Modeling E-Commerce Website Using QFD

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ABSTRACT: : In the last decade, technological developments and advances in the digital economy have changed consumer behavior significantly. In this millennial era, all levels of society can easily use e-Commerce. Meeting customer needs, even exceeding their expectations, is crucial in this intense digital business competition. This study took place at AX Store, which aimed to identify service attributes that would be developed to improve their quality. This study used the Quality Function Deployment (QFD) method, which began with surveys and interviews, then distributed questionnaires to respondents (customers) to find the Voice of Customers, and then processed the data using QFD. The results showed that: 1) the attribute Product Quality had the highest level of importance, with an importance level of 4.63; 2) the attribute Complete Product Type had the top priority for superior performance, with a weight value of 4.6398; 3) the technical response Easy Order Tracking Service is a top priority for improvement, with a priority value of 6.3224 and a normalized contribution of 32.44%.

Keywords: QFD, Voice of Customer, technical response, attribute, e-Commerce.

INTRODUCTION

Technological developments go hand-in-hand with the accelerated growth of the digital economy in Indonesia. Indonesia is the country with the fastest-growing e-Commerce in the world. It was in the top position, with a growth of 78% in 2018 (Merchant, 2022). Based on this number, 11.9% were purchases of clothing and footwear. The number of internet users in Indonesia, which exceeds 100 million people, is one of the forces supporting the growth of e-Commerce. Based on this statistic, building an e-Commerce website for a business will be very profitable. With the shift in consumer shopping styles to online, e-Commerce services have become the core process of the business itself.

AX Store was originally an offline shoe store that designed handmade shoes.

They are made from genuine leather (cowhide) with a touch of cultural uniqueness. Along with the development of people's lifestyles that are switching to online shopping and aiming to increase sales, AX Store is also adapting to these changes to become an e-Commerce business that can reach buyers from various countries. Since e-Commerce is a business where all transactions are internet-based (Laudon, Kenneth C. & Laudon, 1998), AX Store needs a business website to serve prospective buyers. 88% of potential buyers believe that online sellers who sell their products through websites are more trustworthy than those who only sell through social media. Many potential buyers now use search engines to find trusted brands. A study from Verisign.com found that 77% of potential buyers will first survey through reviews

about the products they are looking for from the website (Stickley, 2016). In addition, GE Capital Retail Bank also released the results of its research, which stated that 81% of consumers conducted product research using a search engine before deciding to purchase (Williams, 2013). 60% of shoppers will look at an e-Commerce site they find online before purchasing.

These facts inform us that selling products through marketplaces and social media is considered inadequate to compete for the hearts of consumers. Moreover, business competition in the digital era is very tight, especially if many competitors offer the goods or services being sold. Therefore, trading through online shopping sites or e-Commerce websites, as well as on marketplaces or social media, will strengthen the branding of the products sold. In addition, e-Commerce websites have many advantages over conventional stores because running an online business is not limited to place and time. People familiar with the internet are also increasingly critical of the many demands for quality service from e-Commerce websites. An e-Commerce website is like a shopping center. Product completeness, product transparency, product quality, ease of payment, and fast and friendly service are the main factors that customers always pay attention to. Every customer has the potential to spread good or bad information to other customers or potential customers because they can share product reviews on various social media platforms. With just a simple tweet, they can reach thousands of people instantly. With this fact, a business needs to provide quality services to satisfy consumers (Kottler, 1997). One of these services is through improving the quality of the website. Continuous quality improvement requires

consumer involvement in product/service development as a critical element. The size of the gap between reality and customer expectations for the services obtained shows whether the quality of service is good or not (Parasuraman A, Valarie A. Zeithaml, 1990). Of the five gaps that cause service delivery failure identified by Pasuraman A, Valeri A, Zeithaml dan Leonard L (1993), the fifth gap often occurs between perceived and expected service.

This consumer involvement is the primary goal of the Quality Function Deployment (QFD) method. Cohen (1995) defines QFD as a structured method for planning and developing products, specifying consumer needs and wants, and evaluating a product's or service's capabilities in meeting consumer needs and wants. This method makes customers part of a company's product/service development cycle.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The importance of a CPA review center's service attributes can be determined based on the preferences of the accountancy graduating students. The attributes are affected by the perceptions of the accountancy graduating students on the levels that define an attribute.

