



Evaluation and Improvement of the Service Quality of Tile Industry in China A Case Study of Company G.

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Abstract

After nearly 30 years of development, the Chinese construction industry has driven the development of the decorative materials and tile industry. However, with the increasing market competition, Chinese tile industry will face not only the domestic's fierce competition but also the competition in the international market. "Survival of the fittest" is a cruel reality of Chinese ceramic-tile industry. In order to survive in domestic and international market, tile companies not only focus on the value of the products, but also rely on the innovation of service. With the development of society, customer more care about service quality when they facing same quality products. This paper aims to used SERVQUAL evaluation system and IPA positioning theory to evaluate the service characteristics of China's tile companies. G Company is used as an example of the tile industry to combine the five dimensions of reliability, assurance, tangibles, empathy, and responsiveness with 25 sub-indexes. Based on questionnaires, the researcher compared customer service expectations and customer satisfaction of 377 customers, and find different ways to improve the service quality of G Company.

Keywords: *Ceramic-tile Industry, SERVQUAL Evaluation System, IPA theory, Customer Satisfaction, Customer expectation, Service Quality.*

1. Introduction

After nearly 30 years of development, the Chinese construction industry has driven the development of the decorative materials and tile industry. However, with the increasing market competition, Chinese tile industry will face not only the domestic's fierce competition but also the competition in the international market with the rapidly increasing cost. "Survival of the fittest" is a cruel reality of Chinese tile industry. In order to survive in domestic and international market, tile companies not only focus on the value of the products, but also rely on the innovation of service (Lv, Gu, Zhang & Guo, 2019).

According to many researchers (Ye, Hong, Ma, Qi & Yang, 2018), the prospect of the ceramic tile output will continue to decline and lead to a shrink of profit space of ceramic tile industries in the future. Chinese ceramic tiles are facing various forms of anti-dumping and trade barriers all over the world. The marketing of ceramic tile enterprises is stepped into the era of low profit. While the international market competitiveness of Chinese ceramic tile products is declining, foreign tiles enterprises from Italy and Spain are entering into the Chinese market that compresses the profit space of local brands at the same time.

Due to the manufacture of ceramic tiles are restricted by new labor laws and environmental protection laws and regulations, the production cost of enterprises is largely increasing. Companies should constantly cope with various competition within the industry. Ye et al. (2018) and Lv et al. (2019) pointed out on the 21st-century economic reporter that, the development and growth of ceramic tile enterprises can only be achieved through technological innovation and enterprise services. In order to occupy a high market rate in intense competition, it is essential to ensuring the quality of products and understanding the growth of profits. However, more importantly, providing high-quality services to improve customer satisfaction could become a great advantage for enterprises. When it comes to consumers, researcher indicated the necessary of upgrading of consumption and the brand, consumers need more comprehensive and considerate services to choose brands in the future. Therefore, for the ceramic tile industry, product innovation and service quality innovation are required continuously.

With the development of society, customers care more about service quality when facing the same quality products. This paper aims to used SERVQUAL evaluation system and IPA positioning theory to



evaluate the service characteristics of China's tile companies. G Company is used as an example of the tile industry to combine the five dimensions of reliability, assurance, tangibles, empathy, and responsiveness with 25 sub-indexes. Based on questionnaires, the researcher compared customer service expectations and customer satisfaction of 377 customers, and find different ways to improve the service quality of G Company.

2. Objectives

There are many enterprises in the ceramic tile industry in China, and the homogeneity of product production and sales is serious. Many enterprises lack innovation and systematic strategies in product production and marketing. As a distributor of physical sales, G enterprise is faced with fierce market competition in the face of relative saturation of the domestic market, disorderly brands and mutual pressure of prices, and its market share and profits are severely reduced. Moreover, G enterprise is dominated by the offline real economy. In the face of online and other channels of competition, service quality has become an important factor for the sustainable development of the enterprise.

