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Design of a Chiken Trader's Workbench using Quality Function Deployment Method (QFD)

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Abstract:- In general, the tables that are used by traders selling chicken that currently do not have an ergonomic design; therefore this table design research was conducted to determine the wants and needs of the traders for the table. After conducting a search using a Nordic Body Map questionnaire, 10 people were distributed to chicken traders in Soakbato Market. It was found that the traders experienced many complaints on the neck, back, lower back and calves. the authors are interested in doing research on ergonomic table designs and according to the wishes and needs of chicken traders who can help make it easier for traders to do their work using the Quality Function Deployment method and the Anthropometric method. achieved, it can be concluded as follows, namely the main priority is the first thing that needs to be improved is the selection of the table form with the priority percentage value of 51.26%, the 2nd priority of making the table the priority percent value of 30.57%, and the 3rd priority component selection the priority percent value is 18.17%. The Chicken Trader table has a table length of 184.18cm, a table height of 103.23 and a table width of 77.36.

Keywords:- *Nordic Body Map, Quality Function Deployment, Antropometri, Desk, House Of Quality Introduction.*

I. INTRODUCTION

Traditional markets are still very important to the community because they provide a place for people to shop for food and clothing. The work in the market is done by traders who serve in a standing position, and the hours are relatively routine and long, such as chicken traders at Soakbato Market. Working together in a lifting position with the arms not supported puts pressure on the shoulders, which can lead to shoulder complaints, as shown in Fig 1 and Fig 2. Position of Chicken Trader (Kuswana, 2016)

Fig. 1: Chicken Trader Position

Fig. 2: Chicken Trader Position

Source: Personal Documentation, 2021

Following a search using the Nordic Body Map questionnaire, ten people were distributed to chicken traders at the Soakbato Market. Table 1 demonstrates this. The Nordic Body Map Questionnaire results show that traders

have many complaints in the neck, back, lower back, and calves.

No	MSDs	Score	No	MSDs	Score
5	Back pain	28	22	left calf pain	27
7	Lower back pain	28	23	Right calf pain	27
0	Upper neck pain	27	2	Left shouder pain	20
1	Lower neck pain	27	3	Righat shoulder pain	20

Table 1: Nordic Body Map Questionare
Source: observation data

This study was performed to investigate the wants and needs of traders for their tables. It aims to translate user needs that are focused on the benefits or advantages of the product into various quality characteristics at the design stage by using Quality Function Deployment, and it is equipped with anthropometric measurements that study the measurement of human body dimensions (size, weight, volume, etc.) and special characteristics. such as movement space to design the workbench

Nike Illiyine Pangestuti (2020) conducted her research in the journal "Design and Development of Ergonomic and Multifunctional Dressing Tables Using the Quality Function Deployment (QFD) Method in Surabaya." According to the findings of this study, the proposed ergonomic and multifunctional table design has several advantages over the original table. Apart from being more appropriate in size to user needs, this table has several functions that the original table did not have, such as a foldable dressing table and a chair that can be assembled, so this table does not require a large size when not in use. (Pangestuti and colleagues, 2020)

The findings of Rini Alfatiyah's (2017) research on "Redesign of Lecture Chairs and Desks Using the Ergonomic Quality Function Deployment (QFD) Method in the Industrial Engineering Study Program, Pamulang University" Based on the processing of the questionnaire data with the help of the House of Quality (HOQ) matrix calculation, the main priority from the calculation is that the bag storage area is not under the seat, equipped with front and rear wheels and a fixed mechanism for connecting the chair and table, a book storage area under the table, and seat height and table according to body dimensions. Meanwhile, the implementation of ergonomic anthropometric body dimension measurements resulted in chair height = 41.3 cm, backrest height = 39 cm, and writing table height = 39 cm.

Obtained in the journal Muhammad Ashof Abdul Hasan (2020), the researcher used anthropometric data in his research on "Street Carts With an Ergonomic Approach," which resulted in an ergonomically redesigned prototype by measuring anthropometry with the dimensions of the adult human body with an age range of 20–35 years. The new grobak work table design has been adjusted to the height so that employees are comfortable when making seasonings. The cart has been elevated so that the goods can be placed on the top of the cart. (Hasan, M., 2020)

Ari Muzakir and Christofora Desi-Kusmindari (2018) published a journal article titled "Push-Up Detector Applications Using Quality Function Development and Anthropometry For Movement Error Detection" from this study.

