MEASURING SERVICE QUALITY AND CUSTOMER SATISFACTION: AN EMPIRICAL STUDY IN THE SENIOR-CARE ORGANIZATIONS IN RURAL AREAS OF CENTRAL TAIWAN

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ABSTRACT

With rapid aging of the Taiwan population, the senior-care market has been growing in rural areas of Taiwan. Competition among senior care market players also soared in the past decade and consumers have been demanding better quality performances. This has forced the Senior Care Organizations (SCOs) to fine-tune their employee training programs to meet specific customer needs. The authors examined the relationship between service quality and customer satisfaction of the SCOs residents in rural areas of central Taiwan based on the ten dimensions: access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles, and employee's understanding their customer. The 143 effective data were collected from 3,008 senior residents living in the 94 private SCOs in rural areas of central Taiwan, where a random sample was selected to participate the survey through drop-off and face to face interview. T-test, one-way analysis of variance (ANOVA) and multiple regression analysis were used to test the relationship. The statistical results showed that courtesy and security were significantly and positively related to customer satisfaction. The results also show that demographic factors of age and health conditions have highly significant impact on customer satisfaction when living in the senior-care organizations. This finding, among others, suggests that senior-care operators in rural areas of central Taiwan might have overlooked the above mentioned major dimensions as factors leading to customer satisfaction and, ultimately, to a sustainable competitive edge. To pinpoint what the senior residents really need, the SCOs in central Taiwan should keep communicating with them, to identify the priority dimensions towards customer satisfaction.

JEL: M12; M31; M37; M38

KEYWORDS: customer satisfaction, service quality, consumer behavior, senior care, central Taiwan.

INTRODUCTION

Between 2011, when the first baby boomers turn 65, and 2030, when the entire cohort reaches that age, the population of the seniors in Taiwan is projected to increase dramatically (Ministry of Interior Taiwan Department of Social Affairs, 2007). Due to rapid progresses in health and technology, the life expectancy of Taiwan residents has extended. Council for Economic Development and Planning, a government agency affiliated to Administration Yuan estimates that the old-age population in Taiwan will continue to increase until 2020 (Chiu, 2002). As the older population becomes more diverse in terms of ethnicity, independence, health, economic status and education, services targeting older adults will need to be more flexible (Lee, 2002). There has been an apparent need for care, especially among the seniors living in rural Taiwan, where the young generations tend to leave homes. Currently, the Senior Care Organizations (SCOs) have been one of the best choices available to elderly living in rural areas of central Taiwan (Lee, 2007).

The objective of this present study was to identify the focus of company business strategy at SCOs through assessing the senior customers' perceptions of the satisfaction with the service provided in rural areas of central Taiwan. The SCOs, in order to achieve a sustainable competitive advantage, might need to invest more effort on certain priority dimensions of customer satisfaction. This advantage, in turn, will allow the

SCOs to either maintain or advance their standings in the market. It is an advantage that enables a senior-care provider to survive against its competitors over a long period of time. For this paper consists of six sections: literature review, research design, results and discussion, conclusion and recommendations, scholarly contributions, and limitations.

LITERATURE REVIEW

According to Taiwan's Ministry of Interior of Social Affairs (2007), senior welfare organizations (SWOs) can be divided into five categories: long-term care organizations, senior-care organizations (SCOs), retirement home organizations, senior culture organizations, and services organizations.

Senior-Care Organizations in Rural Taiwan

Ministry of Interior of Social Affairs (2007) estimated the number of senior citizens in Taiwan, as of October 2007, at 3,085,275, about 10.2% of the total population. The same agency reveals that, as of October 2007, there were about 1,015 SWOs providing long term care, senior care and home care to the seniors, with a capacity of around 62,000 beds while only 46,000 seniors actually lived in those facilities. The occupancy rate was 74.19%. On an extended time line, though, among the five types of SWOs, the occupancy rate in the SCOs reportedly increased from 1.04% in 1993 to 2.26% in 2005 (Ministry of Interior Department of Statistics, 2008).

