IMPLEMENTATION OF QUALITY FUNCTION DEPLOYMENT (QFD) IN UD. PRODUCTION FURNITURE TO DESIGN SCANDINAVIAN STYLE WARDROBE PRODUCTS

Hanifah Juliyanti
Faculty of Islamic Business UIN Raden Mas Said Surakarta
hanijuly16@gmail.com

| Article Info	Abstract
	The product is an important aspect for the company because it is what the company can produce for consumers. The products created by the company must meet consumers' wants and needs. Therefore, consumer's wants and needs are important aspects of the company that can be reviewed to improve product quality at the company. This study aims to determine the implementation of the Quality Function Deployment (QFD) method as a problem-solving solution in designing Scandinavian-style wardrobe products at UD. Furniture Production. This research was conducted using a quantitative method with a few qualitative methods to conduct a survey related to the voice of desire and consumer satisfaction. This data collection technique used interview methods and questionnaires. Meanwhile, the sampling technique used a non-probability sampling technique, namely consumers or customers from UD. Furniture Production.

INTRODUCTION

The development of the furniture industry in Indonesia at this time has led to more and more enthusiasts in this industry, especially furniture for indoor and outdoor purposes. In addition, business owners are increasingly competing to improve the quality of their products to further satisfy consumers. As a result, product innovation in the furniture industry is growing rapidly. In the company, the product is an important aspect. This product can be in the form of goods or services provided to consumers. So the company is very concerned about aspects related to their services, especially those related to products. Because this aspect determines how the next product is created by the company. In addition, a good product design process maintains the quality of the company's products and services, plans product development and maintenance on a regular basis, has cooperation between team members or departments, and improves processes.

Companies need product innovation to develop and be able to meet the needs and desires of consumers. To be able to fulfil this, each company creates new products which include original products, improved products, modified products and new brands (Lantos et al., 2009) . There are six new product categories, namely new products to the world, new product lines, additions to existing product lines, improvements and revisions to existing products, repositioning, and cost reductions. According to Kotleand Armstrong (2012) new product development is defined as the development of product concepts into physical products in order to ensure that product ideas can be converted into existing products or trying to create new products to be processed and marketed with changes that have occurred in the current market.

UD. Furniture Production is a furniture manufacturer that focuses on Scandinavian-style furniture made of teak wood which has been established since 2015 located on Jl. West Veterans of *Bulakan* Village, *Sukoharjo* District, *Sukoharjo* Regency. UD. Furniture Production produces Scandinavian style furniture. The raw materials used are wood purchased from *Perhutani*'s TPK (Wood Hoarding Place) and community wood. UD Marketing. Furniture Production currently covers within the city of the Residency of Surakarta and outside the city including Bandung, Depok, Tangerang, Bekasi, Jakarta, Yogyakarta, and Semarang. Furniture Production as the party that will be used as a place of research is a home industry or MSME engaged in furniture and furniture for households. Where Furniture Production targets middle and upper consumers by providing premium quality furniture products. UD. Furniture Production wants to know the consumers wants and needs for the products that will be produced by UD. Furniture Production itself. From the data that has been obtained for the past year, furniture sales at UD. Furniture Production, based on information and statistical data obtained from UD. Furniture Production, sales data from various kinds or types of furniture products as contained in the tables and diagrams below:

Figure 1. UD Sales Percentage Chart. Furniture Production
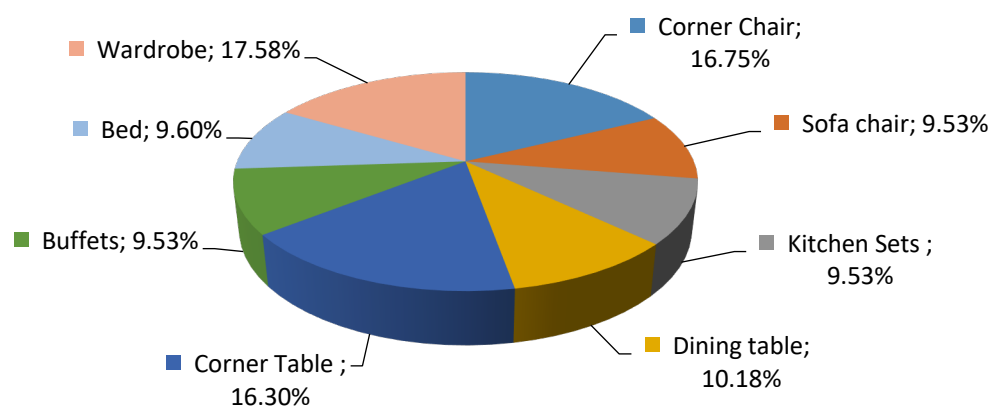
Source: January - December 2022 data

In this case, especially the products that will be developed by UD. Furniture Production is one of their superior products, namely Scandinavian-style wardrobe products. This product is a superior product and a product that is in great demand by consumers. Adjustment of consumer desires who want quality products at affordable prices is still a chore for UD. Furniture Production. UD. Furniture Production needs to adjust the wants and needs of consumers with the production capacity of UD. Furniture Production itself. In addition, it can also be used as a reference point to develop the company's ability to be able to keep up with market demands, especially consumers.