Based on the foregoing, the authors are interested in conducting research on ergonomic table designs that are tailored to the wishes and needs of chicken traders, in order to make it easier for them to do their jobs. The Quality Function Deployment (QFD) method was used in the design of the chicken trader's workbench. Using the QFD method questionnaire results to determine what the complaints and desires of chicken traders are in doing their work, and designing an ergonomic chicken trader work desk using the direct measurement method of body dimensions. Anthropometry of chicken traders' bodies in Soakbato Market and other markets.

II. METHOD

- Research Places and Objects
  The location of the product design research carried out at Soakbato Market Palembang on Jalan Mujahidin, Talang Semut, Kec.Bukit Kecil, Palembang City, South Sumatra Province starting from April 1, 2021. In order to make it more valid, the questionnaires were distributed in other markets where there were chicken sellers.

A. Quality Function Deployment

Reliability and Validity Test for interest questionare is shown in Tabel 2 and Tabel 3 below:

Cronbach's Alpha	N of Items
0.711	12

Table 2 :Reliability Statistics

Source: SPSS Data Processing

Based on the test results, it is said to be reliable if Cronbach's alpha is greater than 0.6, and it is declared reliable if Cronbach's alpha is greater than 0.711.

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Attribute	r Count	r Table	Description
Y1	0.538	0,1779	VALID
Y2	0.305	0,1779	VALID
Y3	0.199	0,1779	VALID
Y4	0.254	0,1779	VALID
Y5	0.538	0,1779	VALID
Y6	0.543	0,1779	VALID
Y7	0.509	0,1779	VALID
Y8	0.210	0,1779	VALID
Y9	0.538	0,1779	VALID
Y10	0.513	0,1779	VALID
Y11	0.578	0,1779	VALID

Table 3: Description of Interest Validity Test Results

Source: SPSS Data Processing

The goal of this test is to determine the validity of the questionnaires that were distributed. Based on the results of the questionnaire data validation test for each question item, if r count (Corrected Item-Total Correlation) > r, the table is declared valid as follows:

It can be explained that, based on the validation analysis above, the assessment of the respondents' perceptions of their interests is completely valid because r count Y1 = 0.538 is greater than rtable = 0.1779, and so on.

Reliability and Validity Test for satisfaction questionare is shown in Tabel 4 and Tabel 5 below

Cronbach's Alpha	N of Items
.712	12

Table 4: Reliability Statistics

Source: SPSS Data Processing

Based on the test results, it can be said that it is reliable if Cronbach's alpha is greater than 0.6, and if Cronbach's alpha is greater than 0.712, then the reliability test is declared reliable.

Attribute	**r Count**	**r Table**	**Description**
Y1	0.389	0,1779	VALID
Y2	0.563	0,1779	VALID
Y3	0.299	0,1779	VALID
Y4	0.505	0,1779	VALID
Y5	0.277	0,1779	VALID
Y6	0.557	0,1779	VALID
Y7	0.207	0,1779	VALID
Y8	0.568	0,1779	VALID
Y9	0.379	0,1779	VALID
Y10	0.286	0,1779	VALID
Y11	0.527	0,1779	VALID

Table 5:Results of the Satisfaction Validity Test

Source: SPSS Data Processing

The goal of this test is to determine the validity of the questionnaires that were distributed. Based on the results of the questionnaire data validation test for each question item, if r count (Corrected Item-Total Correlation) > r, the table is declared valid as follows:

It can be explained that, based on the validation analysis above, the perception of the respondents' satisfaction assessment is completely valid because rcount Q1 = 0.389 is greater than rtable = 0.1779, and so on.

B. Voice of Customer

The next step is to determine the level of customer interest based on the specifications obtained by giving weight to the responses of 122 respondents and then looking for the average value.