Through the analysis of the theory of service quality, this paper diagnoses the problems in the process of sales and service of G enterprise and analyzes the causes of its formation. It provides the direction of G Company's serviceability and market competitive advantage and helps G Company to find and improve the existing service sales problems, which provides guidance and reference for G Company's management decision-making.

3. Materials and Methods

According to Kasiri, Cheng, Sambasivan & Sidin, (2017), customer satisfaction is an indicator of future profits; customers will buy the same product service or product again when they are satisfied. When they meet the purchased product or service, they will buy it more frequently and recommend it to others. Some researchers believe that customer satisfaction can help companies acquire more new customers, and it is essential to establish relationships (Oh & Kim, 2017).

Some researchers pointed out that customer satisfaction is the main factor in company success. It is not surprising that a large number of marketing researches are devoted to measuring customer satisfaction with company performance and service (Ilieska, 2016). According to Oh and Kim (2017), customer satisfaction can be described as the degree to which a customer chooses a product or service for a predetermined purpose. It is about customer expectation and confirmation / unconfirmed -- the degree between customer thinking value and the actual value (Ilieska, 2016). Therefore, customer satisfaction is the result of a complex information processing process. Kasiri et al. (2017) believe that unconfirmed customer expectation can lead to dissatisfaction because this view means that satisfaction can be interpreted as the result of customer expectations, and the relationship between customer confirmation and customer.

Miranda, Tavares & Queiró, (2018) defined perceived service quality as the customer's judgment of the overall performance or advantage of some service providers, the improvement of customer perceived service quality could improve customer satisfaction and then increase company profits. Izogo (2017) defined perceived service quality from the perspective of management. He pointed out that managing perceived service quality means that companies must match customer expected services with perceived services to achieve consumer satisfaction; it is a good way to increase the profit of the customer. According to Kasiri et al. (2017), service quality has a significant relationship with customer satisfaction toward one company, and perceived service quality is a key indicator to measure the performance of an enterprise.

This research is designed by quantitative studies. The researcher used a survey method from the questionnaire to get primary data in order to measure customer satisfaction and customer expectation of G Company.

In this study, both primary and secondary data were used. Zikmund and Carr (2003) stated that primary data refers to the data that is directly collected and analyzed mainly for the research project. Primary data have been obtained directly by the researcher for a particular research project. In this research, the primary data will be collected by distributing questionnaires to the customers of the ceramic tile company G in China. Secondary data is collected by others, not specifically for the research question at hand. For this study,



the researcher will collect data from many sources such as Emerald, textbooks, articles, and websites. These references will provide a strong base and relate all the secondary data to this study.

In this study, descriptive research is used to describe the characteristics of a population or phenomenon being studied. It could figure out what lead to the occurrence of the characteristics, but it could not find out how it happens. The researchers choose a survey technique to collect data from respondents. The survey is the research technique in which researchers make use of a questionnaire to obtain facts, opinions, and attitudes of the respondents. Furthermore, according to Zikmund and Carr (2003), survey technique is a systematic collection of data from respondents in order to understand and to predict some aspects of the behavior of the target population that can provide quick, inexpensive, efficient and accurate means of assessing information about the population.

In order to collect the data, the researchers designed a questionnaire and distributed it to the customer of G Company in China. The questionnaire for the survey contained four parts. The first part includes the screening information. The second part is about the gap between customer satisfaction and customer expectation. Customer satisfaction is related to the demographic factors including gender, age, education and income.

4. Results and Discussion

A total of 400 questionnaires are distributed to the customer of G Company, and 377 respondents participated and completed the survey accurately. In this research, the data analysis uses Statistical Package for the Social Sciences (SPSS). The data analysis has two parts, the first part is descriptive analysis, it is analyzed demographic factors, and the second part is inferential analysis. This part analyzes the gap between customer satisfaction and customer expectation. The researcher also uses this software to analyze reliability for each variable. In this research, researchers use descriptive statistical methods to summarize the basic characteristics of the data. Frequency and percentage were used to calculate and analyze the sample demographic data.

