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FAHP FOR EVALUATING THE SERVICE QUALITY OF CHAIN DRUGSTORE

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ABSTRACT

In recent years, along with stagnating wage and souring price index, consumers have grown awareness of shopping behaviors and rights of purchase. More and more retailers strengthen businesses by sustaining quality control and improvement for continuing profits. This paper intergrades the model of Parasuraman, Zeithaml and Berry (PZB) customer services as a measure with retail service quality scale (RSQS), and adopts fuzzy analytic hierarchy process (FAHP) to further analyze possible problems and performances of drugstores. By the criteria based on literature reviews and the interviews with experts, this paper provides results that reveal what consumers most concern-customer oriented resolution. On the contrary, what consumers weigh the least are on physical aspects. As a result, businesses must reinforce the quality of customer services and competitiveness.

KEYWORDS: PZB, RSOS, Fuzzy Analytic Hierarchy Process (FAHP), Service Quality, Drugstore

INTRODUCTION

In recent years, with the rise of aging population and GDP, consumers' behaviors have gradually changed. Particularly, health care is highly valued and so the market of health products soars. Along with the upgrading National Health Insurance and the implemented separation of prescribing and dispensing, traditional pharmacies were soon changed afterwards. By diverse management, new styles of chain stores emerged for great convenience and profit. Further, drugstores are compound-oriented that sell not just medicine and health products, but also daily commodities, maternal and infant supplies, cosmetics and so forth.

Chen (1999) believes that only by emphasizing compound-and-chain oriented business model, can pharmacies keep competitiveness in the retail market [6]. Arnold et al. (1991) thought that if retailers do not fully understand consumer behaviors, limitations of market strategies and management are meant to appear [1]. Therefore, marketing strategies and effectiveness are based on consumers' behaviors, which again denote that consumers' behaviors are the origin of every marketing strategy and success of business. Besides, to maintain positive relationship with consumers and reinforce service quality and meet their satisfaction is the common target of all drugstores.

Next, coupled with liberalization of retail industry, international, global competitors have joined the industry and become increasingly fierce. And the raising of consumption level and popularity and diversity of information has also made one-stop shopping available. Tanks to the rise of consumer awareness, service quality can directly affect consumers feel, thus service quality is becoming determinant.

The service of drugstore includes whole setting, line of motion, exchange and return process, consultation and so forth, thus measurement of drugstore evolves multi-criteria problem rather than single level or single criteria. Furthermore, service quality has the characteristics which are not easily measured and intangible. Utilizing precise values do not express evaluator's cognition for service quality of a drugstore. Therefore, this paper integrates the PZB model [15] and RSQS scale [10], and adopts fuzzy analytic hierarchy process (FAHP) to propose a complete evaluation model for drugstore. Finally, we obtain a fuzzy evaluative model via group decision which expects to provide reference of strengthened service connotation and improvement criteria for mangers.

LITERATURE REVIEWS

Chain Drugstore

The initial name of drugstore in Taiwan appears to be COSMED, a subsidiary of Uni-President Enterprises Corporation. At the time its first COSMED was established, its name tells it all [4]. The management focuses equally on medicine and cosmetics to the market. Similarly, the concept of WATSONS is a personal store which sells not only cosmetics and health products, but also delights. According to the definition of Chen (2003), "A chain drugstore is identified the number of seven or above, and focuses on health and beauty which products cover open-shelf medicine with open-shelf cosmetics. And then the ratio of product is uniform, and extends relativity to products of cosmetics and daily commodities. Moreover, retail outlet provides pharmacists and medicine consulting services [8]." And this concept also corresponds with the definition of this paper for chain drugstores.

Service Quality

The SERVQUAL was proposed by Parsuraman et al., (1988) which involves tangible, reliability, responsiveness, assurance and empathy [15]. The scale has well reliability and validity which can understand customer's expectancy and perception, so that it promotes service connotation and quality. Thus, this scale is widely accepted. And Dabholkar et al. thought that SERVQUAL is not effective when applying to retail, which modifies content of SERVQUAL [10]. Then measuring service quality must have an own scale for each retailer. Thus, the RSQS was proposed to provide more service quality. The scale involves five dimensions: physical aspect, reliability, personal interaction, problem solving, and policy. As for other relative literatures are shown in Table 1 Due to the focus of this paper is on service quality of drugstore, we combine the model of PZB with the scale of RSQS which proposed a complete evaluative model for service quality of drugstore and facilitates managers improve service quality.