The average level of consumer interest is then rounded up, and the result of the rounding is the value of the level of importance, namely for the light attribute, which has an importance level of 4. Other characteristics are listed in the table 6 below:

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No	Attribute Product	Interest			
		Total	Average	Order of Interest	Level of Interest
1	Workbench Stregth	324	2,66	8	3
2	Security	352	2,89	5	3
3	Workbench Shape	332	2,72	7	3
4	Easy Disassembly	350	2,87	6	3
5	Workbench Convenience	324	2,66	9	3
6	Multi-function table	482	3,95	4	4
7	Workbench Table Durability	567	4,65	1	5
8	Workbench Design	249	2,04	11	2
9	Workbench Color	324	2,66	10	3
10	Workbench Application	564	4,62	2	5
11	Additional Function	514	4,21	3	4

Table 6: Interest Matrix Attributes

While the average customer satisfaction is described in table 7 below

No	Product Attribute	Satisfaction			
		Total	Average	Order of Interest	Level of Interest
1	Workbench Stregth	324	2,66	7	3
2	Security	251	2,06	9	2
3	Workbench Shape	392	3,21	4	3
4	Easy Disassembly	482	3,95	3	4
5	Workbench Convenience	352	2,89	5	3
6	Multi-function table	249	2,04	10	2
7	Workbench Table Durability	339	2,78	6	3
8	Workbench Design	247	2,02	11	2
9	Workbench Color	325	2,66	8	3
10	Workbench Application	567	4,65	1	5
11	Additional Function	513	4,20	2	4

Table 7: Satisfaction Matrix Attributes

The table above, which is the sum of all points of assessment from respondents for interest and satisfaction, shows that the durability of the table is the most important level of importance from the interest questionnaire, while the satisfaction questionnaire is applied to the table.

C. Costumer Interest Rate Calculation

A planning matrix is a calculation used to translate customer complaints and desires into plans that meet or exceed the requests of respondents. The following is the formula equation:

Level of Interest =324/(122)=2,66
Level of Satisfaction =(324)/(122) = 2,66
Goal = The greatest score between the level of satisfaction and interest
IR (Improvement Ratio) =(2,66)/(2,66) = 1,0

The selling point is determined by the development team, while this value reflects the level of importance that can be obtained by improving and refining the relevant indicators (Lestariningsih, 2019). The following sales point values are employed:

1.5 = Strong selling point
1.2 = Middle selling point

Interest Level Value, Satisfaction Level Value, Goal, Improvement Ratio, and Sales Point Processing are shown in Table 8 below:

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No	Product Attribute	Level of Interest (3.1)	Level of Satisfaction (3.2)	Goal	IR (3.3)	SP
1	Workbench Stregth	2,66	2,66	2,66	1,0	1,5
2	Security	2,06	2,89	2,89	1,0	1,5
3	Workbench Shape	3,21	2,72	3,21	1,2	1,2
4	Easy Disassembly	3,95	2,87	3,95	1,4	1,2
5	Workbench Convenience	2,89	2,66	2,89	1,1	1,5
6	Multi-function table	2,04	3,95	3,95	1,0	1,5
No	**Product Attribute**	**Level of Interest (3.1)**	**Level of Satisfaction (3.2)**	**Goal**	**IR (3.3)**	**SP**
7	Workbench Table Durability	2,78	4,65	4,65	1,0	1,5
8	Workbench Design	2,02	2,04	2,04	1,0	1,5
9	Workbench Color	2,66	2,66	2,66	1,0	1,2
10	Workbench Application	4,65	4,62	4,65	1,0	1,5
11	Additional Function	4,20	4,21	4,21	1,0	1,2

Table 8: Interest Level Value, Satisfaction Level Value, Goal, Improvement Ratio, and Sales Point Processing

Source: Research Data Processing

The calculation results on the level of importance and level of satisfaction, as well as on the goal, which is the value used to determine the target or target desired by the respondent, are obtained from the table 8 above.