For this reason, Furniture Production will design a Scandinavian style wardrobe product and optimize its quality so as to reduce the risk of consumer dissatisfaction in the future due to things that cannot be predicted and to increase production capacity in the future. Identification of consumer or customer needs for this Scandinavian-style wardrobe product aims to ensure that the wardrobe product that will be designed is in accordance with its functions and needs so that it becomes the basis for designing more specific products.

THEORETICAL REVIEW

Product

Product design and development are all processed related to the existence of a product which includes all activities from the identification of consumer desires to the fabrication, sale and delivery of the product. (Kasan & Yohanes, 2017). Product design is a stage in the process of creating a product based on a certain shape, size, and color model. (Nurochim et al., 2019) New products can include original products, upgraded products, modified products and brand new products. There are six new product categories, namely new products to the world, new product lines, additions to existing product lines, improvement and revision of existing products, repositioning and cost reduction (Tarigan et al., 2019).

Definition New Products

New products can be defined as goods and services that are substantially different from products already marketed by a company (Indriani, 2006) . The definition is considered broad so that it can lead to somewhat different meanings. Therefore, it is necessary for us to determine about new products. The new product criteria included here are (Nailuvary et al., 2020) :

   a) The product is completely new, there are no substitute products. This criterion also includes products whose turnover is very different.

   b) The same product, with a new model.

   c) Counterfeit products that are new to the company but not to the market.

New products include original products, enhanced products, modified products, and new brands developed through research and development efforts. In addition, it can also be based on consumer views about the product, whether the product is new to them or not (Purnomo & Purnomo, 2017) .

Product quality

According to Kotler and Armstrong (2012), most products are provided at one of four levels of quality, namely: low quality, average quality, good quality and very good quality. Some of the above attributes can be measured objectively. Meanwhile, according to Afnina and Hastuti, (2018) Product quality is a condition of an item based on an assessment of its conformity with predetermined measuring standards. The more according to the standards set, the more quality the product will be judged. Quality is something that is able to meet the wants and needs of consumers (*meeting the needs of the consumers*). The tastes or expectations of consumers on a product are always changing so that the quality of the product must also change or be adjusted. Although there is no universally accepted definition of quality, from the five definitions of quality above, there are some similarities Afnina and Hastuti, (2018) and Santoso (2019) , namely in the following elements:

a) Quality includes efforts to meet or exceed customer expectations.
b) Quality includes products, human services, processes and the environment.
c) Quality is an ever-changing condition (e.g. what is considered quality today may be perceived as less quality in the future).

Identify Customer Needs

Identification process customer needs is an integral part of the product development process, and is the stage that has the closest relationship with the process of concept reduction, concept selection, benchmarks with competitors (Competitive Benchmarking), and set product specifications (Ulrich, 1998) . The product is considered to provide benefits when the product can satisfy a need. This applies both to products that are minor variations or improvements to existing products, as well as entirely new products that are revolutionary inventions. The development of novelty of the product as a whole is risky. One indicator of whether customer needs have been identified correctly is to see if the customer likes the first prototype developed by the team. However, structured methods to collect data from customers are still useful and can reduce the risk involved in developing radically new products. Whether or not customers are able to communicate their hidden needs, interacting with customers who are the target market will greatly help the development team gain an understanding of the user's environment and know their point of view. This information about

users will be useful, although not always obtained through the process of identifying the needs of the product to be developed (Ulrich, 1998) .

Product Development Design

Product development is a planned and conscious effort made by a company to improve existing products or to increase the variety of products produced and marketed (Ato'Illah, 2015) . Product development is not only about improving existing products, but also creating new similar products in the market with different styles and packaging. Yustian (2015) adds that product development can be in the form of improvements to existing products or the creation of new products to be processed and marketed with changes that occur in the current market. In developing products that consumers want, companies must first pay attention to customer satisfaction, so that the products developed can be accepted in the market by consumers.

