

Identifying and Prioritizing Effective Factors on Price Satisfaction in Banking Services using Fuzzy AHP

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Abstract

An important essential way to establish a sustainable competitive position is to identify effective factors on sustainable competitive advantage. Organizations recently need tools including customers' price satisfaction for their decisions in order to sustain their economic life in a highly competitive environment. The main purpose of identifying price satisfaction is for better recognition of price in favor of goods and services which organization receives against competitors and as a result access to better results in business. Therefore, the main objective of this study is to identify key factors of price satisfaction in banking services of Refah Bank; thus, the authors identified six different groups of effective factors on price satisfaction based on which hierarchical structure was first extracted and then analyzed by fuzzy AHP. Based on findings obtained from model, price quality rate has the most weight compared to effective factors on price satisfaction. In the third level of the model, factors were identified from the most to the least important ones in Refah Bank. Accordingly, the sub-criteria of price-quality ratio, 'there is a good combination of prices for high-quality services' is of great importance.

Keywords: Customer satisfaction, price satisfaction, price quality, relative price.

Introduction

Banks are recently considered as an important loop of finance chain. Competitive setting of global economy directs banks to take advantage different techniques for qualitative and quantitative development of their market¹. Hence, Iranian banking industry moves to competitiveness along with other industries by changes in deregulation, activities of credit institutions and private banks and new technologies during recent decades. Meanwhile, those organizations can succeed that are consistent with these changes and demonstrate pre-active reactions to competitive environment. Therefore, tracking, understanding and reacting to competitive environment can be considered as a special aspect of marketing activities. Considering competitiveness of banking service market, emergence of private banks and presence of foreign banks in a near future as well as necessity of survival, banks as an economic element of a country attempted to make their marketing activities². Effectiveness of marketing activities can mostly influence on success of banks. The factors which can influence on marketing effectiveness and service-related customer satisfaction are controversial. Recently, the most important problem of banks is that how they are seen in a market sector, what are their values and credits and what is their image for customers³.

Banks which gain their major resources from customers consider customer satisfaction as a measure of success. Hence, various dimensions of price satisfaction potentially drive the customer satisfaction⁴. Up to now, price satisfaction with banks has not been deeply addressed in international marketing

literature. Only a few researchers have discussed aspects of price satisfaction for services. Therefore, a definition of price satisfaction is derived from the more common construct of customer satisfaction⁵.

The main problem of present study is that, considering situation of private banking in Iran, what factors cause price satisfaction; private banks need to focus on what factors which play a key role in satisfying customers with price. The present study tries to rank and weigh price-effective factors using fuzzy AHP which is a so-called multivariate decision method. Finally, the studied bank can respond its customer needs to gain competitive advantage using clear monetary and financial policies.

Literature Review: To overview theories and concepts of price satisfaction, it was tried to note related history and definitions as well as conducted studies in this area while discussing the importance of price satisfaction in banks.

Price: It is difficult to recognize constituents of price. For many products, price is the same amount written on their labels. However, price of financial services and products can be in different forms. Some prices are tangible and some others intangibles. Some prices are based on finance; for example, price of financial services are in the form of interest rate, wage etc. While, some prices are not based on finance; they include waiting customers, inefficient employees, inappropriate environment etc. Therefore, there are different definitions of price. Price of a product or a service involves significant aspects for both seller and buyer, as shown in table 1².

Table-1
Important aspects of price for both seller and buyer

The importance of price for the seller	The importance of price for the buyer
The price reflects cost of the product or service.	The price reflects cost for the customer.
Price determines proceeds from the sales of the product or service.	Price determines the value of the product or service.
Prices shows long-term profits and survival of the organization.	Price indicates quality of the product or service or its supplier.
Price reflects the ability of rapid response to market conditions.	Price is under influence of purchasing power.

Price Satisfaction: According to Westbrook⁵, satisfaction is an individual's emotional reaction to his or her evaluation of the total set of experiences realized from patronizing the retailer. Oliver et al.⁶ mention that satisfaction is a function of cognition (i.e. disconfirmation) and effectiveness. Merging both definitions, price satisfaction can be defined as an affective reaction resulting from interaction of psychological processes and effectiveness. Disconfirmation of expectations also plays an important role in above cognitive processes.