Table 1: Service Quality Measurement in Prior Studies

Study	Context	Dimensions
Kuo (2004) [13]	Discuss the key success factors of chain drugstore.	Headquarter the attributes of products, marketing and promotions, human resources and the condition of operations.
Chen (2006) [7]	Consumer purchasing behavior in the drugstore	Physical environment, sale person expressions, customer satisfaction, trust and customer voluntary.
Pei and Huang (2009) [16]	Service quality of chain drugstore	Store image, value of promote perception, people interaction and guarantee.
Sheu et al., (2010) [19]	Service quality of 3C retail business	Reliability, responsiveness, assurance, empathy and tangibles.
Lin (2012) [14]	Discuss the key success factors of chain drugstore.	Business circle with five personal characters, pharmacists with five personal characters and drugstore employees.

Fuzzy set Theory and FAHP

Fuzzy set Theory

To deal with the ambiguity of human thought, Zadeh [22] introduced the concept of fuzzy set theory, which can effectively describe imprecise knowledge or human subjective judgment using linguistic terms. The linguistic terms are used to express people's feelings and judgment, which are considered vague. Because linguistic terms merely approximate subjective judgments of decision makers, the widely adopted triangular fuzzy number technique is applied to represent the vagueness of these linguistic terms.

Triangular Fuzzy Numbers: A fuzzy set $\tilde{T}$ in a universe of discourse *U* is characterized by a membership function $\mu_{\tilde{T}}(x)$ which associates a real number in the interval [0,1] with each element *x* in *X*, to represent the grade of membership of *x* in $\tilde{T}$. A triangular fuzzy number is a special type of fuzzy set, widely used in fuzzy applications. As shown in Figure. 1, a triangular fuzzy number can be defined as $\tilde{T} = (l, m, u)$ and its membership function is equal [12] to:

$$\mu_{\tilde{T}}(x) = \begin{cases} x-l/_{m-l}, & l \le x \le m \\ u-x/_{u-m}, & m \le x \le u \\ 0, & otherwise \end{cases} \quad (1)$$

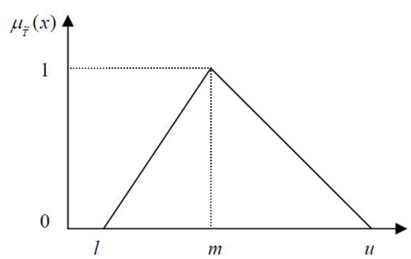

Figure 1: Triangular Fuzzy Number $\tilde{T}$

Where *l* and *u* are the lower and upper limits of the support of $\tilde{T}$, respectively, and *m* is the mid-value of $\tilde{T}$.

α–cut of triangular fuzzy number: The *α*–cut of a fuzzy number $\tilde{T}$ is the crisp set $\tilde{T}$ that contains all the elements of the universal set U whose membership grades in $\tilde{T}$ are greater than or equal to the specified value *α*, as shown in Figure. 2. By defining the interval of confidence at level *α*, the *α*–cut of a triangular fuzzy number $\tilde{T}$ is defined [26] as:

$$\tilde{T}^{\alpha} = [(m-l)\alpha + l, u - (u-m)\alpha], \quad 0 \le \alpha \le 1 \quad (2)$$

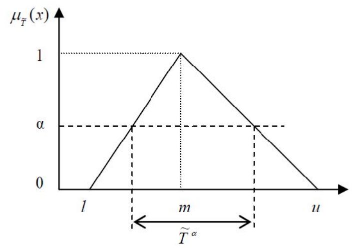

Figure 2: *α*–Cut of Triangular Fuzzy Number $\tilde{T}$

Useful operations using triangular fuzzy numbers: Given any two triangular fuzzy numbers $\tilde{T}_1 = (l_1, m_1, u_1)$ and $\tilde{T}_2 = (l_2, m_2, u_2)$, and a positive real number *r*, some useful operations on triangular fuzzy numbers $\tilde{T}_1$ and $\tilde{T}_2$ can be expressed as follows:

$$\tilde{T}_1 \oplus \tilde{T}_2 = (l_1 + l_2, m_1 + m_2, u_1 + u_2) \tag{3}$$

$$\tilde{T}_1 \otimes \tilde{T}_2 = (l_1 \times l_2, m_1 \times m_2, u_1 \times u_2) \tag{4}$$

$$r \otimes \tilde{T}_1 \cong (rl_1, rm_1, ru_1) \tag{5}$$

$$\tilde{T}_1^{-1} \cong (\tfrac{1}{l_1}, \tfrac{1}{m_1}, \tfrac{1}{u_1}) \tag{6}$$

