CHAPTER 4

UNDERSTANDING THE REQUIREMENTS OF CUSTOMERS AND ESTABLISHING STRATEGIES TO FULFILLING THEIR REQUIREMENTS

4.1 Introduction

In the previous chapter, challenges for the weavers working in different structures (i.e., the type of independent weavers, Master weavers, and Cooperate society weavers) have been discussed, and developed the priority ranking among these challenges. The results show that the lack of information regarding customer preferences (M1) is one of the top challenges to the weavers under the structure of CW and MW and within the ten challenges for IW. In addition, some recent literature also suggested the importance of manufacturing the products according to the customer's requirements. According to Joung et al. (2018), identifying customer requirements (CR) is a critical initial step toward formulating an effective and efficient business development plan for any organization. It can well be understood using customer suggestions, complaints, and feedback. Wang and Ji (2010) stated that the higher levels of customer satisfaction is directly linked to the extent of CR fulfillment in organizations. A similar assertion was made by Gopi and Samat (2020). Also, Gonzalez (2019) has emphasized that any measures taken toward increasing customer satisfaction will ultimately result in improved customer loyalty and profits for organizations. Furthermore, as Murali et al. (2016) have reported, customer satisfaction is crucial to businesses and must be considered an integral part of all business functions. There is a requirement for every company to prioritize and fulfill the CRs, as failing to do so can lead to a loss of business (Bushe, 2019). In addition to customer needs, customer

feedback can guide Research and Development (R&D) initiatives toward developing new and innovative products (Cooper, 2019; Timoshenko and Hauser, 2019). So, organizations must understand CRs to ensure customer satisfaction and overcome competition. Understanding the customers' current requirements and developing strategies towards such requirements will greatly help the handloom sector. The chapter addresses the following research objectives.

- Identifying and prioritizing handloom customer requirements.
- Identifying technical requirements according to customer needs.
- Applying Quality Function Deployment (QFD) and the Analytic Hierarchy Process (AHP) to rank technologies and set targets for meeting these customer requirements.

The current study visualized issues in two parts: i) customer requirements and ii) technical requirements (strategic approaches). The first one focuses on the requirements of the handloom buyer, while the second one shows the technical descriptors that will be used by the handloom houses to fill the first one. The following sub-sections present these one by one.

From the literature, it is evident that knowing customer requirements is essential, but, according to our knowledge, no study is available in the Varanasi Handloom sector to explore customer requirements and suggest practices to solve them. Table 4.1 shows the customers' requirements used in past literature and considered for the handloom products in the present study.

Table 4.1: Customer requirements while purchasing Handloom product

Sr. No.	Factors	Description	References
1	Price (CR1)	The amount of money needed to purchase a handloom product.	Arora and Aggarwal, 2018; Dhiman et al., 2018; Jegethesan et al., 2012; Lee, 2019; Seram and Kumarasiri, 2020.
2	Color (CR2)	Color is the most visible element for apparel products.	Castelo and Cabral, 2018; Dhiman et al., 2018; Kwan et al., 2004; Lee, 2019; Rahman and Koszewska, 2020.
3	Size (CR3)	The amount to which the clothing adjusted to the shape and size of the body of the consumer	Dhiman et al., 2018; Hsu and Burns, 2002; Jin et al., 2010; Lee, 2019; Rahman and Koszewska, 2020; Seram and Kumarasiri, 2020.
4	Brand (CR4)	Name, symbol, design, or mark used as a signal to communicate social status, wealth, and group affiliation	Kwan et al., 2004; Castelo and Cabral, 2018; Dhiman et al., 2018; Jegethesan et al., 2012; Lee, 2019; Rahman and Koszewska, 2020;
5	Fabric (CR5)	The material used for making the saree	Lee, 2019; Rahman and Koszewska, 2020; Kwan et al., 2004; Seram and Kumarasiri, 2020.
6	Comfort (CR6)	How the garment material was felt while wearing to the subject. Coolness was a major factor in the summer in addition to softness or hardness.	Castelo and Cabral, 2018; Dhiman et al., 2018; Rahman and Koszewska, 2020; Seram and Kumarasiri, 2020;
7	Pattern/Design (CR7)	Patterns are repeated features or themes used to produce a one-of-a-kind design on materials.	Arora and Aggarwal, 2018; Forsythe et al., 1996; Jin et al., 2010; Lee, 2019; Seram and Kumarasiri, 2020.
8	Place of origin (CR8)	The place where the fabric was manufactured.	Hsu and Burns, 2002; Jegethesan et al., 2012; Jin et al., 2010; Kwan et al., 2004; Rahman and Koszewska, 2020.
9	Appearance (CR9)	How clothes look on the specific customer: flattering vs unattractive appearance.	Castelo and Cabral, 2018; Hsu and Burns, 2002; Kwan et al., 2004.
10	Exchange/Return (CR10)	If the customer is unsatisfied with the product after purchase, the facility can change the saree or return it with a full refund.	Dhiman et al., 2018; Kwan et al., 2004; Lee, 2019.