Dimensions of Price Satisfaction: In literature, price satisfaction is often measured in one dimension as an antecedent of overall satisfaction. However, research on price satisfaction shows that customers perceive prices based on different dimensions. International literature does not provide any instruments to analyse price satisfaction in multiple scales. However, research on price images provides important strategies to recognize dimensions of price satisfaction. Six dimensions of price satisfaction can be derived from studies on satisfaction and price image, as follows⁷.

Price Transparency: In Economics, transparency refers to information equivalency. Price transparency exists when the customer can easily get a clear, comprehensive, current and effortless overview about informed prices⁸. Increasing access to information, access to more alternatives, more simplified transactions and more interactions between customers are five trends that increase customer power. Because of a high price transparency, costs of customer search and evaluation decrease; this will lead to a higher price satisfaction. Many organizations even have developed advisors to help customers acquiring accurately complete and updated information related to services and price in order to earn customer trust. Their experience shows that it highly influence on increasing satisfaction, trust and sales⁷. Analyzing the most effective dimension on price satisfaction, Diller refers to different stages of decision-making process. For the customer, price is different from other stages. In the search phase, customers need information on the suggested quality and price. Hence, customers will also experience search costs. Therefore, price transparency seems

essential here⁷. In fact, banking service prices represent integrity and reputation of the bank; in this study, therefore, price transparency refers to a clear and comprehensive information and it reflects the professionalism of the bank.

Price Confidence: Antónet al.⁹ argued that confidence and commitment are positively related to customer retention. A customer trusts a businessperson when he willingly feels confidence in the businessperson. Munnukka¹⁰ emphasized that customers will be confident only if they are able to evaluate an offer; thus, price confidence can be considered a personal perception. In the present study, price confidence refers to a currently favourable price and customers feel confident that the offered prices are real⁸.

In banking industry, price promotion is used to stimulate demand. Price promotion is associated with bank commitments and provides sustainable competitive advantages. In other words, the more favourable price a customer perceives, the more satisfaction he feels⁷.

Price Quality: Consumers define value of a product based on two factors: perceived price and perceived quality or, in other words, the price-quality ratio. If perceived quality exceeds perceived costs, customer value is high and vice versa⁷. Therefore, quality is a viable competitive strategy for growth and promotion; based on the discipline of perceived value, many researchers argued that customers' perceived value is crucially important for long-term survival. Zethaml et al.¹¹ defined perceived quality as an evaluation that a customer makes about the excellence or superiority of a product. As Lewis and Booms¹² suggested, service industry focuses on customer needs and expectations. In banking industry, intangibility is a characteristic of service; while making decisions, customers are influenced by many factors such as helpfulness of staff as well as tangible factors and measurable aspects of received services and the price of its service.

Price Reliability: Customers believe that favourable prices are constant without unexpected changes. Customers will perceive high price reliability if there are no hidden costs without any unexpected changes in price. Unexpected changes are not only shocking for the customers, but also they can damage the whole industry as they induce unfair price competition⁷. Generally, price reliability can be understood as raised price expectations and prevention of negative surprises⁸. Reliable prices would enable vendors to plan their future precisely and reduce their financial risks¹³.

In the context of banking, banks fulfil their commitments related to price of offered services if there are no hidden cost; if potential changes are promptly communicated to customers, customers will perceive high reliability of prices offered for services.

Relative Price: According to Matzler⁷, customers make price comparisons during decision-making processes for purchase.

The relative price of a product directly influences on consumer satisfaction and constitutes a dimension of price satisfaction¹³. In other words, if customers have price comparisons during decision-making process, they need to compare the price of the product or service with that of competitors. Therefore, the price of the product or service provided by an enterprise compared to that of competitors is labelled as relative price⁷.

Banking industry is a highly customer-dependent with typically low loyalty. Customers normally choose a particular bank because of its price, convenience and availability. Customers will leave the chosen bank if their expectations are not satisfied. In this study, the price of a product compared to that of competitor is labelled as relative price.