Customer Satisfaction Concept

Basically, the notion of customer satisfaction includes the difference between the level of importance and the perceived performance or results. Engel and Pawitra in Fredi Rangkuti's book also say that this understanding can be applied in assessing satisfaction or dissatisfaction with a particular company because both are closely related to the concept of customer satisfaction (Rahman & Supomo, 2012) . There are measurements to explain customer satisfaction. According to (Apriyani, D & Sunarti, 2017; Kurnia & Suwiknyo, 2018; Natsir, 2018), there are several models that can be used to analyze products, depending on the purpose of the analysis, the type of company and the market situation, namely:

a) Gap between consumer and management perceptions.
b) Gap between management's perception of consumer expectations and product specifications.
c) Gap between product specifications and product delivery.
d) Gap between product delivery and internal communication.
e) The gap between the perceived product and the expected product.

The gap is a discrepancy between the perceived service and the expected service (Rahman & Supomo, 2012) .

Quality Function Deployment (QFD)

Quality Function Deployment (QFD) is a methodology in the process of designing and developing products or services that are able to integrate consumer desires into the design process. (Yustian, 2015). According to Azizah, Lestari and Purba, (2018) , QFD is implemented in several stages, namely the voice of customer (VOC) collection stage, the house of quality (HOQ) development stage, and the design stage, and product development. All activities at each stage can

be carried out as project implementation. The QFD method involves compiling one or more matrices called HOQ matrices. This matrix explains what the customer's needs and expectations are and how to meet them. This matrix consists of several parts or sub-matrix which are combined in several ways, each of which contains related information (Suryaningrat, IB Djumarti Ruriani & Kurniawati, 2010). QFD is a product development system that starts from product design, manufacturing process, until the product is in the hands of consumers, where product development is based on consumer desires (Kasan & Yohanes, 2017).

According to Santoso (2014), to translate consumer wants and needs into the product design process through several stages, namely:

a.   Product Planning Stages (*House of Quality*)

House of Quality (HOQ) is the first stage in the implementation of QFD. This matrix integrates the *Voice of Customers* directly into the technical requirements or technical specifications of the resulting product or service.

Figure 2. *House of Quality* (HOQ)
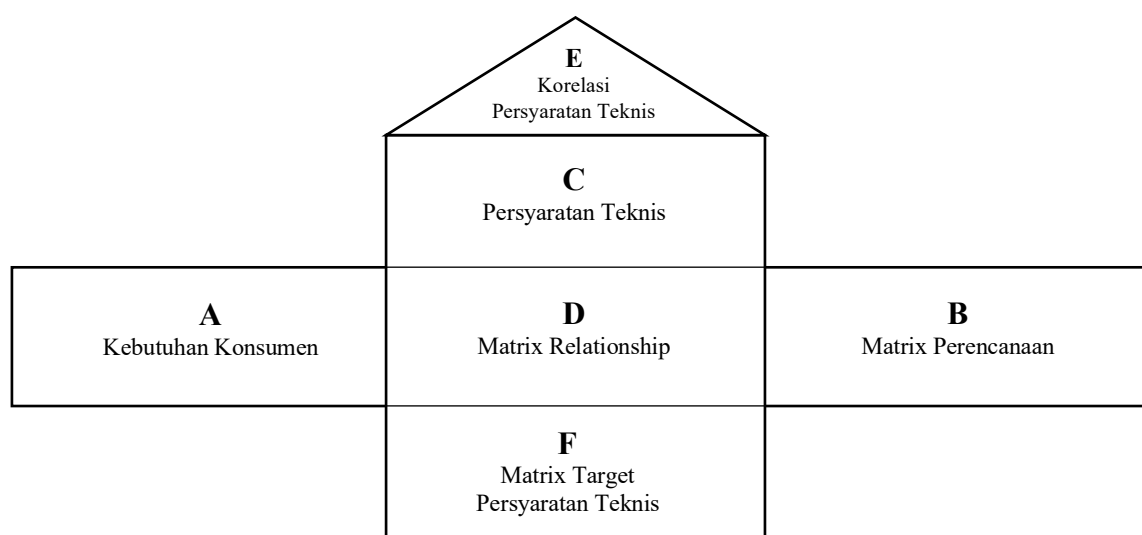
Information:

● Part A

It contains data or information obtained from market research on consumer wants and needs. This consumer voice is the input in the HOQ. The method of identifying consumer wants and needs that is commonly used is interviews both in groups and individually.

