relates to a consumer's macro-level view of the integration of individual satisfaction transactions that lead to a consumer's attitude toward purchasing.

SERVQUAL's research led to the development of specifically identified dimensions of service quality. The quality dimensions, each with several statements, are answered on a 7-point scale and range from "strongly disagree" to "strongly agree". Earlier research by PZB (1985) initially identified 10 service quality dimensions from which they derived the final dimensions for the SERVQUAL scale. Even greater in number in the earlier research were the number of items related to each of the dimensions. PZB's 1988 research led to two stages of data collection and scale purification. The resulting evaluations narrowed from the initial analysis to 22 items among five service-quality dimensions.

Reliability and Validity

PZB tested and evaluated SERVQUAL's reliability through an iterative process. The SERVQUAL researchers cited that the final five dimensions have "relatively low intercorrelations" (p. 24). The data further supported the second stage of scale purification, and the resulting analysis reconfirms high reliabilities and dimensional distinctiveness. The SERVQUAL researchers indicate that:

The reliabilities and factors structures indicate that the final 22-item scale and its five dimensions have sound and stable psychometric properties. Moreover, by design, the iterative procedure retained only those items that are common and relevant to all service firms included in the study. However, by the same token, this procedure may have deleted certain "good" items relevant to some but not all firms. Therefore, while SERVQUAL can be used in its present form to assess and compare service quality across a wide variety of firms or units with a firm, appropriate adaptation of the instrument may be desirable when only a single

service is investigated. Specifically, items under each of the five dimensions can be suitably reworded and/or augmented to make them more germane to the context in which the instrument is to be used. (p. 24)

PZB assessed SERVQUAL's validity by determining the association between resulting SERVQUAL scores and a customer's overall service quality rating (Overall Q) of the evaluated firm. PZB cite their conclusions as to SERVQUAL's validity: "The strength and persistence of the linkage between Overall Q categories and the SERVQUAL scores across four independent samples offer strong support for SERVQUAL's convergent validity" (p. 30).

Applications of SERVQUAL

PZB (1988) declare that the SERVQUAL instrument is applicable across various service and tangible product firms that offer service as a component of product delivery and that the fundamental processes for using SERVQUAL is to quantify a firm's average difference score for each service dimension, quantify an average score across the five dimensions, or identify the "relative importance of the five dimensions in influencing customer's overall quality perceptions (p. 31). Most fundamental to SERVQUAL's application is that "A retailer that uses SERVQUAL to identify the most salient service quality dimensions for its target markets, and compares itself to the competition in terms of strengths and weaknesses on these particular dimensions, will certainly have a sense of what priorities should be in regard to service quality" (p. 36). In terms of value, PZB also stated that "SERVQUAL is most valuable when it is used periodically to track service-quality trends, and when it is used in conjunction with other forms of service quality management" (p. 31).

PZB (1998) further stated that discrete applications of SERVQUAL include customer-based service quality segmentation, individual business unit or employee service quality scores, and measurement of a firm's service quality relative to competitors. In addition, PZB summarized that SERVQUAL can "help in a wide range of service and retailing organizations in assessing consumer expectations about and perceptions of service quality" (p. 36), and that SERVQUAL "can also help in pinpointing areas requiring managerial attention and action to improve service quality" (p. 36).

SERVQUAL Scoring

Zeithaml and Bitner (1996) describe SERVQUAL scores as an expression of the difference between a consumer's perceptions and expectations of service quality. In general, service quality scores which are negative are the result of a consumer's expectations not being met. In contrast, service quality scores which are positive are the result of a customer's expectations being exceeded; hence, the mathematical definition is $P - E$. From the customer's perspective, a negative service quality score indicates that a company did not meet the customer's service quality expectations and positive score indicates that a company met or exceeded a customer's service quality expectations. Service quality scores are tabulated for each of the SERVQUAL dimensions (e.g. Tangibles) as well as an overall score that represents the mean of the SERVQUAL dimensions.

Flight Training Experts

Scholarly research reviewed in this literature review has promoted the concepts that declare that customer satisfaction and quality service play an important role in a

company's success. Success factors can include improved customer retention, greater profitability, improved customer loyalty, and lower marketing costs. General aviation flight training's success is dependent on frontline employees who interface with their customer and are guided by the service quality strategies determined by the organization's management.