Price Fairness: Fairness is central to any transaction⁸ and is defined as a judgement of whether the purchase phenomenon and process is logical and reasonable¹⁴. According to conducted studies, it can be claimed that perceived price fairness is one psychological factor playing an important role in customers' reaction to price satisfaction. Customers are not willing to pay a price that is perceived unfair. Therefore, customer reactions can result in boycotts, civil action or in lower sales. Accordingly, two major aspects of price fairness can be considered as follows: i. Price-quality ratio perceived by the customer; ii. Correlation between real price of a product and its socially accepted price.

Since price-quality ratio has been considered as a separate dimension of price satisfaction, we limit the price fairness to the second aspect. What consumers perceive as a socially acceptable price depends on several factors. Consumers make judgments based on comparing their investments (paid price) and received benefits (quality). Buyers always compare their gains to the gains of the exchange partner. If customers feel that the seller earns higher benefits, they certainly feel unfair about the price⁷.

Methodology

Objectives: A study tries to achieve certain objectives. The main objective of the present study was to identify, weigh and prioritize effective factors on price satisfaction perceived by customers from Refah Bank.

Hierarchical Structure of the Problem: Following complete overview of literature related to dimensions of price satisfaction, a complete series measures were developed to determine effective factors classified into six groups, as follows: i. Price reliability, ii. Price confidence, iii. Price transparency, iv. Relative price, v. Price-quality rate, vi. Price fairness.

Considering these 6 dimensions, 17 measures were determined, as shown in figure 1.

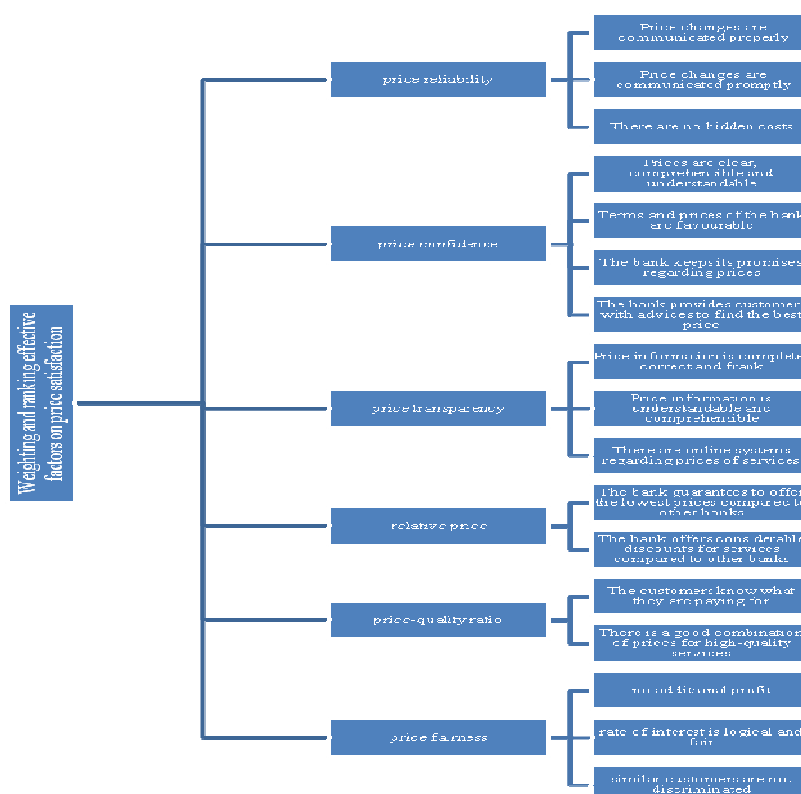


Figure-1
Conceptual model of effective factors on price satisfaction in Refah Bank

Participants: Participants of the present study included 30 customers from different branches of Refah Bank in Tehran, Iran, with bank accounts for at least three years. To collect data, a questionnaire was administered to participants in the form of interview.