● Part B

It contains 3 (three) types of data, namely: the level of importance of each consumer's wants and needs, data on the level of consumer satisfaction with the compared products and strategic objectives for new products or services to be developed.
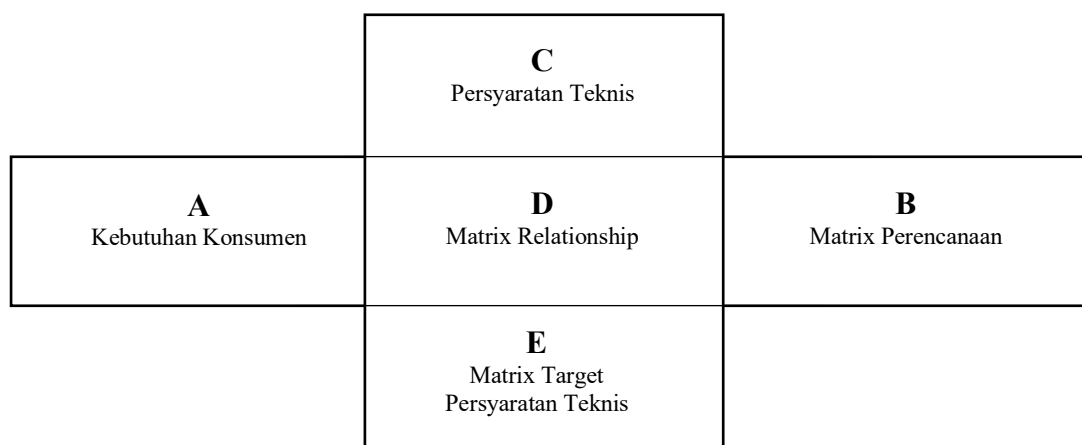
• Part C

It contains technical questions regarding the new product or service to be developed. This technical requirement data is derived based on the voice of consumers that has been obtained in part A. For technical requirements, the unit of measurement is determined on the target that must be achieved. The measurement consists of 3 (three), namely: the bigger the better (the maximum target is unlimited), the smaller the better (the maximum target is zero) and the maximum target is as close as possible to a nominal value where there is no variation around that value.

• D part

It contains the strength of the relationship between the technical requirements of the product or service being developed (section C) and the voices of consumers (section A) that influence it. The strength of the relationship is indicated by certain symbols at certain numbers: not linked (blank), possibly linked, moderate linked, strongly linked

The following is an assessment of the strength of the relationship, there are four possible correlations: Not linked (Blank) is given a value of 0 (changes in technical requirements will not affect customer satisfaction), Possibly linked is assigned a value of 1 (relatively large changes in technical requirements will give little change on consumer satisfaction), Moderate linked is given a score of 3 (relatively large changes in technical requirements will have a significant effect on consumer satisfaction), Strongly linked is given a value of 9 (relatively small changes in technical requirements will have a significant effect on consumer satisfaction) .

Figure 3. Relation Strength Assessment

• Part E

It contains the relationship between one technical requirement and another as contained in part C. The correlation between technical requirements depends on the measurement of each technical requirement. The kinds of relationships between

technicalities are *strong negative correlation (+9), negative correlation (+3), strong positive correlation (-3), positive correlation (-9), and no correlation* (Cohen, 1995).

$$= +9$$
$$= +3$$
$$\mathbf{x} = -3$$
$$\mathbf{*} = \mathbf{-} 9$$

- Part F

It contains three types of data, namely: the level of importance (*ranking*) of the technical requirements, *technical benchmarking* of the products being compared and the performance targets of the technical requirements of the products being developed.

b. Stages of Component Planning (Part Deployment)

Part Deployment is the second stage in the implementation of QFD. The following is the matrix structure for the Part Deployment part:

1) Part A

This section contains the technical requirements obtained from QFD iteration 1.

2) Part B

This section contains the results of normalizing the contribution of technical requirements obtained from QFD iteration 1.

3) Part C

This section contains part requirements related to and in accordance with the technical requirements obtained in QFD iteration 1 and measurements of each part requirements.

4) D part

This section describes the relationship between part requirements and technical requirements. So this relationship is based on the impact of part requirements on technical requirements.

5) Part E

This section contains *part specifications* (units of part requirements), *column weight* (contribution of part requirements) and target specifications to be achieved by each part requirements in the context of development.

c. Stages of Process Planning (*Process Deployment*)

Process planning is determined by the quality characteristics of the sections from the previous matrix.

d. Stages of Production Planning (*Manufacturing / Production Planning*)

At this stage, a *prototype* of a product is produced. The QFD process starts from market segmentation research to find out who the consumers of the company's products are and their characteristics as well as what consumers need, then evaluates the level of market competition. The results of market research are translated into product designs that are technically appropriate or suitable for what consumers need. After product design is continued with process design, namely designing how the product manufacturing process is carried out so that the characteristics of each part or stage of the production process are known. Then determine the operation or production process and the flow of the production process. Finally, a production plan and production implementation are prepared that produce products according to customer needs (Suryaningrat, IB Djumarti Ruriani & Kurniawati, 2010) and (Joegijantoro, 2012) .