The topic of student pilot retention or customer service in flight training has been minimally considered, and then only topically, in the industry's trade magazines; however, several nationally recognized experts in flight training have written about issues that relate to customer relationships in general aviation. Kershner (2002) pointed out that there are common traits that flight instructors have in common: knowledge, ability, interest, adaptability, consistency, and he also notes that responsibility, integrity, appearance, and actions are noteworthy factors. Many of Kershner's required common traits which successful flight instructors share are directly or closely related in definition to PZB's dimensions of service quality.

Greg Brown, a Master Certified Flight Instructor, author of several aviation books, and a previous holder of Federal Aviation Administration's flight instructor of the year award, has written about similar factors in his book *The Savvy Flight Instructor* (1997). Brown noted that a flight instructor's ability to "attract students, to retain their business, to get them back for additional training . . . all rests heavily on personal professionalism" (p. 83). Brown's key attributes of personal professionalism are summarized:

1. Be an expert in the eyes of the student. Students will measure a flight instructor's expertise by personal qualities.

2. Look like a professional. Dress nicely, have hair neatly trimmed, and shoes in good repair.
3. Act like a professional. Use a high level of verbal communication skills.
4. Use the words of a professional. Use proper language around customers.
5. Earn the respect of your student. Instructors who put their students first have the most students.
6. Take the judgments and concerns of your students seriously.

Brown further defines key attributes of the training organization and notes that:

“Since public perception is so important in attracting customers, what do prospects look for in a flight school? A solid training organization needs to project the same sort of image that customers expect when making a large investment in any service: an established company delivering good service, a quality program, oversight of the training process, and lasting support for future flying activities. Meeting customer expectations is very important . . .” (p. 168).

Literature Conclusion

This literature research disclosed that customer retention is strongly linked to customer satisfaction, which is driven by factors that includes service quality. While high satisfaction scores do not guarantee high customer retention, the research does not logically support a presumption that low customer satisfaction scores leads to high customer retention. The value of this paper’s research is that general aviation flight training has suffered a tremendous decrease in its population over the last 30 years, and the industry should identify the dynamics of its market in an attempt to adopt strategies and tactics to stem the loss of its customers. The dimension of service quality was chosen

as the basis of this paper because it is directly controllable by management and the employee responsible to the student or customer. The company can directly and immediately apply the tenets of service quality without significant investment. While the identification of student retention factors have not been the result of scholarly research, the suppositions of noted experts in the flight training industry should not be dismissed. This research and analysis sought to determine whether service quality was a factor in a student's decision to terminate training. The value of this paper is straightforward: If student pilots are retained at a greater rate, they will become the base from which the general aviation community can grow.

Research Question and Hypotheses

Is there a statistically significant difference in service quality scores between student pilots who complete training and those who terminate? The hypotheses will be tested with statistical significance level of .05 ($p < .05$). To test the research question the following hypotheses will be evaluated:

1. Hypothesis one: There is a significant difference in the service quality expectations between those who completed flight training and those who terminated flight training.
2. Hypothesis two: There is a significant difference in the service quality perceptions between those who completed flight training and those who terminated flight training.
3. Hypothesis three: There is a significant difference in the service quality gaps between those who completed flight training and those who terminated flight training?

CHAPTER III

RESEARCH METHODOLOGY

Research Technique

This research project employs a survey methodology to determine if service quality is significantly different between students that completed training and students that terminated training. The results were analyzed utilizing a method that determined whether significant statistical differences exist between service quality levels.

Research Design

SERVQUAL surveys were distributed and administered to pilots and student pilots via Web-based participation. Questions were worded in a format consistent with the SERVQUAL model. Questions were answered with a value rating from “Strongly Agree” to “Strongly Disagree” as to the relative agreement that a respondent has to a question. Numerical values from one to seven were be assigned to the ratings.

Survey Sample

Considering that this research is a pilot study, a minimum survey sample size of 30 respondents for each pilot group, for a total of 60 samples, was accepted as the sample size to produce the statistical basis for analysis of this pilot survey. It was anticipated that each of the desired groups would probably respond at a different rate; that is, one group would have more respondents to the survey than the other. As anticipated, a total of 97 respondents were received from the completed training group, while a total of 30 respondents were received from the terminated training group. It was determined, in advance, that only the first 30 respondents from each group would be used in the analysis.

Sources of Data

The source of data was the participant responses to the survey questions.