Fuzzy AHP: Analytic hierarchy process (AHP) has been successfully used for different problems. AHP was first developed by Saaty, 1980. AHP is a decision method which converts a difficult multivariate problem to a hierarchical problem^{15,16,17}. Fuzzy AHP vastly contributes to evaluation of multivariate decision problems. Nevertheless, AHP will be totally useless when it is applied to solve uncertainty and invalidity problems. To overcome this shortcoming, Zadeh¹⁸ introduced and used fuzzy set theory. Since the real world is ambiguous, many researchers combined fuzzy theory and AHP. The present study used Chang extent analysis method which is completely consistent with fuzzy concept.

In 1996, a Chinese researcher, Chang¹⁹, developed an extent analysis method. The numbers of this method are triangular fuzzy numbers. Consider two triangular fuzzy numbers, $M_1 = (l_1, m_1, u_1)$ and $M_2 = (l_2, m_2, u_2)$ depicted in figure 2.

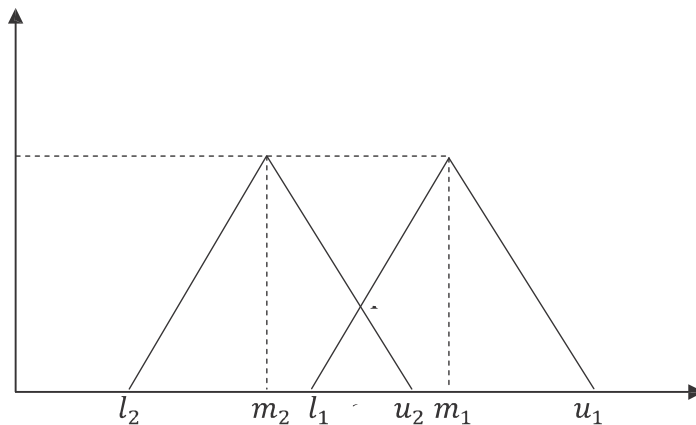


Figure-2
Triangular numbers M_1 and M_2

Their operators are defined as follows:

- (1) $M_1 + M_2 = (l_1 + l_2, m_1 + m_2, u_1 + u_2)$
- (2) $M_1 \times M_2 = (l_1 \times l_2, m_1 \times m_2, u_1 \times u_2)$
- (3) $M_1 \div M_2 = (l_1 \div l_2, m_1 \div m_2, u_1 \div u_2)$

Note that, product of two triangular fuzzy numbers or inverse of a triangular fuzzy number is no longer a triangular fuzzy number. These relations express only an approximate of real product of two triangular fuzzy numbers and inverse of a triangular fuzzy number.

Extent analysis (EA) calculates S_k which is a triangular number for each row in matrix of paired comparisons, as follows:

$$S_k = \sum_{j=1}^n M_{k1} \times \left[\sum_{i=1}^m \sum_{j=1}^m M_{ij} \right]^{-1} \quad (4)$$

where, k, i and j indicate number of row, elements and indices, respectively. Following calculation of S_k s, EA obtains their degree of magnitude. For example, let M_1 and M_2 be two triangular fuzzy numbers; degree of magnitude for M_1 and M_2 is shown by $V(M_1 \geq M_2)$, defined as follows:

$$V(M_1 \geq M_2) = \begin{cases} 1 & \text{if } m_1 \geq m_2 \\ 0 & \text{if } l_2 \geq u_1 \\ \text{hgt}(M_1 \cap M_2) & \text{otherwise} \end{cases} \quad (5)$$

Also, we have:

$$\text{hgt}(M_1 \cap M_2) = \frac{u_1 - l_2}{(u_1 - l_2) + (m_2 - m_1)} \quad (6)$$

Magnitude of a fuzzy number is obtained by following relation from k triangular fuzzy numbers:

$$V(M_1 \geq M_2, \dots, M_k) = \min[V(M_1 \geq M_2), \dots, V(M_1 \geq M_k)] \quad (7)$$

EA calculates weights of indices in matrix of paired comparisons, as follows:

$$W'(x_i) = \min[V(S_i \geq S_k)], \quad k=1, 2, \dots, n, \quad k \neq i \quad (8)$$

Therefore, weight vector of indices is as follows:

$$W' = [W'(c_1), W'(c_2), \dots, W'(c_n)]^T \quad (9)$$

which is the same vector of non-normalized fuzzy coefficients. Based on $w_i = \frac{w'_i}{\sum w'_i}$, finally, values of normalized weights of indices are obtained.