Definition of Scandinavian Style Wardrobe

Scandinavian style interior design is widely applied in Western countries, mainly because this interior design focuses on simplicity, the use of each room while still looking elegant and beautiful. Wood is a material that is often used as the main material in building a house in the Scandinavian style. Not only for building houses, wood also dominates the furniture used in homes. Wood is usually used as a material for roofs and walls of houses. Wood can give a warm, *homey*, and natural impression to a private home.

The wood material used is usually not *finished*. Wood is better left natural In Scandinavian style designs, wood materials are usually combined with soft, monochrome and unobtrusive colours. Scandinavian style furniture definitely pays attention to detail and uses high quality materials. Another characteristic of the Scandinavian style interior design is its minimalist shape and is symbolized by a line motif. Scandinavian style furniture fits perfectly into the *urban style* (urban style interior) (Putra & Irwansyah, 2021) . Urban interiors are more dynamic with sleek furniture models, just like Scandinavian furniture, even though they seem minimalist, Scandinavian furniture has a high artistic value. Scandinavian design is an architectural style that is friendly to nature.

RESEARCH METHODS

Data collection techniques

The data collection technique was conducted by interviewing UD owners and UD consumers. Furniture Production. Interviews were conducted face-to-face individually. The interview guide used in this study used a structured and open interview guide. In collecting data with this interview technique, researchers directly met the respondents and asked questions and

answers. The results of this interview contain the data needed to answer the formulation of the problem under study. The interview guidelines in this study are as follows:

Table 1. Interview guidelines

No.	THEORY	QUESTION
1.	CUSTOMER SATISFACTION ON WARDROBE PRODUCTS	a. Do Scandinavian-style wardrobe products match consumer criteria?
		b. Do Scandinavian-style wardrobe products meet consumer criteria?
		c. Are there instruments from existing Scandinavian-style wardrobe products that do not meet consumer criteria?
		d. What kind of instruments do not meet consumer criteria?
2.	CUSTOMER COMPLAINTS ABOUT WARDROBE PRODUCTS	a. Is there an instrument in the wardrobe product that causes complaints?
		b. Are there other complaints from consumers outside of the existing instruments in the wardrobe product?
		c. Can these complaints support consumer satisfaction with wardrobe?

Questionnaire Variable

Research variables are measuring tools used by researchers in collecting data so that their work is easier and the results are better, in the sense of being more complete and systematic so that they are easier to process. In this study there are 25 questions involving several variables as follows:

Table 2. Questionnaire Variable

No	Variable	Indicator	Item	Amount
1	Strong Wood Material	Planning wood raw materials that are strong, not easily porous, and resistant to termites	1, 3, 6	3
		Planning the method used for wood so that it becomes dry wood, resistant to water and resistant to moisture	2, 4, 5	3
		Consumers want the back of the cupboard to use solid wood	7	1
2	The connection between the wood is stronger	Finding ways to make the joints between wood in wardrobe products stronger	8	1
3	The door used is stronger	Looking for a solution so that the door hinges and wardrobe door *handles are strong*	9, 10	2
4	Consumer satisfaction with wardrobe product safety	Covering powerful key instruments, and how to create them	11, 12	2
		Providing a solution in the form of a secret storage drawer to store important documents	13, 14	2
5	Creating solutions to make wardrobe easy to control	Answering complaints about wardrobe products that are difficult to move, and how the wardrobe doesn't leave marks when moved	15, 16, 17, 18	4

6	Creating wardrobe products that are comfortable to use	Creating a wardrobe that can support its function properly, including use, comfort, and alignment with product functions in everyday life	19, 20	3
7	Simplify the process of packing and shipping	Providing a solution in the form of a loading and unloading packing system so that the packing and shipping process becomes more efficient	21, 22	2
8	Providing modern finishing solutions	Giving a finishing touch that adds value to the modernization of the product by adding paint to the finishing of the product	23, 24, 25	3

Data analysis technique

Validity test

Validity test is carried out to determine how good and reliable the data is to use. Validity testing in this study was carried out by comparing the value of r table with the calculated r value. If the calculated r value is greater than the r table value, then the data is said to be valid so that it can be used for further tests (Tanjaya et al., 2019). To test the validity of this measuring instrument, after the questionnaire was tested, it was then analyzed by analyzing the items. Item analysis was done by calculating the correlation equal to 0.3 or more (at least 0.3). Then the item of the instrument is declared valid.