According to Tsai (2004), most scholars believe that there exists an "urban bias" in Taiwan. Lipton (2005) explains, "Urban Bias Thesis (UBT) proposes that urban classes in poorer countries use their social power to bias (distort) a range of public policies against members of the rural classes." Lipton maintains that this bias involves (a) an allocation, to persons or organizations located in towns or (b) a disposition among the powerful urban classes to allocate resources in this way. Urban bias, so defined, is currently being witnessed in Taiwan's senior-care industry. The latest investigation indicates that the number of SCOs in Taiwan stands at 948 (Ministry of Interior of Social Affairs, 2007). SCOs are mostly established in big cities of Taiwan. For example, there are about 172 SCOs in Taipei County and 190 in Taipei City (Ministry of Interior of Social Affairs, 2007). Options are relatively limited for the rural seniors. More and more seniors living in rural areas, however, are asking for a greater supply of senior-care facilities (Tsai, 2004).

Moreover, senior welfare organizations' statistics (Ministry of Interior of Social Affairs, 2007) shows that the supply is falling short of the demand in rural Taiwan. Take Taichung County as an example, while about 3,562 people have requested SWOs, the available facilities could accommodate only 1,945 people. The authors of the present study conducted an interview with H. Chang, Dean of the E.L.F.C.T. Senior Care Organization in Tungshih Township, Taichung County, said that this problem of short supply is clearly felt in his nonprofit senior care organization (Personal communication, October 4, 2007). This shortage, on the other hand, suggests business potential in rural areas in Taiwan. More and more seniors, in rural Taiwan are looking for professional care through SCOs. Research indicates that the number of retirement homes and SCOs went from 765 in 2002 to 983 in 2007 (Ministry of Interior of Social Affairs, 2007). Currently, Taiwan's central government has encouraged local authorities and civil unions to actively build SCOs (Ministry of Interior of Social Affairs, 2007).

In the future, more and more SCOs will jump into this rural market in Taiwan. To enhance the competitive advantage of SCOs in rural Taiwan, it is important to focus on rural senior customers' satisfaction dimensions in their evaluations of the SCOs. Studies (e.g., Jun and Cai, 2001; Jun et al., 2004; Nwankwo, 2007; Petrochuk, 1999; Lee, 2002) have showed that companies have to know and understand the dimensions of their customers' satisfaction in order to sustain their competitiveness in the marketplace.

Definition of Customer Satisfaction

Customer satisfaction has attracted a great deal of attention in the literature because of its potential influence on consumer behavioral intentions and customer retention (Cronin et al., 2000). The authors of

the present study used the theory by Parasuraman, et al. (1985, p.6-7), who developed a general list of ten dimensions on customer satisfaction (see the detail definition of each dimension on Table 1). Service quality is measured by calculating the difference in scores between the customer's expected level of service and level of service delivered. Several studies have shown that a high level of customer service quality can exert a positive influence on customer satisfaction (Parasuraman et al., 1988; Cronin and Taylor, 1992; Zeithaml et al., 1996; Ramsaran-Fowdar, 2006).

Table 1: Parasuraman et al's ten dimensions of service quality

Ten Dimensions	Definition
Access	Ease of contacting service firm by telephone
Communication	Explaining service to customers in language they can understand
Competence	Knowledge and skill of customer-contact personnel
Courtesy	Friendliness of customer-contact personnel
Credibility	Trustworthiness of customer-contact personnel
Reliability	Performing dependable service
Responsiveness	Willingness and ability to provide prompt service
Security	Confidentiality of transactions
Tangibles	Appearance of physical facilities and personnel
Understanding the Customers	Effort to ascertain a customer's specific requirements

RESEARCH DESIGN

Based on the above-mentioned research findings, a quantitative analysis using survey and statistical methods was conducted to identify possible answers to the research questions (listed below).

Instrument Development

The survey instrument was based on the combined designs by Nwankwo (2007) drawing on Parasuraman et al's (1985) ten service quality dimensions (i.e., access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles, and employee's understanding of their customers). The second part of the survey was to collect demographic information and was based on the studies by Petrochuk (1999) and Kleinsorge and Koening (1991). The authors developed a questionnaire that asked the sample to evaluate SCOs' service quality as well as their customer satisfaction in rural areas of central Taiwan (see the detail survey instrument from Appendix A). The questionnaire consisted of 21 Likert-scale items. Nearly half of the items are phrased positively, and half negatively. A positively worded statement is one for which a very satisfied participant would select strongly agree. A negatively worded statement is one for which a very satisfied participant would elect strongly disagree. (Stamps, 1997).