Distance measurement method: The distance between two triangular fuzzy numbers can be defined using the vertex method [5]. Let $\tilde{T}_1 = (l_1, m_1, u_1)$ and $\tilde{T}_2 = (l_2, m_2, u_2)$ be two triangular fuzzy numbers; the distance between them is

$$d(\tilde{T}_1, \tilde{T}_2) = \sqrt{\tfrac{1}{3}[(l_1 - l_2)^2 + (m_1 - m_2)^2 + (u_1 - u_2)^2]} \tag{7}$$

Fuzzy Analytic Hierarchy Process (FAHP)

The analytic hierarchy process (AHP) is a useful method for solving complex decision making problems involving subjective judgment [18]. In AHP, the multi-attribute weight measurement is calculated via pair wise comparison of the relative importance of two factors. Assuming there is *n* number of decision elements, denoted as (E_1, E_2… E_n), its judgment matrix would be $A = [a_n]$, in which a represents the relative importance of E_1 and E_2. Using the two vector average normalization proposed by Saaty [17], the weight of E_1 is calculated as:

$$w_i = \left(\prod_{j=1}^{n} a_{ij}\right)^{1/n} \Big/ \sum_{j=1}^{n} \left(\prod_{j=1}^{n} a_{ij}\right)^{1/n}, \quad i, j = 1,2,\ldots,n \tag{8}$$

Where w_i denotes the weight of the *i*th decision element, and weight vector $W = (w_i)$, $i = 1 \ldots n$.

Though, AHP is designed to capture decision makers ‘knowledge and conventional AHP does not fully reflect thinking styles. However, it is well recognized that human perceptions and judgments are represented by imprecise linguistic patterns for complex problems. Linguistic and imprecise descriptions were difficult to comprehend by using AHP before recent developments in fuzzy decision making [3, 20]. Fuzzy set theory resembles human reasoning in its use of approximate information and uncertainty in decision generation. A major contribution of fuzzy set theory is its capability to represent vagueness [23-15]. At the same time, AHP was developed to solve multiple criteria decision making problems. By combining fuzzy set theory with AHP, fuzzy AHP allows a more accurate description of the multiple criteria decision making process [2]. The earliest work in fuzzy AHP was from Laarhoven and Pedrycz [20] who compared fuzzy ratios described with triangular membership function. Many studies using fuzzy AHP are designed to calculate the importance (weights) of evaluation items [11, 21]. Therefore, in this paper, we prefer the fuzzy AHP method since this method is to explicitly capture the importance assessments of imprecise human judgments.

RESEARCH METHOD

Constructing the Hierarchy Framework

To validate the main influences on service quality of chain drugstore, measurement items were developed using expert interview method dealing with these factors. A questionnaire was used to verify the factors that had been identified in the literature, with the aim of investigating their degree of importance. Three experts are invited to discuss the problem of the hierarchical structure of service quality of chain store. A five-point Liker scale is used (ranging from 1 = strongly disagree to 5 = strongly agree). After discussing, five criteria (‘modern facilities and decor’, ‘suitable location and traffic convenience’, ‘clear product layout’, ‘clear product grouping’ and ‘proper attire and attitude of attendants’) have a dimension 1, which was called rename ‘Physical Aspects’. Criteria ‘lowest price guarantee in promotion’, ‘product variety’, ‘well-labeled expiry date’, ‘precise calculation’ and ‘unique number and’ were from the dimension ‘Reliability’. Criteria ‘stall expertise’, ‘offering one on one service’, ‘providing customer consulting’, ‘and customer first ’and ‘customer courtesy ‘were from the dimension ‘Personal interaction’. Criteria ‘product return acceptance ‘and ‘rapid response ‘were from the dimension ‘Problem solving’ And the ‘fast checkout’, ‘clear price labeling’, ‘high product quality’ and‘ offering free trials ‘were integrated to form the dimension ‘Assurance’. On the basis of the analysis results presented above, this study developed a hierarchical structure for the research problem (see Figure 3). The goal is to evaluate the relative weights of the factors influencing drugstore (Level 1). Level 2 contains the five dimensions which promote drugstore. Finally, the twenty-one criteria form Level 3.