The Data Gathering Instrument

In order to collect respondent data in a practical, cost effective method, it was determined that a web-based survey would provide an effective method for distribution of the survey instrument. Web-based surveys have gained tremendous acceptance and Gunn (2002) cited Couper's (2000) speculation that web-based surveys will replace traditional methods of survey distribution. A factor in the decision to use a web-based survey for this study was to minimize the overall cost of the survey instrument. Paper surveys require a significant investment in time and financial resources to manually generate the survey product and for packaging, mailing, and tracking responses. A budget of \$400 was allotted for this paper's survey development, distribution, and statistical analysis. Gunn cited an analysis from the Illinois Institute of Technology that an average cost of a paper survey per respondent was, on average, \$2.07. Based on this average cost, this paper's budget, and desired sample size, it was determined that paper surveys would not be suitable due to the typically low response rates of paper surveys. Interestingly, the result of this survey's cost per respondent was \$1.98.

While web-based surveys are faster and less expensive and easier to manage, there are inherent drawbacks. The most significant drawback is that the survey sample is stratified by the need for the respondent to have internet access. However, the growth of web-based surveys and the large numbers of computer users with internet access is significant - therefore, this researcher accepts this limitation and the efficiency that web-based surveys offer.

Rather than developing expertise in programming and web design, this researcher was able to locate a fee-based service, which allowed for the development of web-based surveys with no programming experience and no hosting requirements. SurveyConsole, a company based in Seattle, Washington describes its service on its website:

SurveyConsole is designed as a self-service offering that allows clients access to customizable survey templates from the survey library, or to build their own surveys. Surveys are built utilizing a web browser interface. Surveys are distributed either via email or embedded as a part of an existing website. Results are viewable online with the single click of a mouse button. Survey hosting and data warehousing is handled automatically. Frequency tables, charts and percentage tabulations of the results are provided automatically in real-time. Survey data can also be downloaded and imported to common spreadsheet and analysis programs.

The survey, based on the SERVQUAL format, was developed by this researcher and hosted on SurveyConsole's computers. Invitations for potential respondents were distributed on website bulletin boards including studentpilot.com and aopa.org. In addition, 1000 flyers were distributed to Southern California airports in the cities of El Monte, La Verne, Riverside, San Diego, and Los Angeles. Finally, a print advertisement was placed in the Pacific Flyer newspaper. This publication has an extensive readership in the western U.S. and subscription and distribution base across the U.S.

Survey Pretest

The validity of the SERVQUAL format is widely accepted throughout many industries. Further, the SERVQUAL researchers have validated SERVQUAL through

extensive rigorous statistical analysis and extensive applied use. However, two surveys were evaluated by two personally known respondents to insure that respondents were able to comprehend the survey. The respondent's surveys were scored and determined to have been completed correctly. Interviews with the respondents led this researcher to conclude that the calculated scores were highly correlated to the respondent's service quality assessment. Some changes were made to the survey as recommended by the respondents; however, these recommendations only involved minor typographical changes and, otherwise, did not alter the survey's statements.

Reliability

SERVQUAL's reliability has been subjected to extensive statistical analysis and its reliability has been confirmed and supported by extensive research efforts; however, survey data will be subjected to reliability testing. Cronbach's Alpha test has been selected due to its appropriateness with attitude instruments such as SERVQUAL.

Validity

SERVQUAL's validity has been subjected to extensive statistical analysis and its validity has been confirmed and supported by extensive research efforts; however, Concurrent validity will be established by administering the survey to two groups who are known to have different service quality scores.

Statistical Power

If the statistical power of an experiment is low, then there is a good chance that the experiment will be uncertain. Statistical power does not determine whether or not the null hypothesis is supported. It is the probability the data gathered in an experiment will

be sufficient to reject the null hypothesis. Minimum power for this study is selected at .80 as this threshold is generally considered satisfactory (Lane, 1999).

Treatment of Data and Procedures

This research project employed a survey methodology to determine whether service quality is statistically different between students that completed flight training and students who terminated training. The survey's data has been tabulated and analyzed using the Mann-Whitney statistical test function performed by Graphpad's InStat software. The Mann-Whitney test was selected to compare the two independent groups of sampled data. In other words, we are interested in determining how the groups compared, or ranked, to each other rather than comparing the groups to a standard of service quality. Further, the Mann-Whitney test makes no assumptions of the population's normality. Classical Student-t tests were also carried out as a point of interest for this researcher and no change was noted in the determination of statistical significance amongst groups.

CHAPTER IV

RESULTS

Overview

This chapter presents the results of the study to determine if there is a significant statistical difference in the service scores between student pilots who completed flight training and those who did not complete their training. Tables are provided to summarize the descriptive statistics including important metrics such as means, standard deviations and p-values. The primary data collected from survey respondents ranged from “Strongly Agree” to “Strongly Disagree” on a 7-point Likert scale. A numerical value of 7 was assigned to strongly agree decreasing to a numerical value of 1 for strongly disagree. The survey statements are listed in Appendix A.