D. Matrix Creation, House of Quality

Determining whether or not there is a strong relationship between technical needs and consumer needs requires experience, sharpness, and in-depth knowledge of the entire process of making a chicken trader table. There are many things that cannot be justified when creating a chicken trader table, but it takes several tries to figure out why. Three technical requirements, for example, have a strong influence on product attributes: material quality, safety, and material resistance. Meanwhile, if the relationship has a high talent, it is assigned a value of 9. (strong). If the relationship is moderate, it is assigned a value of 3 (medium), and if it is weak or not as influential, it is assigned a value of 1 (weak). The top of the house of quality lays out the relationships between engineering characteristics. The following is an example of the calculation:

Tech. Importance = (4x1) + (4x1) + (3x9) + (3x3) + (4x3) + (5x1) + (2x3) + (4x3) + (4x3) = 102

Figure 3 shows additional calculations, which are as follows:

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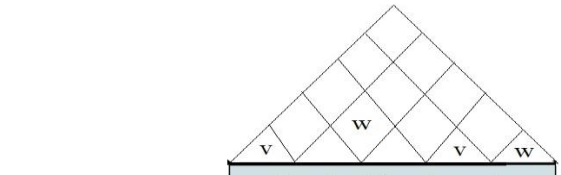

	Functional Requirements					Customer Competitive Assessment						
Customer Requirements	Practicality Level	Material Quality	Function Quality	Color Variations	Product Shape	Level of Interest	Satisfaction Level	Goal	IR	SP	Raw Weight	Normalized Raw Weight
Table Power		●	▽			3	3	3	1,0	1,5	10,12	0,14
Desk Security	▽	●	○		▽	2	3	3	1,0	1,5	7,18	0,10
Table shape	▽	▽	○	○	●	3	3	3	1,2	1,2	7,02	0,09
Easy disassembly	●	○	●		●	4	3	4	1,4	1,2	3,17	0,04
Table comfort	○	▽	○	▽	●	3	3	3	1,1	1,5	3,98	0,05
Multi-function table	○	▽	●		●	2	4	4	1,0	1,5	14,18	0,19
Table Resistance	▽	●	▽			3	5	5	1,0	1,5	9,12	0,12
Table Design	○	●	●	●	●	2	2	2	1,0	1,5	2,78	0,04
Table Color		▽		●		3	3	3	1,0	1,2	3,13	0,04
Desk Application	○	▽	●		○	5	5	5	1,0	1,5	8,15	0,11
Additional Functions	○	▽	●			4	4	4	1,0	1,2	5,49	0,07
Technince Importance	102	136	203	60	208							

Relationships		**Weight**
Strong	●	9
Medium	○	3
Weak	▽	1

Correlations	
Positive	+
Negative	-
No Correlation	

Fig. 3: Determination of the Quality Characteristics of a Chicken Trader's Table

E. Define product Function

Early identification of the relationships between engineering requirements in the process will result in advantages in engineering design that may not be apparent until the process is designed and large sums of money have been spent.

There is a strong positive relationship between the quality of the material and the results in the form of a chicken trader table, just as there is a strong positive relationship between consumer needs and technical requirements or characteristics. The quality house's roof depicts the relationship between engineering characteristics. The information displayed by the quality distribution map (QFD) necessitates the application of the appropriate analytical strategy. The value of the level of importance is multiplied by the value of the relationship between customer needs and function to calculate technical importance. Calculation examples are provided below.

Easy of organizing products = Weight × Goal

= (0×3) + (0×3) + (1×3) + (9×4) + (3×3) + (3×4) + (0×5) + (3×2) + (0×3) + (9×5) + (3×4)

= 114

It can be seen in the QFD matrix shown in Figure 4 below for other calculations.

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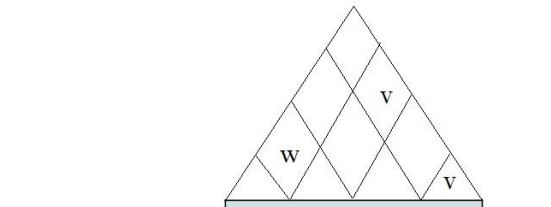

	Functional Requirements				
Customer Requirements	Ease of organizing products	Ease of reaching goods	Added function	Facilitate customer service activities	**GOAL**
Table Power					3
Desk Security					3
Table shape	▽	▽	▽	○	3
Easy disassembly	●	▽	▽		4
Table comfort	○	○	▽	○	3
Multi-function table	○	●	●		4
Table Resistance			▽		5
Table Design	○	●	○	●	2
Table Color					3
Desk Application	●	○	○	○	5
Additional Functions	○	●	●	○	4
Technince Importance	114	124	111	66	