Table 1 Summary of Basic Information

| Subject | Options | Frequency | Percentage |
|-----------------------|-------------------------------|-----------|------------|
| Gender | Male | 175 | 46.4% |
| | Female | 202 | 53.6% |
| Age | Under 25 (inclusive) | 27 | 19.2% |
| | 26-35 (inclusive) | 85 | 22.5% |
| | 36-45 (inclusive) | 103 | 27.3% |
| | 46-55 (inclusive) | 69 | 18.3% |
| | Over 55 years old | 48 | 12.7% |
| Education level | Associate college or below | 92 | 24.4% |
| | Undergraduate | 189 | 50.1% |
| Occupation | Graduate or above | 96 | 25.5% |
| | manufacturing industry | 71 | 18.8% |
| | Military and public education | 80 | 21.2% |
| | personnel | 73 | 19.4% |
| | Information Industry | 85 | 22.5% |
| Position | Medical industry | 68 | 18.1% |
| | Services / other | | |
| | Person in charge | 83 | 22.0% |
| | top management | 60 | 15.9% |
| | middle management | 75 | 19.9% |
| Monthly Income (RMB) | technology | 93 | 24.7% |
| | Administration | 66 | 17.5% |
| | Under 4000 yuan | 66 | 17.5% |
| | 4000-8000 yuan | 85 | 22.5% |
| | 8001-15000 yuan | 117 | 31.0% |
| Source of Information | 15001-20000 yuan | 52 | 13.8% |
| | Over 20000 yuan | 57 | 15.1% |
| | Website advertisement | 41 | 10.9% |



| Subject | Options | Frequency | Percentage |
|---------|------------------------|-----------|------------|
| | Business visit | 84 | 22.3% |
| | Friend introduction | 115 | 30.5% |
| | Television advertising | 76 | 20.2% |
| | Newspaper and magazine | 61 | 16.1% |
| | Other | 0 | 0% |

According to the statistical results shown in table 1, the number between the male and female ratios is similar, 46.43% and 54.57% respectively. Then, the respondents aged 26-35 (inclusive) accounted for 45% of the total, and the respondents aged 36-45 (inclusive) accounted for 29.43% of the total. Their total proportion has reached 74.43%. This age group is the main buyer and supporter of home decoration tiles. For managers of G enterprise, they can strengthen the high-quality customer resources for this part is the focus of marketing in the future. Thirdly, 30.71% of the home decoration tile purchasers with Associate college degrees or below, 49.43% have a college degree or undergraduate degree, whereas 19.86% have a graduate degree or above. This proportion is in line with the current situation. Generally speaking, the higher the education level, the higher the income level, and the stronger the ability to purchase real estate for decoration. It can be seen from Table 4.1 that the distribution of purchasers in occupations is relatively uniform, and none of them has a large proportion. Therefore, the proportion of occupation characteristics is not obvious when buying home decoration tiles. From Table 1, it can be seen that the relatively high proportion of respondents is the backbone of the enterprise. Their comparison accounts for 44.43% of all the answers, and the rest are technicians. They also account for 18%. The enterprise G should strengthen the cultivation of this part of customers. According to the statistical results shown in Table 1, the proportion of people with an annual income of 36000-72000 is 52.14%, and the proportion of people with an annual income of 72000-144000 is 30.72%. Their total proportion has reached 82.86%, accounting for the vast majority of people. G enterprise should strengthen the marketing of these people when marketing, which is very helpful for the improvement of performance. It can be seen from Table 1 that the introduction of friends is the most choices of purchasers, accounting for 44.15%. It can also be seen that the company's investment in advertising is an important channel to expand the enterprise's recognition in public, but the establishment of the enterprise's brand and public praise is the most important part of the performance, which is why it is urgent to improve the service.