Table 3. SPSS Validity Test Results

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Df=N-2 =50-2 =48	Information
P1	103.3800	125.628	,696	,935	0.2353	Valid
P2	103.6200	130,322	,513	,938	0.2353	Valid
P3	103.4200	128,371	,636	,936	0.2353	Valid
P4	103.3800	129,302	,536	,938	0.2353	Valid
P5	103.4800	127,438	,737	,935	0.2353	Valid
P6	103.5800	130,249	,568	,937	0.2353	Valid
P7	103.5000	127,561	,736	,935	0.2353	Valid
P8	103.4200	131.555	,568	,937	0.2353	Valid
P9	103.3600	128,888	,597	,937	0.2353	Valid
P10	103.3200	129,406	,702	,936	0.2353	Valid
P11	103.4600	129,723	,643	,936	0.2353	Valid
P12	103.3600	129,623	,733	,935	0.2353	Valid
P13	103.5000	128,582	,644	,936	0.2353	Valid
P14	103.6200	131.465	,485	,938	0.2353	Valid
P15	103.4400	126.782	,766	,935	0.2353	Valid
P16	103.5200	132,377	,483	,938	0.2353	Valid
P17	103.4800	135,520	,239	,941	0.2353	Valid
P18	103.5200	125,112	,640	,936	0.2353	Valid
P19	103.5400	128,172	,555	,938	0.2353	Valid
P20	103.5400	130.498	,517	,938	0.2353	Valid
P21	103.3400	132,025	,520	,938	0.2353	Valid
P22	103.3400	128,474	,670	,936	0.2353	Valid

P23	103,4000	128,653	,641	,936	0.2353	Valid
P24	103,4000	128,776	,690	,936	0.2353	Valid
P25	103.3200	131,691	,573	,937	0.2353	Valid

Reliability Test

The purpose of the reliability test in this study was to determine whether the measuring instrument designed in the form of items in the questionnaire was reliable. A measuring instrument is reliable if the measuring instrument is used repeatedly will give relatively the same results (Tanjaya et al., 2019). Reliability can be measured by repeating similar questions in subsequent numbers, or by looking at correlations with other questions. The method chosen to find reliability uses the formula of *cronbach's alpha* with a value > 0.6 then the variable is said to be reliable. The results in table 4 show an *Alpha* value of 0.939.
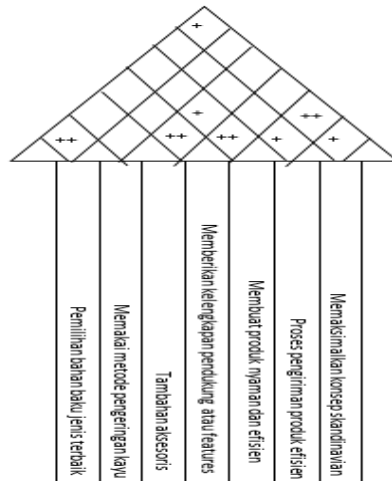
Table 4. SPSS Reliability Test

Cronbach's Alpha	N of Items
,939	25

RESEARCH RESULT

The design of wardrobe product designs for users of wardrobe products uses the House of Quality (HOQ) - Quality Function Deployment (QFD) method, with the following steps:

Figure 4. Quality Function Deployment (QFD) method

WHATs \ HOWs	Pemilihan bahan baku jenis terbaik	Memakai metode pengeringan kayu	Tambahan aksesoris	Memberikan kelengkapan pendukung atau features	Membuat produk nyaman dan efisien	Proses pengiriman produk efisien	Memaksimalkan konsep skandinavian	IC	CSP	Goal	IR	SP	RW	Normalized RW
Kayu yang digunakan tidak mudah patah	⊙	⊙						8,76	7,84	5	0,637	1.5	4,777	0,048
Kayu yang digunakan kering	⊙	⊙						8,28	8,08	5	0,618	1.5	3,708	0,037
Kayu yang digunakan tidak mudah keropos	⊙	⊙						8,72	8,88	5	0,563	1.5	4,222	0,043
Kayu yang digunakan tahan dari rayap	⊙	⊙						8,76	8,52	5	0,586	1.5	4,395	0,044
Kayu yang digunakan tahan dari lembab	⊙	⊙						8,56	8,24	5	0,606	1.5	3,636	0,037
Kayu yang digunakan tahan dari air	⊙	⊙						8,36	7,72	5	0,647	1.5	4,852	0,049
Bagian belakang wardrobe menggunakan kayu	⊙	⊙						8,52	8,72	5	0,573	1.5	4,297	0,043
Sambungan antar papan menggunakan sekrup			⊙	⊙	⊙			8,68	8,2	5	0,609	1.5	3,654	0,037
Engsel pintu kokoh dan kuat			⊙	⊙	⊙			8,8	8,76	5	0,57	1.5	4,275	0,043
Handle pintu menggunakan yang kuat			⊙	⊙	⊙			8,88	8,48	5	0,589	1.5	3,534	0,036
Handle menggunakan bahan stainless steel			⊙	⊙	⊙			8,64	8,24	5	0,606	1.5	3,636	0,037
Kunci pintu dipasang dengan cara dibobok			⊙	⊙	⊙			8,8	8,52	5	0,586	1.5	3,516	0,035
Wardrobe memiliki laci rahasia				⊙	⊙	▲		8,52	8,4	5	0,595	1.2	2,856	0,029
Wardrobe dapat menyimpan pakaian dengan praktis				○	○			8,44	8,52	5	0,586	1.5	4,395	0,044
Wardrobe dapat menggunakan sistem knock down (bongkar pasang)					○	○		8,72	8,56	5	0,584	1.5	4,38	0,044
Sistem knock down memudahkan proses pengiriman					○	○		8,8	8,72	5	0,573	1.5	4,297	0,043
Finishing wardrobe menggunakan jenis cat							⊙	8,6	8,48	5	0,589	1.5	3,534	0,036
Finishing wardrobe agar tampilan wardrobe lebih modern							⊙	8,68	8,4	5	0,595	1.5	3,57	0,036
Finishing jenis cat sesuai dengan konsep Skandinavian							⊙	8,88	8,4	5	0,595	1.5	3,57	0,036
Ranking	3	4	5	1	2	6	7							

Additional right-hand column values (Goal, IR, SP, RW, Normalized RW):

Goal	IR	SP	RW	Normalized RW
5	0,603	1	2,412	0,024
5	0,589	1.5	3,534	0,036
5	0,598	1.5	3,588	0,036
5	0,598	1.5	3,588	0,036
5	0,668	1.5	5,01	0,051
5	0,628	1.5	4,71	0,048

1. Determining Customer Needs (WHATs)

The beginning of the HOQ-QFD is to outline what should be completed on the product based on the needs and desires of consumers. This identification is done by conducting interviews with a consumer who understands the product and is an expert in designing, surveying competitors or competing products and observing the products under study. Based on the results of interviews conducted with several consumers, then obtained data that becomes a reference point to support the next step. The data is in the form of a list of consumer needs. This list of consumer needs is useful for knowing the extent of the required needs such as criteria for raw materials, the need for supporting accessories, procurement of additional accessories, and others.

2. Determining the Level of Consumer Interest (Importance to Customer)

for each voice of the consumer (Voice of Customer).

3. Analysis of Customer Competitive Evaluations.

This column contains consumer perceptions of how well the current product meets their needs.

4. Competitive Satisfaction Performance Analysis

This column contains consumer assessments of the performance of their competitors' products/services that they have felt in meeting their needs and desires.

5. Determine Technical Response (HOWs).

Technical Response is often also called substitute quality characteristics (SQCs). In this section there is a process of translating from consumer desires (voice of customer) into developer language (voice of developer). This process will seek answers to the question of how (how) consumer needs and wants can be met. In this section there are also target specifications that will be determined based on the company's capabilities that have been determined by consumers through their customer needs.

6. Determine Relationships.

The first thing to do is to look for a causal relationship (impact) caused by each technical response to customer needs, which is usually expressed in the form of symbols and weights. In general, there are four possible relationships that occur between the two. The four relationships are:

a. There is no relationship, meaning that changes made to technical characteristics, whether large or small, have no effect on customer satisfaction performance, with a weight of 0 and the symbol is empty/none.

b. The relationship is weak, meaning that large changes made to technical characteristics have little effect on customer satisfaction performance, with a weight of 1 and the symbol $\triangle$.

c. Medium relationship, meaning that relatively large changes made to technical characteristics will have a significant effect on customer satisfaction performance, with a weight of 3 and the symbol $\bigcirc$.

d. Strong relationship, meaning that changes made to the slightest technical characteristics will have a very significant influence on customer satisfaction performance, with a weight of 9 and the symbol $\circledcirc$.