Two groups, those who completed flight training and those terminated training, were surveyed and the statistical results tabulated. In addition to survey results, calculations were performed to determine survey reliability, validity, and statistical power. Table descriptions and explanations are provided. Raw data sets and intermediate summaries are available in Appendix B.

In most cases, statistical calculations were processed by Graphpad’s InStat® software, version 3.06, executed on a PC-based platform. Web-based statistic calculators were used in some cases and are referenced in the Bibliography. Data from the survey were transferred from Microsoft’s Excel, version 10.2614.2625, into InStat® via the copy and paste method. The primary objective in this data analysis was to compare the two groups and statistically determine if a significant difference

existed between the groups. Two-tailed Mann-Whitney tests were utilized to compare population means, with the use of the p-value to determine if there was a significant difference.

Table Descriptions

Service Quality Means Comparisons – Expectations

Table 1 below describes the expectations of service quality between the two surveyed groups – those who completed flight training and those who did not complete their training. The expectation survey data quantifies what level of service the student expected to receive from the flight-training provider. The respondent replied to the survey by evaluating a Likert scale for each of the 22 SERVQUAL-based statements. A 1 rating indicated that the survey respondent strongly disagreed with the statement, while a 7 rating indicated that the survey respondent strongly agreed with the statement.

Each group contained 30 survey respondents and the group's mean and standard deviation was calculated. Data from the completed training group has a mean of 6.09 and a standard deviation of .59. Data from the terminated training group has a mean of 5.84 and a standard deviation of .98. The level of significance for all tests was $p < .05$. GraphPad's InStat® software was utilized to analyze the data and the p value was determined to be .42, and as a result, the difference between the means of each group is not considered statistically significant, therefore, the null hypothesis is retained.

Table 1

Service Quality Means Comparisons - Expectations

Category	Completed Training Group	Terminated Training Group
Number of Students (n)	30	30
Mean (μ)	6.09	5.84
Standard deviation	.59	.98
Lower 95% Confidence Index	5.87	5.47
Upper 95% Confidence Index	6.31	6.21
P value	0.42	

n = 30; $p < .05$; The expectation mean between groups is not considered significant.

Service Quality Means Comparisons – Perceptions

Table 2 describes the perceptions of service quality between the two surveyed groups – those who completed flight training and those who did not complete their training. The perception survey data quantifies the student’s perceptions of service delivered to the student by the flight-training provider. The respondent replied to the survey by evaluating a Likert scale for each of the 22 SERVQUAL-based statements. A 1 rating indicated that the survey respondent strongly disagreed with the statement while a 7 rating indicated that the survey respondent strongly agreed with the statement. Each group contained 30 survey respondents and the group’s mean and standard deviation was calculated. Data from the completed training group has a mean of 5.26 and a standard deviation of .99. Data from the terminated training group has a mean of 3.93 and a standard deviation of 1.10. The level of significance for all tests was $p < .05$. GraphPad’s InStat® software was utilized to analyze the data and

the p value was determined to be less than .0001 and as a result, the difference between group's means is considered statistically significant and this test rejects null hypothesis two.

Table 2

Service Quality Means Comparisons - Perceptions

Category	Completed Training Group	Terminated Training Group
Number of Students (n)	30	30
Mean (μ)	5.26	3.93
Standard deviation	0.99	1.10
Lower 95% Confidence Index	4.88	3.52
Upper 95% Confidence Index	5.63	4.34
P value	< 0.0001	

n = 30; $p < .05$. The perception mean between groups is considered significant.

Service Quality Means Comparisons – Gaps

Table 3 describes the gaps in service quality. The gap is the difference between the survey respondent's expectations in service quality and their perceptions of the service quality (gap = perceptions – expectations). Gap scores are typically a negative number because most services do meet the expectations of their customers – however, this not always the case. Gap scores were calculated for each group and a significance test was made between the two groups. Data from the completed training group has a mean of -0.84 and a standard deviation of .98. Data from the terminated training group has a mean of -1.91 and a standard deviation of 1.46. The level of significance for all tests was $p < .05$. GraphPad's InStat® software was utilized to

analyze the data and the p value was determined to .0006 and as a result, the difference between group's means is considered statistically significant and this test rejects null hypothesis three.