Computational Procedure of Fuzzy AHP

Scaling the Relative Importance of Decision Elements

The design of the questionnaire incorporated pair wise comparisons of decision elements within the hierarchical framework. Each decision maker was asked to express the relative importance of two decision elements in the same level using a nine point rating scale. The collection pair wise comparison scores were then used to form pair wise comparison matrices for each of the K decision makers.

***Constructing the fuzzy positive reciprocal matrix*:** The pair wise comparison scores were transformed into linguistic variables, which were represented by fuzzy numbers (see Table II). A fuzzy reciprocal judgment matrix $\widetilde{A}^k$ can be established as

$$\widetilde{A}^k = [\widetilde{a}_{ij}]^k \tag{9}$$

Where n is the number of related decision elements at this level, $\widetilde{a}_{ij}^k = 1$, $\forall i = j$ and $\widetilde{a}_{ij}^k = 1/\widetilde{a}_{ij}^k$, $\forall i, j$=1, 2, . ,n.

Once fuzzy reciprocal judgment matrix $\tilde{a}^k$ is established, the fuzzy numbers in $\tilde{a}^k$ are transformed into triangular fuzzy numbers based on Table 2 and equation (6). According to Buckley [3], a fuzzy positive reciprocal matrix can be defined as

$$\tilde{R}^k = [\tilde{r}_{ij}]^k \tag{10}$$

Where $\tilde{R}^k$ is the fuzzy positive reciprocal matrix for decision maker k, $\tilde{r}_{ij} = (l_{ij}, m_{ij}, u_{ij})$. $\tilde{r}_{ij}$ Is the relative difference in the importance between decision elements i and j. $r_{11} = (1, 1, 1)$, $\forall i = j$, $\tilde{r}_{ij} = 1/\tilde{r}_{ij}^k$, $\forall i, j = 1, 2. . . n$.

***Consistency Test*:** According to the analysis of Csutora & Buckley [9], let $\tilde{R} = [\tilde{r}_{ij}]$ be a fuzzy positive reciprocal matrix with triangular fuzzy number $\tilde{r}_{ij} = (\alpha_{ij}, \beta_{ij}, \gamma_{ij})$ and form $R = [\beta_{ij}]$. If R is consistent, then $\tilde{R}$ is consistent. Saaty [18] provides a consistency index to measure any inconsistency within the judgments in each pair wise comparison matrix as well as the entire hierarchy. If the calculated *C.I.* of a pair wise comparison matrix is less than 0.1, the consistency of the pair wise judgment can be thought of as being acceptable. If the consistency test is not passed, the original values in the pair wise comparison matrix must be revised by the decision maker.

Calculating Fuzzy Weights: This procedure is as follows:

- Based on the α-cut method (equation (2)), set α= 1 to obtain the positive matrix of decision maker k, $\tilde{R}_m^k = [\tilde{r}_{ij}]_m^k$.
- Next, set α= 0 to obtain the lower bound and upper bound positive matrices of decision maker k, $\tilde{R}_l^k = [\tilde{r}_{ij}]_l^k$ and $\tilde{R}_u^k = [\tilde{r}_{ij}]_u^k$.
- Following the weight calculation procedure proposed in AHP, use equation (8) and (9) to calculate weight vertices $W_m^k = (w_i)_m^k$, $W_l^k = (w_i)_l^k$ and $W_u^k = (w_i)_u^k$.
- By [7], two constants, the smallest possible S_l^k and largest possible S_u^k, are used to minimize the fuzziness of the weight. S_l^k and S_u^k can be expressed as follows:

$$S_l^k = \min\{w_{im}^k / w_{il}^k \mid 1 \le i \le n\} \tag{13}$$

$$S_u^k = \min\{w_{im}^k / w_{iu}^k \mid 1 \le i \le n\} \tag{14}$$

The lower bound and upper bound for the weight are defined as

$$w_{il}^{*k} = S_l^k w_{il}^k, \quad i = 1, 2, \ldots, n \tag{15}$$

$$w_{iu}^{*k} = S_u^k w_{iu}^k, \quad i = 1, 2, \ldots, n \tag{16}$$

Thus, the lower and upper weight vectors are $(w_i^*)_l^k$ and $(w_i^*)_u^k$, i=1… n.