In this research, the KMO measurement value of the tested satisfaction questionnaire is 0.880, higher than 0.7, and Bartlett's sphericity test value is 6234, the corresponding significance level $\text{sig} = 0.000 < 0.05$. According to the data, KMO and Bartlett's sphericity test has passed, indicating that the data conforms to the normal distribution, meets the conditions of factor analysis, and can be analyzed in the next step.

According to the 25 evaluation indexes determined in the previous chapter, the final service indexes of the ceramic tile industry are obtained, and the items are numbered according to the indexes, as shown in Table 2.

Table 2 The Contents of Questionnaire

| Dimension | Item Number | Evaluating Indicator |
|----------------|-------------|--|
| A. tangibles | A1 | The site environment of the company is simple, atmospheric, clean, bright and not chaotic |
| | A2 | The proper appearance of service personnel |
| | A3 | With professional and all-round exhibition hall, the product features can be displayed intuitively and comprehensively |
| | A4 | Employees explain the characteristics and application scope of ceramic tiles with professional |
| | A5 | Arrange high-quality customers to visit the production base regularly |
| B. Reliability | B1 | The company arranges shipment on time as required by customers |
| | B2 | Provide on-site service when required by customers |
| | B3 | The company is trusted by its customers |
| | B4 | The company has a perfect after-sales service system |
| | B5 | Timely remedy for service failure |

[1867]



| Dimension | Item Number | Evaluating Indicator |
|-------------------|-------------|---|
| C. Assurance | B6 | Service personnel have complete planning and arrangement for customer requirements |
| | B7 | “One-stop” service from communication to transaction and follow-up |
| | C1 | Employees have sufficient professional knowledge and skills to be competent for the job |
| | C2 | The manufacturer has clear instructions on customer service |
| | C3 | Employees are polite and polite in service |
| D. Responsiveness | C4 | Enterprises arrange professional training for employees on a regular basis |
| | C5 | Products worth buying, Employees are trustworthy |
| | D1 | Employees provide warm service to every customer |
| | D2 | Do employees understand customer needs and provide services at the first time |
| E. Attract | D3 | Timely inform the customer of the specific time when the product is in place |
| | D4 | Give timely feedback on customer complaints and suggestions |
| | E1 | Give special attention to the customer’s personal situation |
| | E2 | Whether the service time provided by the enterprise meets the requirements of customers |
| | E3 | Whether the service personnel are expected to understand the special needs of customers |
| | E4 | The service personnel of the manufacturer have a legal salary and insurance guarantee |

The gap of service quality is analyzed from the index level, which is to get the customer’s evaluation on the expectation and perceived value of specific measurement indexes contained in each dimension through the questionnaire survey receipt. The service quality gap of each indicator is obtained by subtracting the corresponding expected value and perceived value of each indicator. Through the statistics of the expected quality of each service index, the average value of perceived quality and the calculation of service gap, the gap between the perceived quality and expected quality of each level of indicators in the ceramic tile industry is obtained. The specific data is shown in figure 1. It can be seen from the figure that the perceived quality value of each indicator in the figure is lower than the expected quality value of the customer. It can be seen from the figure that the customer is not satisfied with the service quality of the tile industry, and the service quality of each indicator needs to be improved. In the customer’s opinion, the highest service quality is tangibility A1, tangibility A3, attractive E2, reliability B1, and reliability B2. The lowest service quality is tangibility A4, attractive E3, assurance C4, reliability B7, and tangibility A5.