Table 3

Service Quality Means Comparisons – Gaps (P-E)

Category	Completed Training	Terminated Training
Number of Students	30	30
Mean	-0.84	-1.91
Standard deviation	0.98	1.46
Lower 95% Confidence Index	-1.20	-2.46
Upper 95% Confidence Index	-0.47	-1.37
P value	0.0006	

$n = 30$; $p < .05$. The gap score mean between groups is considered significant.

Survey Validity

The purpose of establishing survey validity is to insure that the survey accurately measures the construct under research – in other words, to insure that the survey measures what it proposes to measure. Previously stated were PBZ's (1988) determination of SERVQUAL's validity through an extensive statistical review and their presentation of the content-related evidence for its appropriateness in measuring service quality. The purpose of this survey is to measure the current performance of the service quality construct in flight training. As such, the appropriate validity measure is concurrent validity. According to Siegle (n.d.), concurrent validity can be accomplished by administering “the instrument to two groups who are known to

differ on the trait being measured by the instrument. One would have support for concurrent validity if the scores for the two groups were very different” (para. 6).

Table 4 presents two sub groups of data with known differences in service quality levels to validate the survey. One sub group data rated their service quality as unacceptable and another rated their service quality as acceptable. This was accomplished by analyzing data received in a comment field for each respondent that chose to leave a comment. Gap scores were calculated for each group and a significance test was made between the two groups. Data from the completed training group has a mean of -0.05 and a standard deviation of .25. Data from the terminated training group has a mean of -1.67 and a standard deviation of .50. The level of significance for all tests was $p < .05$. GraphPad’s InStat® software was utilized to analyze the data and the p value was determined to .0079 and as a result, the difference between group’s means is considered statistically significant. This leads us to assert support for concurrent validity in this research.

Table 4

Survey Concurrent Validity – Known Differences

Category	Completed Training	Terminated Training
Number of Students	6	6
Mean	-0.05	-1.67
Standard deviation	0.25	.50
Lower 95% Confidence Index	-0.36	-2.30
Upper 95% Confidence Index	0.25	-1.05
P value	0.0079	

n = 6; $p < .05$. The mean between groups is considered significant.

Survey Reliability – Internal Consistency

The purpose of measuring instrument reliability is to establish confidence in the instrument's ability to yield the same results on a consistent basis. Established statistical research indicates that reliability, the ability for consistent measurements, can be accomplished using several methodologies; test-retest, equivalent form, and internal consistency. Siegle (n.d.) indicates "When the items on an instrument are not scored right versus wrong, Cronbach's alpha is often used to measure the internal consistency. This is often the case with attitude instruments that use the Likert scale" (para. 9).

Table 5 displays the resulting Cronbach's alpha calculations and the resulting alpha coefficients. Cronbach's alpha is defined as the mean correlation between a set of items and is suitable for measuring the reliability of a psychometric instrument such as a survey based on the Likert scale. A statistical generalization is that an alpha

value of .80 or greater is acceptable for a reliable psychometric instrument. The smallest alpha for the collected survey data calculated was .92.

Table 5

Survey Reliability – Internal consistency

Category	Cronbach's Alpha
Completed Training	
Expectations	.92
Perceptions	.94
Terminated Training	
Expectations	.95
Perceptions	.92

Note: Alpha coefficients greater than .80 are considered reliable.

Statistical Power

Table 6 presents the survey's statistical power. According to Lane (1999), statistical power is probability of correctly rejecting a false null hypothesis; therefore, power is defined as: $1-\beta$ where β is the probability of committing a Type II error. A Type II error is the failure to reject a false null hypothesis (e.g., failing to convict a guilty person). Statistical power for this data was calculated at .915. It can be restated that the probability of committing a Type II error is 8.5%. It is considered that statistical powers greater than .80 are acceptable in producing meaningful p-value statistics.

Table 6

Statistical Power

Category	Mean	Standard Deviation
Completed Training	-0.84	.98
Terminated Training	-1.91	1.46
Statistical Power		.92

Note: $\alpha = .05$; $n = 30$; Note: Power coefficients greater than .80 are considered reliable.

CHAPTER V

DISCUSSION

The purpose of this paper was to determine if there were differences in service quality scores between students that completed flight training and students that terminated flight training. It was hypothesized that service quality scores would be significantly lower from students that terminated flight training. Since flight-training models considering service quality were not available at the time of this paper, this project used the widely accepted SERVQUAL methodology for quantifying students' service quality expectations, perceptions, and gap scores (Parasuraman, Zeithaml, and Berry, 1985). It is noted that the SERVQUAL methodology can be successfully applied in many industries and domains (Parasuraman, Zeithaml, and Berry, 1988) (PZB).