Results and Discussion

This section tries to represent data obtained from AHP in the form of separate tables; then, hypotheses are analyzed by studied data.

Table-2
Relative weights of six dimensions

Prioritizing effective factors on dimensions of price satisfaction	Dimension	Weight	Priority
	Price Reliability	0.003703	6
	price confidence	0.154108	4
	price Transparency	0.080845	5
	relative price	0.229796	3
	price quality rate	0.278266	1
	Price fairness	0.253282	2

Table-3
Relative weights of price reliability

Price reliability	Dimension	Weight	Priority
	Price changes are communicated properly	0.011	3
	Price changes are communicated promptly	0.291	2
	There are no hidden costs	0.698	1

Table-4
Relative weights of price confidence

Price confidence	Dimension	Weight	priority
	Prices are clear, comprehensible and understandable	0.017158	4
	Terms and prices of the bank are favourable	0.459777	2
	The bank keeps all promises regarding prices	0.468557	1
	The bank provides customers with advices to find the best price	0.054507	3

Table-5
Relative weights of price transparency

Price transparency	Dimension	Weight	Priority
	Price information is complete, correct and frank	0.146767	3
	Price information is understandable and comprehensible	0.67637	1
	Online systems for price of services	0.176863	2

Table-6
Relative weights of relative price

Relative price	Dimension	Weight	priority
	The bank guarantees to provide the lowest prices compared to other banks	0.901128	1
	The bank offers considerable discounts for services compared to other banks	0.098872	2

Table-7
Relative weights of price-quality ratio

Price quality rate	Dimension	Weight	Priority
	Customer knows what he is paying for	0.086951	2
	There is a good combination of prices for high-quality services	0.913049	1

Table-8
Price fairness

Price fairness	Dimension	Weight	Priority
	No additional profit	0.392566	2
	Interest rate of the bank is logical and fair	0.583667	1
	Similar customers are not discriminated	0.023767	3

Discussion: The present study initially tried to determine the most important factors effective on price satisfaction and then prioritized the factors. The first level of decision tree was objective which is one for all dimensions²⁰. The second level characterized major measures effective on price satisfaction. Table 2 shows final weight and combined priority of the measure from customer view. Price-quality ratio was the highest priority in the evaluation. Customers of bank demand expected level of price quality. Price-quality ratio is measured to show how customers ascribe value to a product or service subject to their perception of two factors: perceived price and perceived quality. Customers find plans and characteristics in the service when its price is unexpectedly more than his paid price; thus, quality price is higher for them. Therefore, bank managers need

to consider the fact that, two factors of service quality rate studied in the third level, 'Customer knows what he is paying for' and 'There is a good combination of prices for high-quality services' are of great importance. On the other hand, results showed that reliability was not significantly scored in banking system; this implies that customers pay least attention to this factor that bank keeps all its promises regarding prices. While, price of services delivered by Iranian banks are typically determined by Central Bank. In fact, banks lesser involve in changes of prices for services; considering this, thus, customers have the least attention.

Third level of decision tree involves 17 sub-criteria, as listed in table 9.

Table-9
Final weight of sub-criteria effective on price satisfaction

Sub-criteria	Weight	Ranking
Price changes are communicated properly	0.00004	17
Price changes are communicated promptly	0.00108	16
There are no hidden costs	0.00259	15
Prices are clear, comprehensible and understandable	0.00264	14
Terms and prices of the bank are favourable	0.07086	6
The bank keeps its promises regarding prices	0.07221	5
The bank provides customers with advices to find the best price	0.00840	12
Price information is complete, correct and frank	0.01187	11
Price information is understandable and comprehensible	0.05468	7
There are online systems regarding prices of services	0.01430	10
The bank guarantees to offer the lowest prices compared to other banks	0.20708	2
The bank offers considerable discounts for services compared to other banks	0.02272	9
The customers know what they are paying for	0.02420	8
There is a good combination of prices for high-quality services	0.25407	1
No additional profit	0.09943	4
Rate of interest is logical and fair	0.14783	3
Similar customers are not discriminated	0.00602	13

According to above table, the three highest sub-criteria, 'There is a good combination of prices for high-quality services', 'The bank guarantees to offer the lowest prices compared to other banks' and 'Rate of interest is logical and fair' explain 60.89% and remaining criteria explain 39.12% of customer satisfaction.