- By combining the lower, the middle and the upper bound weight vectors, the fuzzy weight matrix for decision maker k can be obtained, and is defined as

$$\tilde{\tilde{W}}_u^k = (w_{il}^{*k}, w_{im}^{*k}, w_{iu}^{*k}), i = 1,\dots,n \tag{17}$$

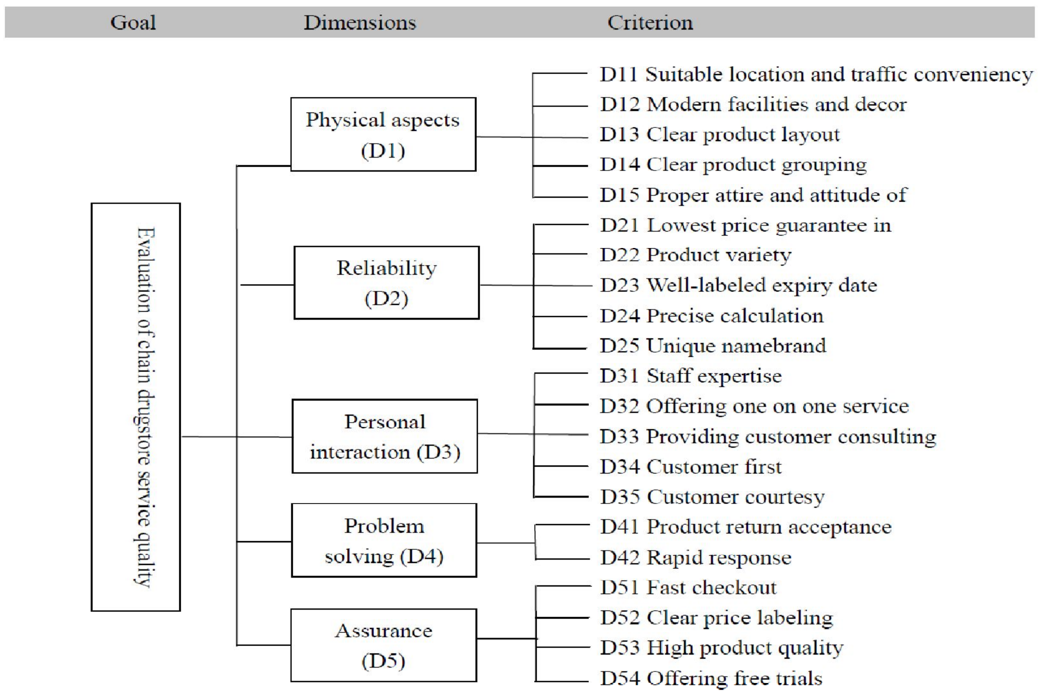

Figure 3: The Hierarchical Structure of this Research Problem

***Combine the Opinions of Decision Makers*:** This procedure is used to combine the fuzzy weights of decision makers, that

$$\tilde{\tilde{W}}_i = \frac{1}{K}(\tilde{W}_i^1 \oplus \tilde{W}_i^2 \oplus \cdots \oplus \tilde{W}_i^k) \tag{18}$$

Where $\tilde{\tilde{W}}_i$ is the combined fuzzy weight of decision element i for K decision makers, $\tilde{W}_i^k$ is the fuzzy weight of decision element i for K decision makers, and K is the number of decision makers.

***Undertaking Defuzzication and Obtaining the Final Ranking*:** Applying the distance measurement method to undertake defuzzification, the defuzzification value of fuzzy weights $R_{\overline{w}_i}$ is calculated using the [4]. The ranking order of the decision elements is determined by $R_{\overline{w}_i}$, which can be expressed as follows:

$$R_{\overline{w}_i} = d^-(\tilde{\tilde{W}}_i,0) \big/ d^-(\tilde{\tilde{W}}_i,0) + d^*(\tilde{\tilde{W}}_i,1), \quad i = 1,2,\dots,n, \quad 0 \le R_{\overline{w}_i} \le 1 \tag{19}$$

Where $d^-(\tilde{\tilde{W}}_i,0)$ and $d^*(\tilde{\tilde{W}}_i,1)$ are the distance measurement between two fuzzy numbers (seen equation (7)).