Creswell (2002) states that for a quantitative correlational study the results should apply to as many people as possible; therefore, a sample was chosen that was representatives of the population. The sample is a subset of the population that meets the study criteria. A larger sample more closely reflects the characteristic of a larger population (Colling, 2003). The authors hired Focus Survey Research Company to conduct the questionnaire survey and collect the data. The target population was the 3,008 senior residents living in the 94 private SCOs in rural areas of central Taiwan, where a random sample was selected to participate the survey through drop-off and face to face interview. In order to obtain a reliable output, substantial consideration must be given to the sample size (n) and the number of predictors (K). A recommended ratio is identified by Tabachnick and Fidell (1996), who put the simple rule of thumb as $n \geq 50+8K$. Therefore the sample size is 130 (K=10).

Research Questions and Hypotheses

Research Question #1: is there a significant relationship between the senior customers' satisfaction and the ten dimensions of SCOs' service quality (i.e., access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles, and employee's understanding of their customers) in rural areas of central Taiwan?

Research Question #2: Do the demographic factors (i.e., gender, age, education level, the length of residence, health condition, marital status, percentage of care paid by self or family, and monthly income) have significant impacts upon customer satisfaction?

Hypothesis #1: The senior customer satisfaction is highly correlated with the ten dimensions (i.e., access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles, and employee's understanding of their customers) in rural areas of central Taiwan's senior- care industry.

Hypothesis #2: The demographic factors (i.e., gender, age, education level, length of residence, health condition, marital status, percentage of care paid by self or family, and monthly income) will have significant impact upon customer satisfaction.

The dependant variable of this study is customer satisfaction. The independent valuables of this study are the ten dimensions and eight demographic factors. The authors used a correlational statistical approach to study the relationships. Therefore, a quantitative correlational design can be considered an effective method for analyzing data and understanding relationships. Data analyses included independent samples t-test, one-way analysis of variance (ANOVA) and multiple regression analysis were conducted to test these relationships.

RESULTS AND DISCUSSION

Responses to the Survey

In this study, data were gathered during the period of June to July 2008 from a total effective 143 SCOs respondents in central Taiwan by the Focus Research Company. The data collection for this research study was hired by the professional survey company Focus Research Company which operated under the authors' directions. Each participant was provided the following: (a) letter of introduction, (b) informed consent form, (c) survey questionnaires. 143 out of the 220 people had responded to the inquiry during this drop-off collection phase, with the response rate being around 65%. On the basis of the data set obtained during the initial collection phase, some modifications on the questionnaire design were made to reduce the response time and, thus, to increase the response rate.

An evaluation of missing data and outliers (i.e., extreme values) led to the elimination of 48 cases, reducing the number of responses to 95 for further statistical analyses. The test of data normality, linearity, and homoscedasticity were also conducted in order to satisfy the general assumptions in multivariate statistical testing. Mertler and Vannatta (2005) suggested that "when the assumptions of linearity, normality, and homoscedasticity are met, residuals will create an approximate rectangular distribution with a concentration of scores along the center" (p.55). The scatterplots revealed that the residual plot created a rectangle shape with scores concentrated in the center, suggesting that the collected data set had satisfied the general assumptions of normality, linearity, and homoscedasticity in multivariate statistical testing.

Statistical Results and Discussions

Result 1: Table 2 and 3 represented the primary outputs of multiple regression. A review of the tolerance statistics presented in Table 3 indicated that all IVs were tolerated in the model (with the tolerance statistics exceeding 0.1). Mertler and Vannata (2005) explain, **"**…if the tolerance value for a given IV is less than 0.1, multicollinearity is a distinct problem" (p. 169). Thus, collinearity is not a serious problem for the current data. The model summary (see Table 2) indicated that the overall model of the ten IVs is significantly related to the customer satisfaction [Adjusted R^2 = .451, F (10, 83) = 8.650, p<.05]. Therefore, the results supported the hypothesis that the 10 dimensions are significantly correlated with the senior customer satisfaction in the SCOs. In addition, the statistical results also showed that courtesy and security are particularly significantly and positively related to customer satisfaction. The statistical results

led to the development of a multiple regression function using beta weight on Table 3.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	Df1	Df2	Sig. F Change
1	.714(a)	.510	.451	.510	8.650	10	83	.000

* Dependent variable: customer satisfaction. Independent variable: access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles, and understanding the customer.