Conclusion

Knowledge of effective factors on price satisfaction among customers of Refah Bank and importance of mentioned factors for customers can influence on customer satisfaction and competitive advantage. This section provides results obtained from this study.

Considering that service-quality rate is high, 'continuous improvement of service quality' seems to be the major guidance of services provided by the organization; this reflects increase in the sub-criterion 'there is a good combination of prices for high-quality services'. Advantages of service quality increase ability of the organization to provide customers with efficient services; hence, the bank needs to identify and directly satisfy customer needs and requirements and eliminate unnecessary services. Increased effectiveness and efficiency of services increase profitability of the bank; providing better services also repeat the purchase and expand positive advertisement for the bank. Considering that, reliability is weak in the second level of decision tree, banking regulations issued by Central Bank including maximum facilities and interest of investors seem to be very old-fashioned. On the other hand, customers are aware that prices of banking services are directly determined by Central Bank and banks have the least influence on determining their rates; hence, reliability is assigned the lowest score by customers. It is noteworthy that global central banking has moved to more independence to target inflation and to establish

a constant monetary system. While, Central Bank ignores this and our banks are not aware that where, when and under what economic conditions this policy is fulfilled. Thus, it seems necessary to develop an in-depth regulation to increase reliability of customers to price satisfaction.

Considering that, the sub-criteria 'the bank guarantees to provide the lowest prices compared to other banks' is high, banking services are of a competitive area. Thus, banks need to analyse competitors precisely for that: i. who are competitors in the market; ii. what advantages the bank has over other competitors; iii. what are advantages and disadvantages of competitors; iv. what are experiences of previous competitions, in order to sustain in the competition. Hence, it can be claimed that the major advantage of the bank is continuous decrease in prices while promoting quality.

Since rate of interest is identified as a key sub-criterion of effective factors on price satisfaction, fair and accurate rate need to be determined by market mechanism. Although customers express lower rate of interest in financial section of the bank and believe that a low interest regime can accelerate growth, they need to consider the fact that structure of private banks and costs of their branches are planned by higher rates of interest. In fact, equal rate of interest and inflation indicates that bank delivers facilities to customers free of charge or even by additional costs; this results in numerous financial loads and invertible loss. Thus, decision makers do not tend to use this policy. Hence, the bank needs to be cautious about rate of interest.

Recommendations: Results of the present study showed that price quality, price fairness and relative price are the most important factors among customers of Refah Bank. Thus,

following strategies are recommended to achieve these goals. i. Full accountability to financial needs of customers by integrated package of financial services including purchase of shares, insurance, money exchange leasing, investment advisory, wealth management and creating values more than interest of deposits by real participation in interests of joint venture, ii. Reduced finished cost by attracting inexpensive resources of current loan and reduced non-operating costs by organizational agility, iii. Development of e-banking infrastructure by developing network of sales terminals and ATMs, e-banking and providing centralized banking, iv. Improved quality of facilities through improved customer validation model and market selection, v. Enhanced internet banking system and continued strategy to encourage customers to use internet banking service of Refah Bank and contracts with reputable companies to provide internet access of customers, vi. Standard regulation to improve the performance of banking system (for example international standards), vii. Transparency and consistency in the rules, viii. Using internal and external experts, ix. Raising public awareness through availability and affordable required information, x. Reduced non-operating and operating costs to realize lower profit of deposits as well as to compensate reduction of profit margins of bank, xi. Increased number of ATM terminals to provide and implement hall terminals academic, commercial, governmental centers and bus stations as well as centralized cash management services through a structure outside the branches, xii. Providing financial and investment advice, xiii. Granting more diverse facilities in different parts, xiv. Modified directives for more transparent procedures, processes and service system.

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