Correlations	
Positive	+
Negative	-
No Correlation	

Relationships		**Weight**
Strong	●	9
Medium	○	3
Weak	▽	1

Fig. 4: Identifying the Purpose of the Chicken Trader's Table

The priorities derived from the above-mentioned function determination are as follows: making it easier for traders to use tables in order to speed up the service process. Following that, the product design concept is determined, as shown in Fig 5 below:

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	Chicken Trader's Table			
Customer Requirements	The table is easy to disassemble	Have more storage space	The table has another function	**Technince Importance**
Practicality Level	s	+	-	102
Material Quality	+	-	-	136
Function Quality	+	+	+	203
Color Variations	-	-	-	60
Product Shape	+	s	s	208
Functions				
Ease of organizing products	-	+	s	114
Ease of reaching goods	+	+	s	124
Added function	s	s	+	111
Facilitate customer service activities	-	+	+	66
TOTAL + (positif)	671	609	380	
TOTAL - (negatif)	240	196	298	
TOTAL	431	413	82	

Correlations	
Better	+
worse	-
same	s

Fig. 5: Determination of a Product Design Concept

Source: Data Processed

After obtaining the concept determination matrix, the next step is to choose the three planned concepts. Meanwhile, to select the best concept based on the highest positive concept value, the table has other functions, allowing the user to have a multi-functional table. Calculation example:

The table is easy to diassemble

= (102×3) + (136×1) + (203×9) + (60×0) + (208×9) + (106×1) + (118×0) + (105×3) + (105×3) + (67×0)

= 5374

Further calculations can be seen in the product design matrix in Figure 6 as follows:

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	Desain Function				
Customer Requirements	The table is easy to disassemble	Has 2 functions	Material strength quality	Size adjustment based on anthropometry	**Importance Cust (%)**
Practicality Level	○	▽			102
Material Quality	▽	▽	●		136
Function Quality	●	●		▽	203
Color Variations					60
Product Shape	●	○		●	208
Functions					
Ease of organizing products	▽	▽			106
Ease of reaching goods		○		●	118
Added function	○	●		▽	105
Facilitate customer service activities		▽			67
Factor Design Priority	5,374	4,094	1,224	3,242	**13,934**
Priority Percent	38.57%	29.38%	8.78%	23.27%	100.00%
Priority	1	2	4	3	

Relationships		Weight
Strong	●	9
Medium	○	3
Weak	▽	1

Fig. 6: Product Design Determination

Source: Data Processed

The production process that must be carried out is compiled from the product design that has been prepared, as well as its priorities. To determine process priority, the relationship of each item in the production process to the product design has been determined.

F. Analysis and Interpretation Stage

Following the completion of the QFD process, the priority of product and process designs that must be implemented is generated. The designer will then determine the production plan, which includes operational matters such as preparing raw materials according to consumer preferences, from the chicken trader's table to serve buyers. The priority percentage is calculated by dividing the priority value of the design factor by the number of design factors and multiplying by 100 percent.

Example:

Priority Percent = (27138/204006)x100%
= 13,30%

For more details, the above is made in a QFD matrix as shown in fig 7 below:

	Chicken Trader's Table			
Customer Requirements	Component selection	Shape selection	Tool making	**Importance Cust**
The table is easy to disassemble	○	●	○	5,374
Has 2 functions		●	○	4,094
Material strength quality	●	▽	○	1,224
Size adjustment based on anthropometry		●	●	3,242
Factor Design Priority	27138	115614	61254	**204006**
Priority Percent	13.30%	56.67%	30.03%	100.00%
Priority	3	1	2	

Relationships		Weight
Strong	●	9
Medium	○	3
Weak	▽	1

Fig. 7: Production Process Determination

Source: Data Processed

56,67 percent of the forms are prioritized based on the design of the production process that has been prepared, as well as the priorities for form selection. The relationship between each item in the production process and the production process that has been determined to receive process priority is determined for each item in the production process.