Discussion of Key Findings

The paper used two data groups. One group consisted of 30 students that completed flight training and the second group consisted of 30 students that terminated their training - a total of 60 samples. Web-based survey invitations were placed on pilot bulletin boards, flyers were distributed to local airports, and an advertisement was placed in a widely distributed aviation trade newspaper. To answer the research question, data analysis included determining means, standard deviations, and testing for statistical significance ($p < .05$) between groups. In addition, the statistical evaluations included testing for statistical power, reliability, and validity, resulting in the acceptance of the survey data.

Three hypotheses nested in a single research question were tested in the application of the SERVQUAL methodology to the flight training groups. The data analysis included three stages. First, means and standard deviations were calculated for each of the group's overall service quality and dimension scores to examine the central tendency and total mean for each group ($n = 30$). Secondly, statistical significance testing ($p < .05$, $\alpha = .05$) was accomplished for each hypothesis to evaluate the null hypothesis for each statement. Third, statistical reliability, validity, and power tests were completed. These tests validated the hypothesis testing to high values of statistical power and low probabilities of committing Type II errors. Thus, the results of the study's significance testing could be accepted.

Hypothesis One

The first hypothesis to be evaluated was the difference in service expectations between those who completed flight training and those who terminated flight training. Expectations are based on what customers feel service firms should offer. PZB (1988) proclaimed: "expectations are viewed as predictions made by consumers about what is likely to happen during an impending transaction or exchange" (p.17). Further, PZB (1988) stated that service quality is "expectations are viewed as the desires or wants of the consumers, i.e., what they feel a service provider *should* offer rather than *would* offer" (p. 17). The assumption among some scholars is that service expectations are typically very high and respondents are likely to select excellence regardless of the service context (Robertson, Lewis, Bardzil, and Nikolaou, 1999).

In general, a student's expectations are formed by their initial interactions with contacts in the flight training industry. Those contacts can be industry-sponsored

trade organizations such as "Be A Pilot" or a flight instructor from a local flight school. The information provided by these contacts may consist of general information regarding training such as minimum flight hour requirements and pricing. It is always reasonable to presume that a potential student, with little to no knowledge, will rely on those they initially come in contact with to provide accurate and reliable information.

The first hypothesis stated that there is a significant difference in the expectation scores between the completed flight training and terminated flight training groups. The null hypothesis stated that there is no significant difference. The result of the hypothesis testing failed to reject the null hypothesis ($p = .42$, $\alpha = .05$). Therefore, it is supported that there is no statistical difference in expectations between the completed flight training and terminated flight training groups. Thus, the groups do not view their predictions about the outcome of the service as different.

Hypothesis Two

The second hypothesis to be evaluated was the difference in service perceptions between those who completed flight training and those who terminated flight training. Perceptions are the result of a comparison of consumer expectations to actual service performance (PBZ, 1985). According to PZB (1988), "perceived service quality is a global judgment, or attitude, relating to the superiority of the service..." (p. 16). It has been proposed that service expectations are an unnecessary measurement in service quality evaluations and that the measurement of perceptions is sufficient (Cronin and Taylor, 1992). However, PZB (1994) reasserted that their "research offers strong support for defining SQ (Service Quality) as the discrepancy

between customer's expectations and perceptions" (p. 111). They lend credibility to their assertion that prior research by Gronroos (1982), Lehtinen and Lehtinen Sasser, Olsen, and Wyckoff (1978) that service quality "supports the disconfirmation of expectations conceptualization of SQ (Service Quality)" (p. 112).

Accepting that a consumer's service quality perceptions are the result of a comparison of the consumer's expectations to actual service performance, we may consider that those responsible for delivering service are primarily the flight school managers and flight instructors. This researcher suggests, because of the unique one-on-one relationship (which is typical in general aviation flight training), the flight instructor is predominantly responsible for the delivery of service performance. However, this suggestion should not mitigate the role of the flight school manager in the overall process of service policies, flight training, and management oversight.

The second hypothesis stated that there is a significant difference in the perception scores between the completed flight training and terminated flight training groups. The null hypothesis stated that there is no significant difference. The result of the hypothesis testing rejected the null hypothesis ($p = .0006$, $\alpha = .05$). Therefore, it is supported that there is a statistically significant difference in the perceptions of service between the completed flight training and terminated flight training groups. That is, the groups view their judgments of the service delivered as being significantly different.