In this study, the CPA review centers attributes such as track record, reviewers, conduciveness, review materials, and affordability are the independent variables influencing the preferences of accountancy graduating students of a CPA review center in Davao City.
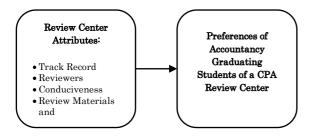
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┌─────────────────────┐        ┌─────────────────────┐
│ Review Center       │        │   Preferences of    │
│ Attributes:         │        │   Accountancy       │
│                     │───────▶│   Graduating        │
│ • Track Record      │        │   Students of a CPA │
│ • Reviewers         │        │   Review Center     │
│ • Conduciveness     │        │                     │
│ • Review Materials  │        │                     │
│   and               │        │                     │
└─────────────────────┘        └─────────────────────┘
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Figure 1. Conceptual Framework of the Study

RESEARCH METHODOLOGY

This research begins with a preliminary study with business observation, formulating problems and their limitations, setting research objectives, and conducting related literature studies. The next step is identifying the study's variables and samples, then deploying the questionnaire. Applying the Quality Function Deployment method maps the needs and desires of consumers into a product design (Akao, 2004). It begins with forming a product planning matrix, often called the House of Quality, which includes technical responses, relationship matrices, technical correlations, and determining technical matrices to map how much each technical response contributes to the quality of services. The priority value of technical responses that need to be developed can be seen in the House of Quality (HOQ).

RESULT AND DISCUSSION

After the respondent's data is successfully collected and tested for validity and reliability, the data will be used to form a planning matrix.

The Relative Importance Rating

This value indicates the importance of the attribute for determining the quality of services. The higher importance value means the attribute is increasingly important according to the customer.

Table 1. Ranking of The *Relative Importance Rating*

No	Service Attribute	Importance Level	Rank
1.	Product quality	4.64	1
2.	Discount	4.41	9
3.	Competitive price	4.45	8
4.	Completeness of product description	4.56	2
5.	Ease of payment	4.46	7
6.	Attractive web design	4.50	4
7.	Completeness of product types	4.52	5
8.	There is an offline store	4.36	10
9.	High quality product photos	4.46	6
10.	Fast and friendly response	4.57	3

The Competitif Priority Ratings

The level of satisfaction attribute of AX Store and its competitors (W Store) is viewed in terms of customer perception. From the questionnaire that was successfully collected and after processing, the performance of the attributes above obtained the average value of the respondents, which is shown in Table 2.

Table 2. The *Competitif Priority Ratings*

No	Service Attribute	Company AX Store	Competitor W Store
1.	Product quality	3.80	3.70
2.	Discount	3.50	3.30
3.	Competitive price	3.50	3.42
4.	Completeness of product description	3.55	3.43
5.	Ease of payment	3.43	3.52
6.	Attractive web design	3.54	3.41
7.	Completeness of product types	3.57	3.67
8.	There is an offline store	3.48	3.60
9.	High quality product photos	3.69	3.55
10.	Fast and friendly response	3.53	3.53

The Target Value

The target value is a goal that will be used to achieve the level of performance of the online store service to be analyzed. The setting of target values must be adjusted to the capacity of the online store in terms of its advantages and disadvantages as well as opportunities and threats from the environment.

Table 3. Target Value Analysis

No	Service Attribute	Target Value Analysis		
		AX Store	Target	Status
1.	Product quality	3.80	3.80	Target
2.	Discount	3.50	3.50	Target
3.	Competitive price	3.50	3.50	Target
4.	Completeness of product description	3.55	3.55	Target
5.	Ease of payment	3.43	3.53	Improved
6.	Attractive web design	3.54	3.54	Target
7.	Completeness of product types	3.57	3.67	Improved
8.	There is an offline store	3.48	3.50	Improved
9.	High quality product photos	3.69	3.69	Target
10.	Fast and friendly response	3.53	3.55	Improved

The Improvement Ratio (IR)

This value indicates the level of importance needed to achieve development targets by referring to the level of satisfaction with store service attributes. The higher the improvement ratio, the more effort it will take to achieve the target—the Improvement Ratio is shown in Table 4.