Table 3 The gap between the perceived quality and the expected quality of customers in the tile industry

| Indicators | Expect Service Quality | Perceived Service Quality | Gap |
|------------|------------------------|---------------------------|-------|
| A1 | 4.43 | 4.32 | -0.11 |
| A2 | 4.54 | 4.15 | -0.39 |
| A3 | 4.44 | 4.33 | -0.11 |
| A4 | 4.64 | 3.98 | -0.66 |
| A5 | 4.65 | 4.18 | -0.47 |
| B1 | 4.61 | 4.35 | -0.26 |
| B2 | 4.48 | 4.21 | -0.27 |
| B3 | 4.66 | 4.06 | -0.6 |
| B4 | 4.58 | 4.09 | -0.49 |
| B5 | 4.45 | 4.05 | -0.4 |
| B6 | 4.55 | 4.14 | -0.41 |
| B7 | 4.63 | 4.15 | -0.48 |
| C1 | 4.62 | 4.16 | -0.46 |
| C2 | 4.56 | 4.2 | -0.36 |



| Indicators | Expect Service Quality | Perceived Service Quality | Gap |
|------------|------------------------|---------------------------|-------|
| C3 | 4.5 | 4.22 | -0.28 |
| C4 | 4.59 | 4.15 | -0.44 |
| C5 | 4.55 | 4.06 | -0.49 |
| D1 | 4.59 | 4.2 | -0.39 |
| D2 | 4.51 | 4.08 | -0.43 |
| D3 | 4.59 | 4.17 | -0.42 |
| D4 | 4.49 | 4.18 | -0.31 |
| E1 | 4.64 | 4.18 | -0.46 |
| E2 | 4.48 | 4.25 | -0.23 |
| E3 | 4.6 | 4.01 | -0.59 |
| E4 | 4.52 | 4.08 | -0.44 |

IPA evaluation is an effective service quality evaluation and improvement method, and its basic ideas are to help enterprises quickly identify the focus and direction of improving service quality by comparing the importance of service quality evaluation index with the actual performance and maximize the service quality with limited resources. The evaluation method has two attributes: importance and service quality satisfaction. According to the data obtained from the questionnaire survey, the IPA evaluation matrix of indicators at all levels of the tile industry is shown in Figure 2 and 3. The horizontal axis represents the mean value of the perceived quality of the indicators, while the vertical axis represents the mean value of the importance. According to the subdivision index IPA matrix diagram of the ceramic tile industry, 25 indicators are classified into four limits.

Competitive advantage areas (high importance, high performance). There are five indicators in this area, namely B1, C2, D1, E1 and A5. The indicators within this limit indicate that the service quality has reached the customer's expectation and can be maintained B. Continuous maintenance (low importance, high performance). There are seven indicators in this region, namely D4, B2, C3, E2, A1, and A3. The indicators within this limit indicate that the service level is oversupplied, and these indicators only need to be maintained C. Secondary improvement areas (high importance, low performance). There are six indicators in this region, namely reliability index B5 and B6, responsiveness index D2, attractive index E4, assurance index C5, and tangible index A2. From these indicators, it can be seen that, in the service process, the staff of the enterprise did not provide a timely remedy plan for the service failure, and the customer service did not have a complete plan. The service staff did not understand the needs of customers at first and did not provide timely service. At the same time, there is also a lack of customer trust in-service personnel and product understanding; The indicators within this limit indicate that customers are not satisfied with the indicators with a high degree of importance, which need to be strengthened and improved. D. Urgent improvement area (low importance, low performance). There are eight indicators in this region: tangible indicator A4, attractive indicator E3, reliability indicator B3, B4, and B7, assurance indicator C1 and C4, and response indicator D3. From these indicators, it can be seen that in the service process, the service staff of the enterprise have a lack of professional knowledge when explaining products, the special needs of customers have not been served, the enterprise has not improved the construction of customer trust, and the after-sales service system and "one-stop" service have not been well implemented. There are problems in the professional knowledge of employees and the implementation of the internal training mechanism of the enterprise. The indicators within this limit indicate that the customer's expectation for the service is not high, but the actual situation is that the service quality is also relatively low. If the indicators in this region are improved, higher customer satisfaction can be achieved.