Hypothesis Three

The third hypothesis to be evaluated was the difference in gaps (expectations - perceptions) between those who completed flight training and those who terminated

flight training. PBZ (1985) describe a model by Gronroos which "contends that consumers compare the service they expect with the perceptions of the service they receive in evaluating service quality". Further, PBZ wrote that "service quality involves a comparison of expectation with performance" (p. 42) and cite Lewis and Booms (1983) that "service quality is a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis" (p. 42).

The third hypothesis stated that there is a significant difference in the gaps (service quality) between the completed flight training and terminated flight training groups. The null hypothesis stated that there is no significant difference. The result of the hypothesis testing rejected the null hypothesis ($p = .0001$, $\alpha = .05$). Therefore, it is supported that there is a statistically significant difference in service quality scores between the completed flight training and terminated flight training groups. That is, the groups view their service quality as significantly different.

Key Results Summary

1. The service expectations (desires or wants of consumers) between those who completed flight training and those who terminated flight training is not different.
2. The service perceptions (service performance) between those who completed flight training and those who terminated flight training is significantly different.

3. The service quality gaps (perceptions minus expectations) between students that completed flight training and students that terminated flight training is significantly different.

Behavioral Responses to Service Quality

Zeithmal, Berry, and Parasuraman (ZBP, 1996) developed a conceptual model which describes the behavioral consequences of service quality. Their model considered the favorable and unfavorable responses to service quality success, failure, or recovery. ZBP hypothesized that the favorable responses would lead to customers participating in positive word-of-mouth, recommendations to others, loyalty, and price premiums. The unfavorable responses would result in customers participating in negative word-of-mouth, complaining, minimizing or ending the purchasing relationship. ZBP's conclusions of their research model show "...customer's behavioral intentions show strong evidence of their being influenced by service quality" (p. 31). In addition, ZBP state "Customers perceiving service performance to be inferior are likely to exhibit behaviors signaling that they are poised to leave the company or spend less with the company" (p. 34). The conclusions of ZBP's behavioral consequence research illustrate strong support for the service quality scores assessed between the two training groups.

SERVQUAL Dimension Statistics

The dimensions of service quality include tangibles, reliability, responsiveness, assurance, and empathy. Table 7 outlines the dimensional statistics for each group. All dimensions exhibit negative gap scores (expectations not being met) across the groups; however, those who terminated training had lower intangible

dimensional service quality scores than the completed training group ($p < .026$, $\alpha = .05$). The tangible dimension datum shows no significant statistical difference between those that completed training and those that terminated training ($p = 0.96$, $\alpha = .05$). This shows that tangibles are not a significant factor in the terminated training group's service quality scores. Consider the SERVQUAL statements which are evaluated by the survey respondent for the tangible dimension: the appearance of physical facilities, equipment, personnel, and communication materials; that is, how physical items look and are presented. As such, the aesthetics of the aircraft and the spit-and-shine of the facility do not appear to be a significant factor in the student's service quality evaluation.

In contrast, reliability, which is the ability to perform the promised service dependably and accurately, is significantly different between the groups ($p = 0.003$, $\alpha = .05$). In each dimension, except for tangibles, there exists a significant statistical difference between those who complete flight training and those who terminated training. These dimensions are responsiveness, reliability, assurance, and empathy and are defined as, respectively, to measure the firms' ability to perform the promised service, the willingness to help customers, the ability employees and their ability to convey trust and confidence, and the individualized attention that the firm provides its customers. These dimensions are the intangible dimensions which are primarily functions of the interaction or the relationship between the service provider and the customers.

Recall Diette's assertion that the primary reason that a student no longer patronizes a flight school is the failure of the student/instructor relationship. This

study validates Diette's assertion. The students that terminated training assessed significantly lower service quality scores ($p < .05$, $\alpha = .05$) and this study offers reasonable probability, that service quality is linked to student pilot retention in flight training.

Table 7

SERVQUAL Dimensions

Statistic	<u>Tangibles</u>	<u>Responsiveness</u>	<u>Reliability</u>	<u>Assurance</u>	<u>Empathy</u>
Student's Expectations Scores					
Completed Training Mean	5.21	6.17	6.37	6.42	6.19
Terminated Training Mean	5.02	5.86	6.13	6.31	5.82
Two-tailed P-Value	.86	.36	.40	.68	.22
Significant	No	No	No	No	No
Student's Perceptions Scores					
Completed Training Mean	4.60	5.17	5.14	5.68	5.62
Terminated Training Mean	4.44	3.75	3.80	3.94	3.78
Two-tailed P-Value	0.72	0.002	0.003	0.0001	0.0001
Significant	No	Yes	Yes	Yes	Yes
Gap Scores (Perception - Expectation)					
Completed Training Mean	-0.61	-1.00	-1.23	-0.73	-0.57
Terminated Training Mean	-0.58	-2.11	-2.33	-2.37	-2.04
Two-tailed P-Value	.96	0.0217	.0260	0.0009	0.0062
Significant	No	Yes	Yes	Yes	Yes

Scores based Likert scale evaluation of SERVQUAL statements (1 = Strongly Disagree, 7 = Strongly

Agree). Mean significance based on $p < .05$.