Table 4. Improvement Ratio on AX Store Service

No	Service Attribute	AX Store Performance	Target Value	Improvement Ratio	Performance
1.	There is an offline store	3.48	3.50	1.03747	Improved
2.	Ease of payment	3.43	3.53	1.03218	Improved
3.	Completeness of product types	3.57	3.67	1.03096	Improved
4.	Fast and friendly response	3.53	3.55	1.00283	Improved
5.	Product quality	3.80	3.80	1.00000	Maintained
6.	Discount	3.50	3.50	1.00000	Maintained
7.	Competitive price	3.50	3.50	1.00000	Maintained
8.	Completeness of product description	3.55	3.55	1.00000	Maintained
9.	Attractive web design	3.54	3.54	1.00000	Maintained
10.	High quality product photos	3.69	3.69	1.00000	Maintained

The Raw Weight (RW)

The value of weight is closely related to the level of fulfillment of consumer satisfaction, the amount of effort required to improve these attributes, and the potential value of its sales. The greater the weight value, the more it becomes a major concern for the development team to prioritize those attributes for development—ranking of The Raw Weight shown by Table 5.

Table 5. Ranking of The Raw Weight

No	Service Attribute	RW	Rank
1.	Completeness of product types	4.6398	1
2.	Product Quality	4.6201	2
3.	Ease of payment	4.5830	3
4.	Completeness of product description	4.5721	4
5.	Fast and friendly response	4.5627	5
6.	There is an offline store	4.5527	6
7.	Attractive web design	4.4101	7
8.	High-quality product photos	4.3702	8
9.	Competitive Price	4.3403	9
10.	Discount	4.3001	10

Table 6. The Normalized Raw Weight

No.	Service Attribute	NRW
1.	Completeness of product types	0.102453
2.	Product Quality	0.102317
3.	Ease of payment	0.101202
4.	Completeness of product description	0.100732
5.	Fast and friendly response	0.100521
6.	There is an offline store	0.099651
7.	Attractive web design	0.099469
8.	High-quality product photos	0.098671
9.	Competitive Price	0.097836
10.	Discount	0.097782

The table above shows that the attribute "Completeness of product types" has the highest value of 0.102453, which means that the attribute contributes 0.102453 to consumer needs.

Technical Response and Relationship Matrix

At the technical response stage, the management team will conduct discussions with relevant parties and literature studies for each need and targets to be achieved to improve the performance of service attributes. While the relationship matrix is a matrix that shows the closeness of the relationship between consumer desire attributes (Customer Needs / Whats) and Substitute Quality Characteristics (How). The magnitude of this level of

The Normalized Raw Weight (NRW)

The Normalized Raw Weight shows the contribution of attributes to all wishes of customers. The greater the weight normalization value, the greater attributes' contribution to meeting customer desires—the Normalized Raw Weight is shown in Table 6.

relationship is shown in the visual symbols, which are full rounds that indicate very strong relationships and non-full rounds that indicate medium relationships. These triangles indicate weak and empty relationships that indicate that attributes and SQCs have no relationship—technical Response and Relationship Matrix shown by The House of Quality (HOQ).

Technical Correlation

The determination of technical correlation contains the reciprocal relationship between technical responses. The stronger the technical response affects other technical responses, the stronger the relationship. From the interview with the management, a relationship can be formulated between the technical responses—the correlation that occurs in technical response, shown by the House of Quality (HOQ).
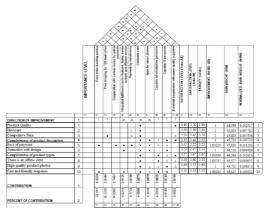
Technical Matrix Determination

The technical matrix maps how much each technical response contributes to service quality. The greater the priority value, the greater the contribution of the technical response in meeting customer satisfaction. The priority value of technical responses that need to be developed is shown by the House of Quality (HOQ)

CONCLUSION

From the results of data processing and analysis, the following conclusions can be drawn:

Figure 1 House of Quality

1. The attribute with the highest importance level is the "Product Quality" attribute, with an importance value of 4.63.
2. The service attribute with the top priority to develop or improve its performance is "completeness of product type," with a weight value of 4.6398.
3. The top priority of technical response to be improved is the "Easy order tracking service," with a priority value of 6.3224 and a normalized contribution of 32.44%.

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