The QFD analysis results show that the respondents' wants or needs are that the first order table must have at least two functions, with a score of 4094, the second order table be easy to disassemble, with a score of 5374, the third table size, which means according to anthropometry, with a score of 3242, and finally, quality. With a score of 1224, the strongest material that should be used is a wooden table because wood is both strong and environmentally friendly.

The table's shape represents the prioritized production process. During the table production process, the table shape must be prioritized; the second priority is the manufacture of tools or the design of the table whose shape has been determined; and the final and most important priority is the selection of table components. If the table shape has been determined and the tools have been made, the components will be chosen in accordance with the predetermined shape.

G. Antropometri

a) Data Normality Analysis

The following are the results of the normality calculation of the trader's body dimension data:

Example of a Dimensional Hypothesis (D-32)

H0 Denotes that the observation data dimension 32 is normally distributed.

H1 = The dimension 32 of the observation data is not normally distributed.

The result of antropometry normality test is shown in table 9 below:

Dimention	R Count	R table	Description
D 32	0,937	0,05	NORMAL
D 4	1,228	0,05	NORMAL
D 28	1,001	0,05	NORMAL

Table 9: Results of the Anthropometric Normality Test

Source: SPSS Data Processing

If the value of R count is greater than the value of Rtable, then the data distribution is declared to meet the assumption of normality, or H0.

b) Uniformity of Data Test

The following table 10 is the result of the calculation of the uniformity test of the trader's body dimension data.

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Uniformity of Data Test	D32	D4	D28
Average	170,34	103,23	69,92
SD	8,41	3,55	4,52
UCL	195,58	113,88	83,48
LCL	145,10	92,58	56,37
Highest	183	109	76
Lowest	157	98	62

Table 10: Uniformity of Data Test

Source: SPSS Data Processing

Example of calculation (D32)
Mean

$$\bar{X} = \frac{\sum x_i}{n} = \frac{9057}{53} = 170{,}88$$

Standar Deviasi
SD=

$$\sqrt{\frac{\sum(\bar{x}-x)^2}{n-1}} = \sqrt{\frac{\sum((170{,}88-167)+(170{,}88-161)\ldots.)^2}{52}} = 8{,}38$$

UCL = $\bar{X}$+K σ
= 170,88 + 2 (8,38)
= 187,64

Highest Data = 183
LCL = $\bar{X}$-K σ
= 170,88 - 2 (8,38)
= 154,13

Lowest Data = 157

The Dimension of Hand Stretch is then the graph obtained from the data's uniformity is shown in fig 8

- **The Dimension of Hand Stretch**

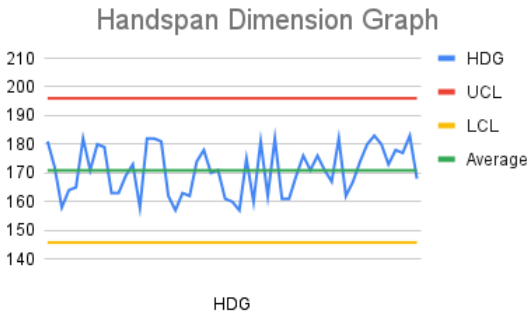

Fig. 8: Hand Stretch Dimension Graph.

According to fig 8 the dimensional graph of the hand strech, it is uniform due to the data distribution interval between UCL and LCL, namely UCL is 187.64 and LCL is 154.13.

- **Elbow Height Measurement**

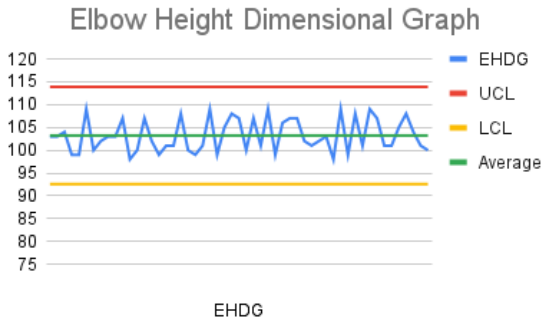

Fig. 9: Elbow Height Dimensional Graph

According to fig 9 the elbow height dimension graph, it is uniform due to the data interval of distribution between UCL and LCL, which is 110.3 and 96.1, respectively.