11	Convenient availability (CR11)	Availability of product at customer place, through online or local stores.	Arora and Aggarwal, 2018; Dhiman et al., 2018;
12	Genuine handloom Product identification (CR12)	The product has been made only by using handloom and real fabric.	Prathap and Sreelaksmi, 2022; Ramachandran et al., 2012.

To meet these requirements, various strategies have been identified and are discussed as Technical Requirements (TR) is section 4.2.

4.2 Technical Requirements

A technical requirement or a descriptor is the approach or strategy that may be devised to fulfill the customer's requirements. One of them is the bulk purchase of raw materials, which is a significant factor in enterprises and is also recognized as a strategic management decision and a competitive weapon (Gao and Tang, 2003). Tahir and Anuar (2016) suggest that purchasing raw materials in bulk in the sector will decrease the procurement cost. Bulk purchases by the handloom houses certainly reduce the cost of materials but also increase inventory stocking costs.

The second technical requirement is the low transportation costs. The transportation cost of raw materials, finished products, and other supplies can significantly impact the industry's profitability. According to Yan and Zhang (2015), an analysis of optimizing transportation costs is crucial for logistics enterprises. Bertsimas et al. (2019) showed that advancements in technology, such as the emergence of the Internet and smartphone technologies, have led to increased connectivity and the ability to plan and optimize daily commutes, which will reduce transportation costs. The Handloom sector can also work to reduce such costs.

The mass production of a particular product at a low cost and high throughput has been the traditional manufacturing approach, as noted by Koren et al. (2018). However, with the changing selling strategies by adopting online marketing through social media and websites, there is a need for the bulk availability of fabric with the same design at different locations. Mass production will help the weavers minimize loom setup time and compete with other sellers to make a cost-effective product. Another significant requirement in the handloom sector is loom upgrading. The handloom sector has traditionally relied on conventional looms, which are labor-intensive and time-consuming, leading to low productivity and high production costs. So, the upgradation of the loom will improve the productivity and quality of weaving operations (Khatoon and Iffat, 2022). Loom upgrading will also provide handloom weavers access to a wider range of design options, allowing them to cater to evolving customer demands.

Government support and incentives play a critical role in promoting the growth and sustainability of the handloom sector. During their field survey, Surayya et al. (2015) observed the requirements of the subsidized power and the raw material bank for handloom weavers at convenient locations. According to Ahmed et al. (2022), the government must support and provide incentives to traditional handloom weavers by providing financial support, tax exemptions, and controlling the price of raw materials. Like other manufacturing industries, the handloom sector also generates significant waste that increases production costs and process time and harms the environment. Therefore, reducing manufacturing waste and using recycled or reused materials will optimize the use of resources (Menzel et al., 2010) for sustainable and profitable business. The traditional method of dyeing in the handloom sector is a time-consuming and labor-intensive process requiring significant water and energy. However, with the advancement of modern techniques, the handloom sector reduces process time, labor, and energy (Adeel et al.,

2019). According to Adeel et al. (2020), different methods are being used to modify textile processing based on conventional methods. Automatic dyeing machines can be used to dye fabrics with precision and consistency and reduce processing time. Government support to this extent is highly required.

When it comes to manufacturing handloom products, size and specifications play an important role in determining the final product. Handloom products can be made in various sizes. The size of the product is determined by the length and width of the loom used in the weaving process. Faust et al. (2006) state that garment producers must adopt standard size charts to produce garments that meet customer requirements.

Advertising handloom products is crucial to creating awareness and promoting traditional and sustainable handloom products. There has been a growing interest in handloom products in recent years due to their unique designs and eco-friendly nature. As per Cucculelli and Bettinelli (2015) study, advertising is necessary for a business to succeed economically. On the other hand, the study of Dehghani et al. (2016) revealed that advertising through social media influences the customers' purchase intention. Panda et al. (2013) suggested that companies can use dramatic emotional messages to make advertising more distinctive. By collaborating with influencers or using targeted advertising, handloom products can be promoted to specific audiences, such as those interested in sustainable fashion or those who appreciate traditional weaving.