Table 3: Coefficients

Model		Standardized Coefficients Beta	Collinearity Statistics Tolerance	VIF	T	Sig.
1	(Constant)				-1.278	.205
	Access	.050	.533	1.875	.474	.637
	Communication	.048	.383	2.611	.389	.698
	Competence	.006	.431	2.318	.050	.960
	Courtesy	.370	.440	2.274	3.198	**.002***
	Credibility	-.092	.459	2.180	-.813	.418
	Reliability	-.074	.497	2.012	-.677	.500
	Responsiveness	.021	.502	1.992	.195	.846
	Security	.224	.482	2.074	2.026	**.046***
	Tangibles	.231	.360	2.781	1.807	.074
	Understanding the Customer	.098	.533	1.877	.932	.354

* $P < 0.05$, Because the observed significance value is less than 0.05, it would safe to say that there were highly significant effects of courtesy and security on senior customers' satisfaction when living in senior-care organizations in rural areas of central Taiwan.

The general model of the hypothesis of the present study is specified as:

(1)

Y(Customer Satisfaction) = 0.050X (Access) + 0.048X (Communication) + 0.006X (Competence) + 0.370X (Courtesy) - 0.092X (Credibility) – 0.074X (Reliability) + 0.021X (Responsiveness) + 0.224X (Security) + 0.231X (Tangibles) + 0.098X (Understanding the Customer).

Result 2: Table 4 and 5 represented the primary outputs of one-way ANOVA and T-test for each demographic factor. Table 4 shows the statistic results of the 143 seniors' demographic factors (age, education level, length of residence, health condition, marital status, percentage of care paid by self or family and monthly income) significant impact upon customer satisfaction. The results show that age and health conditions have highly significant impact on customer satisfaction when living in the senior-care organizations. Field (2005) mention that "Social scientists use a cut-off point of 0.05 as their criterion for statically significance." Thus, because the observed significance value is less than 0.05, it would safe to say that there were significant effects of age and health conditions on senior customers' satisfaction when living in senior-care organizations in rural areas of central Taiwan. Table 5 shows that the gender was not statistically significant (P>0.05). Brace, Kemp and Snelgar (2006) maintain, "If Leven's p >.05, then there is equality of variance, use the top row of value for t. If Levene's p ≦.05, then there is not equality of variance, use the bottom row of values for t." Therefore, the result shows P > 0.05 for the Levene's test, makes it clear that there is equality of variance.

Table 4:   One-Way ANOVA Results of Demographic Factors

	df	F	Sig.
Between Groups **(Age)**	2	5.678	**.001***
Within Groups	141		
Total	143		
Between Groups (Education)	4	1.274	.280
Within Groups	139		
Total	143		
Between Groups (Length of Residence)	4	.332	.856
Within Groups	139		
Total	143		
Between Groups **(Health)**	4	9.800	**.000***
Within Groups	139		
Total	143		
Between Groups (Marital Status)	4	.402	.807
Within Groups	139		
Total	143		
Between Groups (% of Care Payment)	5	.312	.906
Within Groups	138		
Total	143		
Between Groups (Monthly Income)	4	1.739	.141
Within Groups	139		
Total	143		

* $P < 0.05$. Dependent variable: customer satisfaction. Independent variable: education level, length of residence, health condition, marital status, percentage of care paid by self or family and monthly income. Because the observed significance value is less than 0.05, it would safe to say that there were highly significant effects of age and health conditions on senior customers' satisfaction when living in senior-care organizations in rural areas of central Taiwan.

Table 5: T-Test Result of Gender

	Levene's Test for Equality of Variances				95% Confidence Interval of the Difference	
	F	Sig.	t	Sig (2-tailed)	Lower	Upper
Equal variance assumed	0.236	0.627*	-1.358	0.175*	-0.362	0.066
Equal Variance not assumed			-1.357	0.176	-0.363	0.067

* For the results there is equality of variance, so t = -1.358, p = 0. 175; $P > 0.05$. **Dependent variable: customer satisfaction. Independent variable: gender.

CONCLUSION AND RECOMMENDATIONS

Competition in the SCOs for senior people has been upheld as a means of increasing efficiency, driving down prices and raising the quality. Choices are made available to meet user expectations of healthcare and to improve service provision. Optimizing the management and process of care transitions of senior peoples is important to senior-care providers. In a word, catching the senior customers' hearts is the key to winning the business in today's ever-competitive senior-care market. Senior-care organizations have to understand the level of customer satisfaction in order to improve its service quality (Parasuraman et al., 1985). Efforts to align marketing strategies with the goal of maximizing customer satisfaction have been embraced in earnest as a new marketing concept by product and service providers. A theoretical framework of customer satisfaction is a way of measuring the perceived quality of a service product.