- **Dimensions of Hand Length**

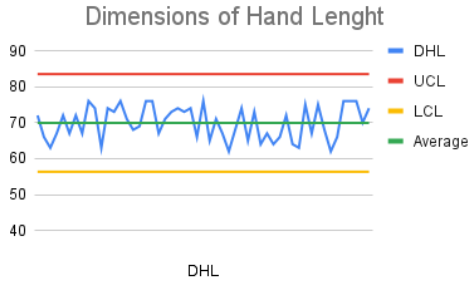

Fig. 10: Dimensions of Hand Length

According to fig 10 the hand length dimension graph, it is uniform because the data interval of distribution between UCL and UCL is 79.0 and 60.9.

c) Data Adequacy Test
The data adequacy test for the anthropometric dimension is calculated as follows in table 11:

Uniformity of Data Test	D32	D4	D28
∑	9057	5471	3706
(∑x)2	82029249	29931841	13734436
∑(x2)	1551371	565407	260202
N	53	53	53
N’	3,77	1,86	6,56
Description	**Fair**	Fair	Fair

Table 11: Displays the results of the Data Adequacy Test

Example of Calculation (D32)
Description :
N'= [(k/s √(N.(∑x^2)-(∑ ⟦x)⟧ ^2))/(∑x)]^2
= [(2/0,05 √(53 (1552866)-(82119844)))/9057]^2

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= [(40√(82301898-82119844))/9057]^2
= 3,772

Based on the height dimension calculations, the N value is 53 and the N' value is 3.772, indicating that the N value is greater than the N' value and that the hand stretch dimension data is sufficient, and so on.

d) Percentile Data

The percentile for the anthropometric dimentions is calculated as follows in table 12 below:

Percentile Data	Calculation	D32	D4	D28
5	X-1,64σ	157.11	97.39	62.49
10	X-1,28σ	160.16	98.68	64.14
50	X	170.89	103.23	69.92
90	X+1,28 σ	181.61	107.77	75.71
95	X+1,64 σ	184.67	109.07	77.36
97,5	X+1,96 σ	187.31	110.18	78.78
99	X̄+2,325σ	190.36	111.48	80.43

Table 12: Calculated Percentile Data Results

The merchant table design that will be used is based on the following criteria based on the data above:

- Table height dimensions are calculated using the elbow height dimension (D4) with a 50th percentile value because a table that is too high will raise the elbow when cutting chicken. Dimensions of the table.
- The size used is the 95th percentile when determining the dimensions of the table length using the dimensions of the width of the fingertip extending from left to right (D32).
- Table Dimensions Table width dimensions are determined by measuring the length of the reach of the hand forward from the shoulder to the tip of the finger (D28). The 95th percentile is used to determine the size.

III. RESULTS AND DISCUSSION

The following are the outcomes of research planning in accordance with data processing in Figure 11. Data Processing Results Table:

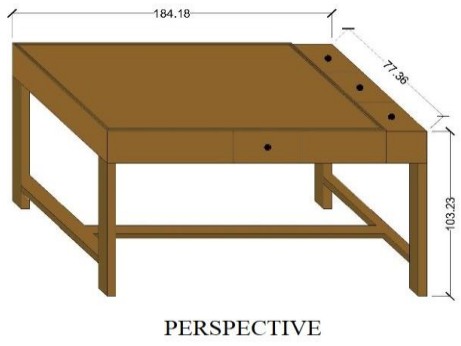

Fig. 11: Table of Data Processing Results

A questionnaire whose results are presented in the form of a table with two additional functions: a storage area for chicken innards; the ability to disassemble the table; and the suitability of the table size with anthropometric calculations, with the selection of components made of wood shown in the appendix.

A. Analysis of the Questionnaire's Validity and Reliability

According to the results of the questionnaire on the importance of reliability and validation testing, it was discovered to be 0.682, which is greater than 0.6 and indicates that the reliability test is declared reliable, and the value of validation r count is greater than r, indicating that the table is valid.