7. Creating a Correlation Matrix.

The matrix, which is located at the very top and looks like a roof, illustrates the relationship and dependence between one technical response and another. The elements of the technical response may influence each other, either positively (supporting each other) or negatively (contradicting each other). The cell that connects the two technical responses is given a symbol of the level of the relationship. With correlation symbol : ($\checkmark\checkmark$) strong positive relationship; ($\checkmark$) weak positive relationship; ($\times$) weak negative relationship; ($\times\times$) strong negative relationship and ( ) no relationship.

8. Determine Technical Response Priorities

This section contains the absolute importance value obtained from the product of the importance to customer value with the relationship value which is then added up for each column of technical characteristics. Large values will be selected as the basis for priority in the technical response improvement process.

9. Making Analysis About Competitive Technical benchmarks/Benchmarking.

This analysis is made by comparing similar products from other companies, on products and similar market segments, with the aim of evaluating existing deficiencies in the company's products, so that improvement efforts can be made.

10. Determine Technical Target (How Much).

This section contains performance targets for technical requirements for new products/services to be developed. In determining the target value of each technical characteristic, it is considered based on the information contained in the priority section and the results of the benchmarking process. The target value, which is stated in the form of this particular specification, is determined jointly with the development team by taking into account the current state of the technology or method.

DISCUSSION

The description of the data and the results of the analysis in each component of the previous QFD method, in general it can be stated that the planning of the Scandinavian-style

wardrobe product development at UD. Furniture Production has implemented the QFD method well. This can be seen by making various improvements to the Scandinavian-style wardrobe products made by the company, including:

a. Selection of the best raw materials with premium quality, especially Teak wood Grade A and B. This type of teak is teak which is considered the most termite-resistant, porous, not easily broken and durable for decades. In addition, the company also applies a new method, namely oven drying or drying the wood for 10-14 days to reduce the moisture content of the wood in order to make the wood drier. This is to answer problems related to wood that is not moisture resistant, and not waterproof.

b. Responding to consumer complaints regarding the connection between the boards in the wardrobe that is less sturdy, the company uses a new accessory, spindle joins, namely accessories to hook or connect the boards to the wardrobe to make it sturdier. Then the lock or handle on the wardrobe is then replaced with a handle and key made of stainless steel. Handles and keys from this material are considered to be stronger, sturdy, and safe for wardrobes, especially wardrobes made of wood like this Scandinavian-style wardrobe.

c. The addition of a secret drawer to store important documents is also a concern for the company. The consumer's desire for the wardrobe to support the security function is also a special job for the company. Then added this secret drawer feature in the wardrobe so that consumers can use it according to their needs.

d. Consumer complaints about Scandinavian-style wardrobe products which when shifted cause stains on the floor, then a solution was given in the form of adding cushioning features made of rubber. These rubber pads are used so that the wardrobe when moved does not cause stains on the floor. Besides that, the bearings can also make the wardrobe easy to move and move.

e. Using a new system for delivery purposes in the form of a *knock down system* or so-called unloading system. This system is used to make the delivery process more efficient. Because *knock down* can save space and reduce shipping costs.

f. Improve the finishing of the wardrobe that does not only use natural finishing but also uses paint, especially white paint. Where finishing using paint is considered more modern and in accordance with the Scandinavian concept compared to natural finishing which shows the wood grain looks like ancient and less modern.

Judging from the selection of materials based on the selection of the best quality materials, the existing wardrobe product designs have covered all segments of consumers or wardrobe product customers which in general can be categorized into two groups. The first group is consumer needs, where consumers or customers are interested in existing wardrobe products according to their needs. The second group is consumer desires, where these consumers or customers want wardrobe products that are in accordance with their wishes (ordering wardrobe products).

CONCLUSION

Based on the results of research and discussion, it can be concluded: Planning to improve the quality of Scandinavian-style wardrobe products at UD. Furniture Production has been carried out using the QFD method. The management of the QFD method is marked by the distribution of questionnaires to UD consumers. Furniture Production found in the company or provided online. 5 of these consumers were interviewed informally to be used as sample variables. Meanwhile, 50 consumers filled out online questionnaires and formally took their data. The category of application of the QFD (Quality Function Deployment) method in the Scandinavian-style wardrobe product development plan is categorized as very good with a percentage of 71%, good 29%, and moderate, low and very low 0%. The needs of consumers or customers for wardrobe products to be designed include things such as material selection, handles, locks, hinges, drawers, stabilizers (legs), delivery efficiency, and color.

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