The weight ω_i for decision element i am the normalization of $R_{\overline{w}_i}$, which can be expressed as:

$$\omega_i = R_{\overline{w}_i} \Big/ \sum_{i=1}^{n} R_{\overline{w}_i} , \quad i = 1,2,\ldots,n, \tag{20}$$

Table 2: Triangular Fuzzy Numbers

Linguistic Variables	Fuzzy Number	Triangular Fuzzy Numbers
Equally important	$\tilde{1}$	(1, 1, 1)
Intermediate	$\tilde{2}$	(1, 2, 3)
Weakly more important	$\tilde{3}$	(2, 3, 4)
Intermediate	$\tilde{4}$	(3, 4, 5)
Strongly more important	$\tilde{5}$	(4, 5, 6)
Intermediate	$\tilde{6}$	(5, 6, 7)
Very strongly more important	$\tilde{7}$	(6, 7, 8)
Intermediate	$\tilde{8}$	(7, 8, 9)
Absolutely more important	$\tilde{9}$	(8, 9, 9)

EMPIRICAL STUDY OF CHAIN DRUGSTORE

Background and Problem Description

The drugstore here in this research indicates chain stores which manages retail route for health and beauty, mail goods include open patent medicine and maintenance cosmetics. The goods ratio should be balanced. It extends relative goods and the articles for daily use. Moreover, this retailer has in-store pharmacists and medicine consulting services. Because drugstores and pharmacies have different market targets, the goods of chain drugstores are displayed on-shelves, and cosmetics is particularly the most competitive goods for its qualities of light, thin, short, and free trials offer, high independence and style for small amount and variety. It is the fascination of open cosmetics.

The drugstore industry is a marketing competition in increasing market share. By factors such as compatible price strategies, product promotion, product differentiation, product uniqueness, customer service, pharmacist consultation or product assurance measures to achieve marketing profits. Particularly, to hold customer loyalty, service quality is the key factor among all. Thus, we use an empirical study to illustrate the use of fuzzy AHP and evaluate the relative importance of factors which affect service quality of drugstore.

Constructing the Fuzzy AHP Method for the Factors Influencing Drugstore

- Scaling the relative importance of influence factors: A questionnaire is designed in the form of a pair wise comparison based on the hierarchical structure described Figure. 3. A conventional AHP questionnaire format is used to indicate the relative importance of each attribute in the same hierarchy.

We interviewed four managers from the chain drugstore in Taiwan and two teachers whose specialty is Retail and Service Quality to evaluate the chain drugstore hierarchy framework. These six experts were selected because of their familiarity with multiple aspects of chain drugstores. The aim of the interview was to collect participant's opinions, to measure the relative weight of the influences on chain drugstore. Therefore, these participants were asked to complete the questionnaire and their subjective judgments analyzed for factors which affect chain drugstore.

- Constructing fuzzy positive reciprocal matrix: Triangular fuzzy numbers were used to construct fuzzy positive reciprocal matrices for each level in the hierarchy, formulated using equation (10).
- Consistency test: For decision maker 1's opinions, the consistency was tested using equations (11) and (12). The results of the consistency test gave the *C.I.* of 0.070, 0.097, 0.083, 0.077, 0 and 0.085, respectively, which shows that all of the judgments of decision maker 1 are consistent.
- Calculating fuzzy weights: After testing *C.I.*, we adopted the method of [9] to calculate the fuzzy weights of the factors influencing chain drugstore of each level. Equations (13)-(17) were used to obtain fuzzy weight matrix for decision maker 1.
- Combine the opinions of decision makers: Above 2-4 are performed for decision makers 2-6. The fuzzy weights from all decision makers were combined using equation (18) to generate the overall fuzzy weights.
- Undertaking defuzzication and obtaining final ranking: Finally, using equations (19) and (20), the overall importance weights for all decision makers were determined. In order to compare all factors influencing chain drugstore at the same layer of the hierarchical structure, the priority weights and ranking are summarized in Table 3.