In the handloom sector, the choice of fabrics can greatly impact the cost and comfort of the finished product. Weavers commonly use natural fabrics such as cotton, wool, silk, or linen to increase comfort. These fabrics are breathable, absorbent, and hypoallergenic, making them ideal for clothing worn close to the skin. Natural fibers may be more expensive than synthetic fibers, but they offer superior comfort and quality.

According to the Çoruh (2015) study, an increase in the thickness of knits of fabric will decrease the person's comfortableness. A similar study by Atalie et al. (2021) suggested the need to check the mechanical properties of the fabric, like elongation, thickness, and coefficient of mass variation for the use of fabric. Manufacturers must carefully consider all of these factors when choosing fabrics for their handloom products.

The handloom sector relies heavily on skilled weavers with high technical expertise and creative flair. Skilled weavers are responsible for creating unique and complex patterns, designs, and textures, which are highly valued fabrics in the market (Albaugh et al., 2021). To become a skilled weaver/designer, one must undergo extensive training and practice. Though this sector is poor in cost competitiveness with other industries, skilled weavers are needed to get good profit margins and quality of products (Aswani and Bhat, 2022).

A warranty is a promise by the manufacturer or seller that the product will meet certain quality and performance standards. According to Ambilkar et al. (2022), the return of Products is a major issue in industries due to the uncertainty associated with the price, demand, quality of the product, and policies made by industries. The warranty can cover various aspects of handloom products, such as defects in materials, workmanship, or design. The warranty can also cover the product's durability, color fastness, and shrinkage. The warranty duration can vary from product to product and manufacturer to manufacturer. According to Denuwara et al. (2019), if consumers have better access to warranty information, they will be more likely to repair/replace their product if it does not meet their standards. Bahn and Boyd (2014) revealed that product with a return policy enhances customer post-purchase satisfaction. A similar study by Oghazi et al., 2018 also revealed that return policy would influence online shoppers' purchase decisions.

Certification is essential to ensuring the quality and authenticity of handloom products. According to Abrar et al. (2016), certain certifications and specified standards for labeling products are required to develop good perception positively in the consumer's mind. This certification also assures that certified organizations follow strict criteria on traceability and environmental performance (Fråne et al., 2017). In the handloom sector, geographical indications (GIs), handloom marks, and silk logos have emerged as significant intellectual property rights (Das, 2010).

In the competitive business market, the location of a store is a decisive factor that can significantly impact the success of a business (Koc and Burhan, 2015). Choosing the right site can help increase customer footfall, brand visibility, and sales. The layout, location of the store with, the variety of products, and the price will contribute to the overall perception of the store (Hosseini et al., 2014). A handloom business located in a good location will increase the chances of potential customers discovering the store and encouraging them to explore the products on offer.

Online marketing of handloom products is the process of promoting and selling traditional handloom textiles through various digital channels. This form of marketing enables handloom weavers and sellers to reach a wider audience and showcase their unique products to potential customers all around the world. The handloom units can use online marketing to increase business awareness, organizational image, and level of customer satisfaction or brand loyalty (Krizanova et al., 2019). According to Eckhardt et al. (2019), with the use of an online platform, they can easily share and access information regarding product information. All such technical requirements considered for the study are shown in Table 4.2.

Table 4.2: Technical requirements

Sr. No.	Name	Description
1	Bulk Raw material purchasing (TR1)	When items or materials are acquired in bulk, the cost per unit and order cost will be reduced.
2	Optimize transportation cost (TR2)	Optimizing transportation costs is when a firm transports its goods from one place to another.
3	Mass production (TR3)	Manufacturing large quantities of goods will decrease the loom setup cost and time.
4	Loom upgradation (TR4)	Upgradation of the loom will have flexibility in design change and smooth production function.
5	Govt support/incentives (TR5)	Support from the government as a reduction in Tax or subsidy
6	Manufacturing waste reduction (TR6)	The use of the appropriate technique of weaving and good quality raw materials will reduce waste.
7	Using modern tools/techniques for dyeing (TR7)	Using modern techniques will make the process quick and easy
8	Manufacturers respect the size specifications (TR8)	Manufacturing different dimensions of saree with respect to customer requirements.
9	Advertising (TR9)	Advertising is a medium for communicating information and messages about goods or services.
10	Using a different type of fabric (TR10)	Different fabric types will give different comfort, and some fabric materials are used to show social status.
11	Skilled weaver (TR11)	The weavers with talent and experience have complete knowledge about weaving techniques and maintenance of looms.
12	Warranty (TR12)	A written declaration that you received when you buy something that guarantees to restore or replace it if it damages
13	Certification/ authentication (TR13)	The process of certifying that the item which was purchased is genuine and will be replaced or exchanged within the particular time
14	Store location (TR14)	A store is a place where customers buy products.
15	Online marketing and sales (TR15)	Online marketing is using web-based channels to sell products to customers.