For senior service providers, it is important to reduce the complexity and fragmentation of the care process system (Clarfield et al., 2001). It seems essential to encourage the SCOs either to provide a range of services across the care continuum or to develop partnerships with other providers whose services complement their own (Coleman, et al., 2004; Cheek et al., 2006). This needs senior-care organization to adopt its policies practicable. This strategy could also limit the number of agencies a senior resident customer has to deal with, thereby reducing the complexity of the care system.

Other regulatory and policy constraints, such as requirements for employees training, will also pose a block to future competition among senior-care providers (Knibb, 2006). Therefore, providing quality services to the seniors is a multidimensional activity; employees' qualities are the key to customer satisfaction of the service quality (Cheek et al., 2006). If SCOs did not expend money training their employees on new and improved methods of carrying out business simply lag behind. Companies that have an employee performance management system have developed an affordable way to keep staffs trained and educated on the best possible methods. Cheek (2004) suggests that senor health-care related education and training should focus on short term; curative, episodic care provides a limited basis for developing worker that can contribute to the provision of services prompting positive, long term outcomes for senior people. For the SCOs in rural areas of central Taiwan, education and training should emphasize courtesy and security, and how these factors may be employed to enhance the senior-customer satisfaction.

The SCOs managers often become so caught up in daily administration that they fail to recognize that the satisfaction of the ultimate customers goes unmeasured and in many instances is totally ignored. The present study is a pioneer in conducting empirical studies to develop a diagnostic instrument for senior-customer satisfaction. This instrument may be an effective tool of evaluating ultimate customer satisfaction in way of developing future employee training programs. The results of the present study suggest that the SCOs in the rural areas of central Taiwan should customize their employee training programs to focus on *courtesy and security*. On the other hand, these findings suggest that the SCOs service providers might have overlooked the above-mentioned two priority dimensions of customer satisfaction which may have helped them gain a sustainable competitive advantage in rural areas of central Taiwan. Moreover, the results of demographic variables show that the *age and the health* condition have a significant impact on customer satisfaction with living in senior-care organizations in rural areas of central Taiwan. The satisfaction results generated in the present study are of practical value to both the executives of senior-care industry and the business investors.

Some of the surveyed senior residents in SCOs were not in good health, and their responses could have been biased or misleading. In addition, the administrators at the surveyed SCOs sometimes interrupted the survey process and therefore may have lowered the accuracy of data. Furthermore, as the study sample was taken from rural areas of central Taiwan, the results of the present study may not be generalized to other regions of Taiwan.

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APPENDIX A: THE SURVEY OF THE STRUCTURE OF THE INSTRUMENT

Section I: <u>**Senior Resident Satisfaction Survey**</u>

Customer Satisfaction – Service Quality Dimensions Identified by Parasuraman et al. (1985) and modified by Nwankwo (2007)

Question 3 & 13 addressed **Access**

Question 5 & 14 addressed **Communication**

Question 12 & 16 addressed **Competence**

Question 1 & 17 addressed **Courtesy**

Question 7 & 18 addressed **Credibility**

Question 2 & 19 addressed **Reliability**

Question 4 & 11 addressed **Responsiveness**

Question 15 & 20 addressed **Security**

Question 8, 9 & 21 addressed **Tangibles**

Question 6 & 10 addressed **Understanding the Customers**

Customer Satisfaction –Service Quality Dimensions Identified by Besterfield et al. (1995) and Modified by Nwankwo (2007).

Question 27 addressed **Communication.**

Customer Satisfaction – Overall Customer Satisfaction (Nwankwo, 2007).

Question 28 addressed **Overall Satisfaction with the Service Quality at Senior-care organizations.**

Section II: <u>**Demographic Information**</u>

The Demographic Questionnaire is Based on Petrochuk (1999) and Kleinsorge and Koening (1991).

Question 1 addressed **Gender** (Petrochuk, 1999).

Question 2 addressed **Age** (Petrochuk, 1999).

Question 3 addressed **Education Level** (Petrochuk, 1999).

Question 4 addressed **Length of Residence** (Kleinsorge and Koening, 1991).

Question 5addressed **Health Condition** (Petrochuk, 1999).

Question 6 addressed **Marital Status** (Petrochuk, 1999).

Question 7 addressed **Percent of the Living Cost Provided by the Seniors and Their Families** (Kleinsorge and Koening, 1991).

Question 8 addressed **Monthly Income** (Petrochuk, 1999).