Table 3: Weighted Dimensions and Attributes of Factors Influencing Chain Drugstore

Dimensions/Criteria	Weight of Each Dimension	Weight of Dimension (Ranking)	Weight over all Criteria (Ranking)
Physical aspect (D1)	0.1432		
(D11)		0.1819 (5)	0.0260 (21)
(D12)		**0.2218 (1)**	0.0318 (14)
(D13)		0.1832 (4)	0.0262 (20)
(D14)		0.2149 (2)	0.0308 (15)
(D15)		0.1982 (3)	0.0284 (19)
Reliability (D2)	0.2217		
(D21)		0.1962 (4)	0.0432 (9)
(D22)		**0.2061 (1)**	0.0457 (6)
(D23)		0.2008 (3)	0.0445 (8)
(D24)		0.1952 (5)	0.0433 (11)
(D25)		0.2017 (2)	0.0447 (7)
Personal interaction (D3)	0.1573		
(D31)		0.2014 (2)	0.0331 (13)
(D32)		0.1942 (4)	0.0305 (17)
(D33)		**0.2137 (1)**	0.0336 (12)
(D34)		0.1864 (5)	0.0293 (18)
(D35)		0.1953 (3)	0.0307 (16)
Problem solving (D4)	**0.2714**		
(D41)		0.4628 (2)	0.1256 (2)
(D42)		**0.5372 (1)**	**0.1458 (1)**
Assurance (D5)	0.2064		
(D51)		0.2613 (2)	0.0539 (4)
(D52)		**0.2973 (1)**	0.0613 (3)
(D53)		0.2134 (4)	0.0440 (10)
(D54)		0.2281 (3)	0.0471 (5)

RESULTS AND DISCUSSIONS

The final weights for the five dimensions affecting service quality of drugstores are shown in Table 4, which are 'solving problem' (0.2714) and 'reliability' (0.2217). There are the two most important dimensions affecting service quality of drugstore in the Taiwanese retail industry, followed by 'assurance' (0.2064), 'personal interaction' (0.1573) and 'physical aspects' (0.1432). The criteria 'rapid response' (0.1458), 'product return acceptance' (0.1256), 'clear price labeling' (0.0613), 'fast checkout' (0.0539) and 'offering free trials' (0.0471) show the highest importance with respect to all criteria. The relatively slight differences in weights between the five dimensions imply they are all significant. The result indicates that 'solving problem' outweighs all other dimensions. This shows that consumers value majority on complaint handling and response and product return. In addition, customer complaints are caused by product or service dissatisfaction whereas product returns are resulted from unacceptable quality. If the management of a drugstore can effective to solve problem, they not only maintain image and improve drawbacks, but also cause customers tend to visit again. Next, reliability here refers to the confidence degree of business. Customers constantly shop at particular stores for the reason of store reliability. On the contrary, customer churn occurs due to distrust. Thus, establishing a firm relationship must be an issue highly valued.

The top three criterion customers value the most are 'rapid response', 'product return acceptance' and 'clear price labeling'. This shows that business must realize customers' points of view to promote service quality. The last three are 'proper attire and attitude of attendants', 'clear product layout' and 'modern facilities and decor'. However, the lower criteria do not show customer value less. In service industries which customer concerns invisible service is provided by business. The closer observation to customer's feelings, the more desirable service quality can a drugstore provide.

CONCLUSIONS

In recent years, with the increase of GDP, advanced concept of maintenance, and the higher value people pay to health care, there is a significant surge in the drugstore industry. And since service quality is a key factor to maintain the corporate image and customer satisfaction. Therefore, in the service industry, service quality is no doubt the key in competition.

However, we tend to neglect the fact that desirable service lies in where consumers' expectations are met, and we are aware that this can never be solved by looking at one single layer. This paper aims to look at this problem in every aspect and determines to offer a solution with multiple criteria of evaluation.

In investigating both concerns, we establish the procedures for identifying the most important attributes of service qualify for drugstore base on these attributes. The evaluation procedures consist of the following steps:

- Identify the evaluation criteria for drugstore service quality;
- Establish the hierarchical structure for drugstore service quality;
- Evaluate the average importance of each criterion by applying Fuzzy Analytic Hierarchical Process over all the respondents;
- Discuss how dimensions or criteria influence one another.

Finally, this paper emphasizes method application, and the alternative method we adopted may not all-inclusively meet each standard. Therefore, we believe the Multi-Objective Programming Method can be applied in the near future to withdraw a fairer and more accurate principle.

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