Through to the ceramic tile industry service quality evaluation and in-depth analysis, it draws a ceramic tile industry in reliability, guarantee, and responsiveness such that few dimension performance value is relatively low. The specific performance for service personnel to understand the needs of customers is not in-depth enough. Furthermore, in the case of a customer complaint, it is not the first-time solution; service personnel in the process of service at the same time, they lack professional knowledge. If the enterprise has internal employee training without sustainability, the enterprise did not set up a distinctive brand image. There are loopholes in the implementation of the company's innovative service policy at the grassroots level.

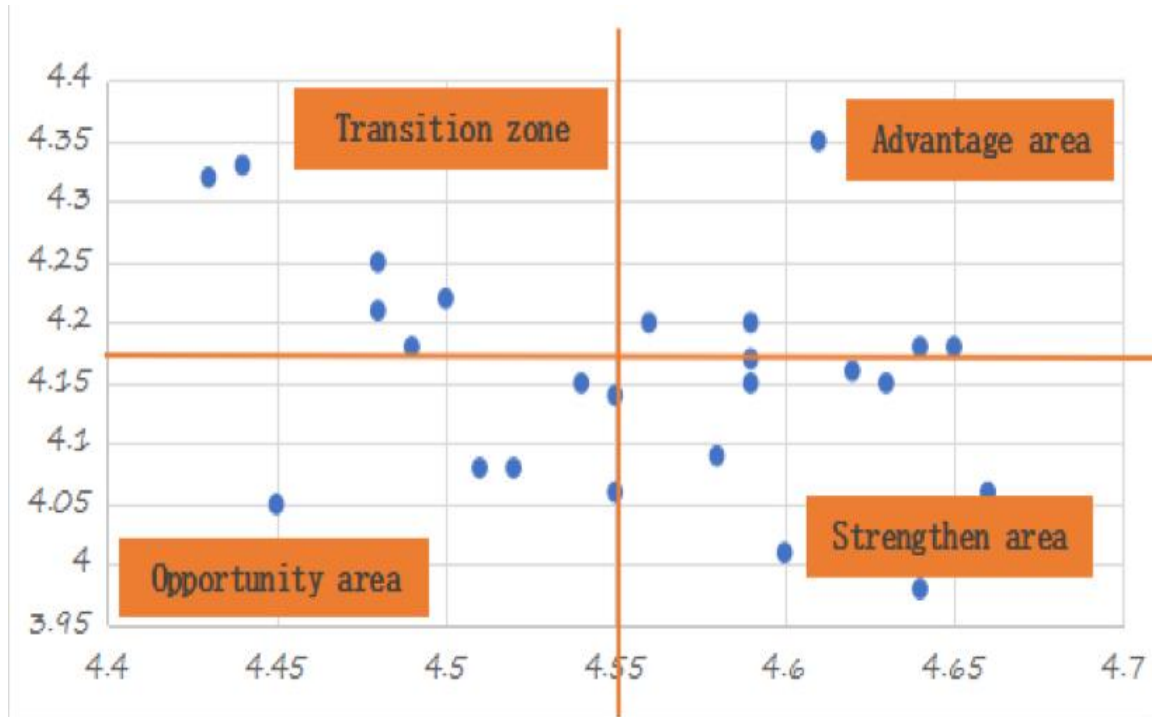


Figure 1 Importance of service in the tile industry - IPA chart of satisfaction

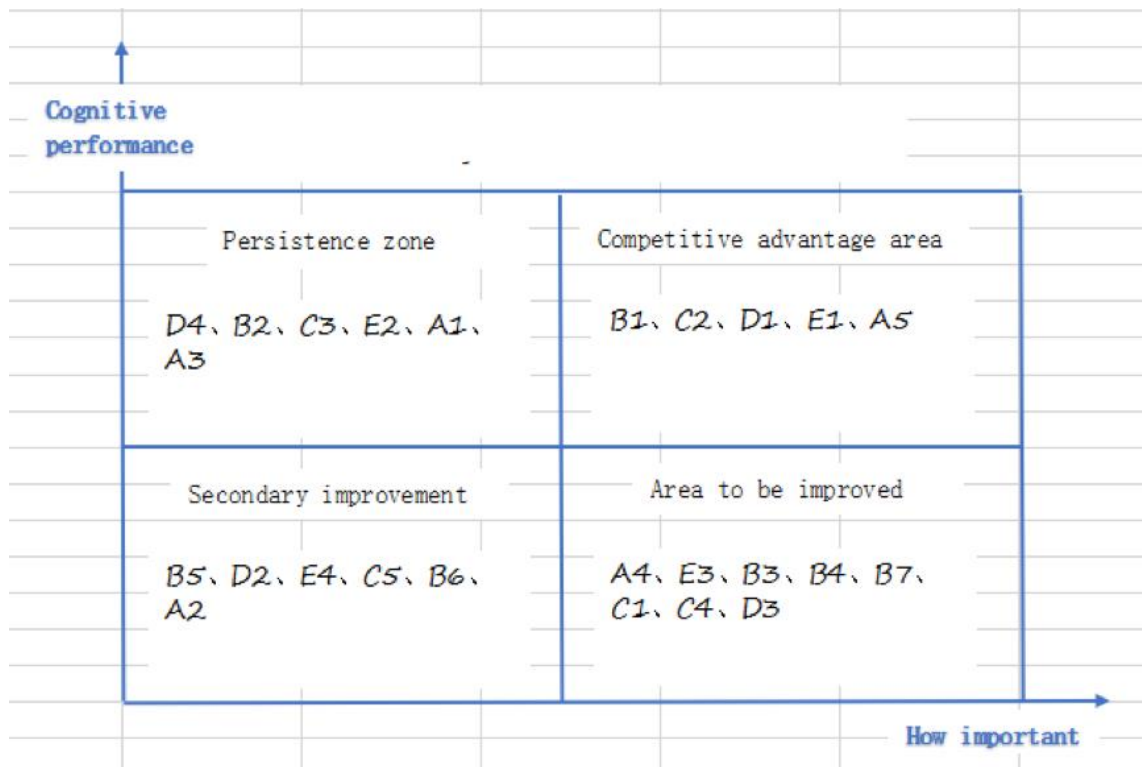


Figure 2 IPA evaluation matrix of ceramic tile industry subdivision index



5. Conclusion

The satisfaction of service quality directly determines the image and market position of ceramic tile enterprises. From the perspective of customers, the scientific evaluation of service quality of ceramic tile enterprises is carried out, the problems of service quality of ceramic tile enterprises are accurately analyzed, and targeted improvement measures are put forward to help enterprises grasp market opportunities, optimize operational efficiency and timeliness, and then increase customer attraction and loyalty. Of course, the customer's evaluation of ceramic tile enterprises is the result of a multi-factor comprehensive effect. These factors will change with the market environment, and also lead to the change of the customer's evaluation attitude. The selection of evaluation indicators and weight distribution should also be adjusted according to the situation at that time to obtain accuracy and reliability. At the same time, building the service quality evaluation system of ceramic tile enterprises will help improve the service quality's evaluation index system and evaluation method of ceramic tile enterprises, and ensure the objectivity and accuracy of the service quality evaluation of ceramic tile enterprises.

The above research is believed to improve the service quality of the ceramic tile industry to a certain extent. It can also provide a reference for other similar enterprises to achieve the organizational goal of maximizing the economic and social value of enterprises in a certain period. However, due to a short period for conducting this research, many areas should be improved and modified in terms of research areas and methods. In the future, the author will continue to track the practical problems of the service quality of ceramic tile enterprises, hoping to put forward more reasonable improvement measures.

In the domain literature, the quality of public services is evaluated using a well-known model, SERVQUAL. It is a combination of dimensions such as tangibility, reliability, responsiveness, empathy, and assurance. SERVQUAL has been successfully used in various fields, such as hotels, tourism, libraries and information services, health care, telecommunication centers and financial institutions.

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