Customer and technical requirements can be linked to each other to find which technical requirements can fill what type of customer requirements. The next section explains the methodology that is used to address this issue.

4.3 Methodology

The study uses a three-phase approach. Figure 3.1 illustrates the detailed methodology adopted in this study to assess handloom sector customer requirements. In the first phase, the customer's requirements were identified with the aim of prioritizing these. Expert opinion, then, is sought to validate these requirements. The expert group includes two academicians, six handloom weavers, two handloom retailers, and two customers. The customer requirements variables like price, color, design, availability, and others are discussed with experts. After consideration of the expert's opinion, twelve customer requirements were finalized for further analysis. A pairwise comparison of these twelve customer requirements was done with the help of a survey. In phase 2, the customers were provided with a response data sheet containing pairwise customer requirements and asked to evaluate one requirement over another using the AHP rating scale (Saaty, 1988). The sample size of the study was considered by using previous studies like, Unver and Ergenc (2021) used data from 34 respondents to apply the AHP method, while Jabeen et al. (2019) used data from 50 AHP respondents to determine innovation-decision in small and medium enterprises while Akbar et al. (2020) used 31 AHP respondents' data. So, in this study, 73 respondents were collected to implement AHP. The second phase is related to the implementation of AHP to rank these twelve customer requirements.

In the third phase, the QFD method was adopted to convert the customer requirements (CRs) into Technical Requirements (TRs) to identify the key requirements to achieve CRs. To achieve this, a group of experts was selected from various backgrounds, each having more than ten years of experience in the Handloom sector. The expert panel consisted of eight members, including two master weavers, two independent weavers, two cooperative society weavers, and two professors with research expertise in the handloom

sector. The number of experts is decided by using previous studies like Haktanır and Kahraman (2019), who used the opinions of three experts for the QFD method application. In comparison, Kabukcu (2016) used ten experts' data for the QFD method application in the fashion industry. Chavan et al. (2021) used nine industry experts' data for the study. After careful consideration and discussion, the expert panel finalized fifteen technical requirements (Table 4.2) and opined to relate the TRs with CRs.

Quality Function Deployment (QFD) is a technique exclusively used for translating the 'voice' of customers into technical requirements, whereas the Analytic Hierarchy Process (AHP) method can be employed to deal with inconsistencies in judgments. The combination of AHP and QFD will help decision-makers arrive at the best decision with a clear rationale (Dai and Blackhurst, 2012). According to Gupta and Modi (2018), AHP and QFD can be combined to develop an integrated methodology for ranking puroses. Chadawada et al. (2015) used the AHP-QFD method for selecting facility locations. Kürüm Varolgüne et al. (2021) used the AHP-QFD method to understand thermal hotel design criteria that improve customer satisfaction. Chowdhury et al. (2018) adopted the AHP-QFD method for identifying barriers in the supply chain of apparel manufacturers.

Overall, this research identifies the CR in the handloom sector and proposes strategies (technical requirements) to satisfy the CR of the handloom sector.