CHAPTER VI

CONCLUSIONS

This pilot study contributes to literature in several ways. First, this study can contribute to a flight school's success because of the knowledge gained in presenting a link between service quality and student pilot retention. Secondly, this pilot study contributes to the flight training industry by proposing SERVQUAL's methodology in general aviation flight training to monitor a firm's service quality. This contribution is consistent with a survey instrument by Ruby (1998) in measuring the service quality of student services and Wisniewski's (2001) application of SERVQUAL in public services. The instrument in this pilot study demonstrated high Cronbach alpha reliability exceeding .91 and high statistical power resulting in the low probability of committing Type II errors (8.5%).

The primary responsibility of flight school managers and flight instructors is to ensure safety. However, the business goal of both managers and flight instructors is to ensure satisfaction of their customers to maximize customer retention and the firm's profitability. Flight school managers should consider all the possible factors that drive retention and attempt to determine what factors have the greatest positive affect on their customers. Flight school managers should considering carrying out a SERVQUAL instrument to measure the quality of their services and implement service training programs to improve the effectiveness in meeting the customer's expectations and insuring that their perceptions are properly managed. It is expected that this pilot study should serve as a basis for further evaluation of the service quality construct within general aviation flight training and advance the knowledge of flight

school management and flight instructors regarding service quality and its affects on student behavior.

CHAPTER VII

RECOMMENDATIONS

The findings of this paper suggest several directions for future research. First, application to a larger-scale study, with appropriate replication and refinement, would be important to correlate the value of this paper's pilot level study. In a sense, this paper's findings suggest that there is value in investigating the service quality construct further.

Second, while this paper identified that overall service quality is linked to student retention; the magnitude of the effect of each service quality dimension should be quantified in order to determine the relative weight in a student's decision to depart. This may be accomplished by cataloging various termination dimensions and determining the statistical significance of each dimension. In addition, the dimensions of service quality should be fully explored so an understanding is developed and applied to a flight school's marketing, training, and retention plans.

Third, other constructs should be considered as a link to student's retention. For example, personality traits should be explored and correlated between traditional personality traits and success probabilities. Another recommendation would be to evaluate a socialization construct (social interaction with other student pilots) and its relationship to student retention. In addition, flight instructor job satisfaction measurements could also be correlated to student pilot retention rates and a determination made as to the significance of the correlation coefficient. As a companion measurement, flight school management could be studied to determine the congruency of their beliefs on service quality's importance to their customer's beliefs.

This may help management determine what service levels are expected by students and how to manage the discrete transactions to maximize satisfaction.

This study attempted to determine if service quality is linked to student pilot retention. Because this data has not been previously available in flight training, this research adds to the body of knowledge and has proposed new areas for investigation. Through research and the widely-accepted service quality model, this researcher concludes that there is significant probability that service quality is a factor in student pilot retention. The literature review outlined in this paper draws from more than 20 years of service quality research where other industries have produced measurable benefits from meeting their customers' expectations. Flight school managers and flight instructors should benefit from this study's findings by developing strategies and tactics to retain students. Efforts to continually satisfy customers, while maintaining the high standards imposed by the FAA, should be a tenet of the flight training industry.

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APPENDIX A
SURVEY STATEMENTS

45. The flight school understands (or understood) the specific needs of their customers.

Strongly Agree Strongly Disagree

46. What grade of pilot certificate do you have?

- Student (Valid)
- Student (Expired)
- Private
- Commercial
- ATP

47. The flight school in my responses would be best described as:

- One-flight instructor flight school
- Small "mom & pop" flight school
- Medium size flight school (4 to 9) aircraft
- Large flight school (more than 10 aircraft)
- College flight school

48. What do you consider was the reason(s) you stopped training with the flight school?

49. If I have a question about your responses would you like to leave me your email address so I could ask you about it? Not required and I will not give/sell/rent your email address to ANYONE.

APPENDIX B
BIBLIOGRAPHY

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