The reliability and validation test satisfaction questionnaire obtained 0.601, which is greater than 0.6, so the reliability test is declared reliable, and the r-count validation value is greater than 0.6, indicating that the table is valid.

B. QFD Data Analysis

a) Voice of Customer

The results of the sum of all points of assessment of respondents for importance and satisfaction show that the most important level of importance for the importance questionnaire is the table's durability, whereas the satisfaction questionnaire is applied to the table.

b) House of Quality

The highest score obtained from the House of Quality is 4.65 on the table's resistance and application.

Product Form, with a score of 208, is an important technical requirement for describing the quality of the table from customer requests.

The function obtained that becomes the priority is an ease in reaching the goods, which means making it easier for traders to use the table in order to speed up the service process.

c) Analysis and Interpretation Stage

The QFD analysis results show that the respondents' wants or needs are that the first order table must have at least two functions, with a score of 4094, the second order table be easy to disassemble, with a score of 5374, the third table size, which means according to anthropometry, with a score of 3242, and finally, quality. With a score of 1224, the strongest material that should be used is a wooden table because wood is both strong and environmentally friendly.

The table shape must be prioritized during the table production process, which means determining the shape of the table that matches the final result, namely in the form of a table with added two functions, namely to make it more practical and

reduce movement, there is a storage area for cut parts. Chicken innards and the ability to disassemble the table because the majority of traders keep their tables after they trade, as well as the suitability of the table size with anthropometric calculations so that the table size has a standard that matches the traders' body postures, causing traders to parse unnecessary movements. The second most important priority is to create tools or designs from tables whose shapes have been determined, or to form results or conclusions from predetermined table shapes, and the final most important priority is to select table components. If the shape of the table has been determined and the tools have been created, then the selection of components that are in accordance with the predetermined shape, namely wood, because you want a flexible table, then try to use a table made of wood because it is easier to design, install, and make drawers.

C. Normality Test, Uniformity Test, and Data Sufficiency Test Anthropometric Analysis

As a result of the normality test, the results are found to be: R=0.937; D4=1.228; and D28=1.001. If the R value is greater than the Rtable value of 0.05, then we can say that the data distribution meets the assumption of normality, which is H0.

According to the graphs in Figures 4.1, 4.2, and 4.3, the data are all uniform if the distribution interval of each data point in the Data Uniformity Tests D32, D4, and D28 is between UCL and LCL.

In the data adequacy test, the value of N 'D32 = 3.77, D4 = 1.85, and D28 = 6.55, which is less than the value of N = 53, therefore the data is sufficient.

D. Analysis of Percentile Data

In the calculation of the anthropometric percentile data obtained from the calculations in table 4.11, the 95th percentile D32 = 184.67 for the length of the table, D4 the 50th percentile = 103.2 for the height of the table, and D28 the 95th percentile = 77.36 for the width of the table.

E. Design Analysis of User Redesign

The user's current design includes a table with a storage area for chicken pieces in the form of a drawer with a lid on top, and the table can be folded and stored so that users who sell in places where they do not stay can have it. Furthermore, the size of this table is based on anthropometric calculations, making it ergonomic.

IV. CONCLUSION

Based on the results of data processing in the previous chapter and the goals to be achieved, the following can be concluded:

- The priority is the shape of the table based on the results of the QFD analysis used to design the table. During the table manufacturing process, the table shape must be prioritized. The second priority is the production of tools or the design of the table, the shape of which has been determined. The final priority is to choose table components. If the table shape has been determined and the tools have been made, the components will be chosen in accordance with the predetermined shape. The researchers designed the chicken merchant table in accordance with Figure 4.15 Data Processing Results Table, which is in the form of a table that has been added with two functions, namely: there is a storage area for parts of chicken innards and the table can be disassembled, as well as the suitability of the table size with anthropometric calculations.
- The obtained anthropometric results are tables that have been adjusted to the anthropometric dimensions that were tested as normal, uniform, and sufficient. This point is also supported by the QFD analysis, which revealed that the dimensions of the Chicken Trader Table are 184.18cm long, 103.23cm tall, and 77.36cm wide. The researchers designed the chicken trader table in accordance with Figure 4.15: Data Processing Results Table.

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