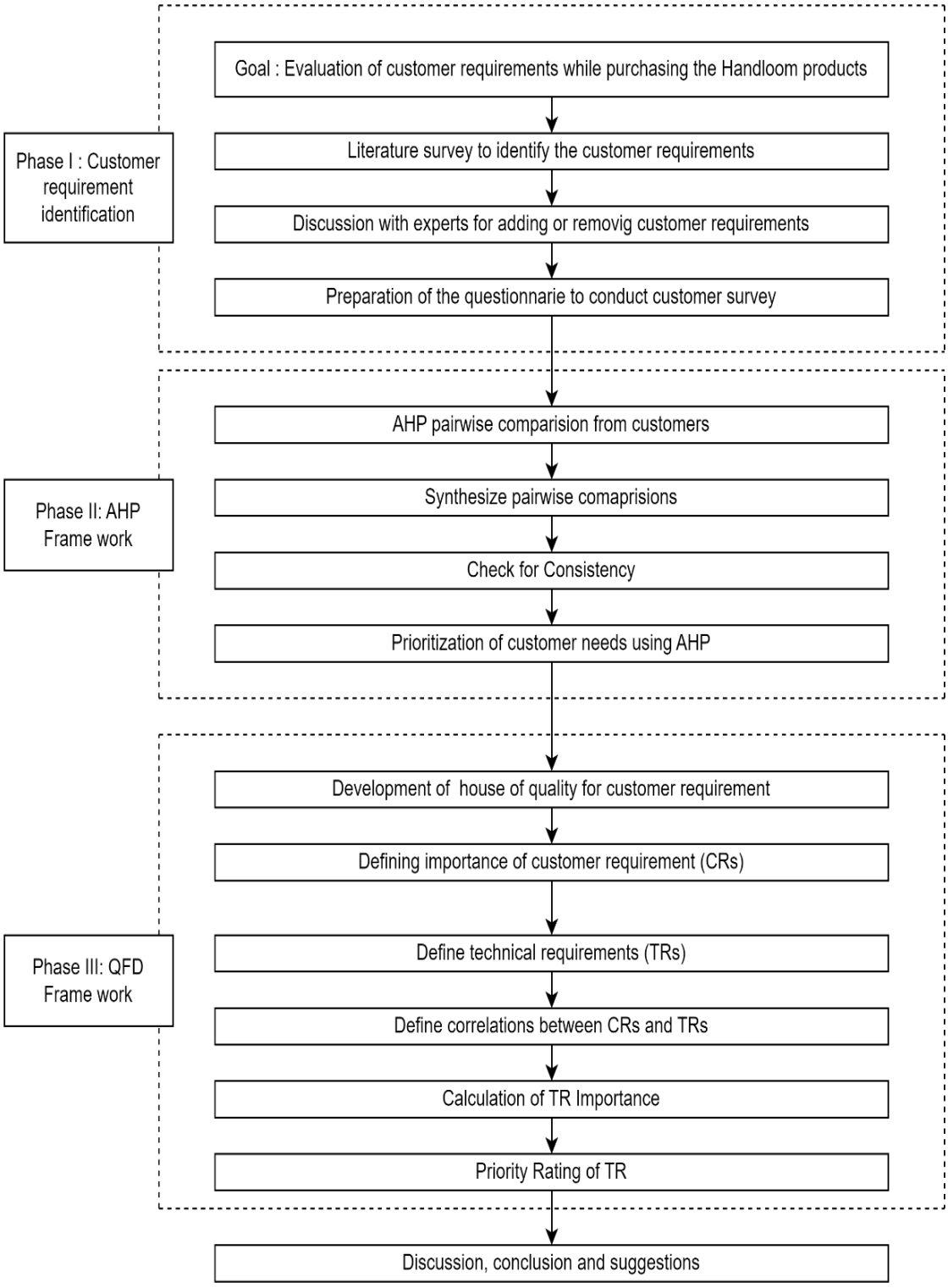

Figure 4.1: Flow chart of study methodology

4.3.1 AHP method

The AHP method was developed by Thomas L. Satty in 1988 and is widely used for decision-making in the real world (Saaty, 1988). According to the Cheng and Li (2001), AHP method provides the pair-wise comparison to execute the consistency test to validate the consistency of responses. Similarly, Darko et al. (2019) highlighted that AHP method provides the high level of consistency in decision making. Dong and Cooper (2016) argued that various methods have been proposed over the past three decades to determine individual weights. However, these methods suffer from drawbacks, such as the need for at least one individual in a group to act as a judge of the judges, providing subjective weighting for decision-makers' preferences. This potential for bias poses a significant obstacle in practice.

One of the primary applications of AHP is to calculate criteria weights, as demonstrated by De FSM Russo and Camanho (2015). The steps of AHP have been summarized by various authors, such as Mayyas et al. (2011), Jabeen et al. (2019), Akbar et al. (2020), and Unver and Ergenc (2021), and are reproduced below.

I. Customer Requirement Identification (CR): Identify the requirements of customers for purchasing products in the handloom sector with the aid of literature surveys and expert opinions. The customer requirements identified from the literature review, such as price, color, size, brand, etc. These factors have been validated by experts for consideration in the present study. Table 4.1 represents the factors of customer requirements (CR).

II. Pairwise Comparison Matrix Formulation: Create a questionnaire to collect data from handloom customers using the Saaty scale (Saaty, 1988) to formulate a comparison pairwise matrix. For example, in the comparison of CR1 with another

customer requirement, CR3, if the customer deems CR1 to be more important than CR3, they will assign a value of 3. Similarly, if the respondent feels that CR3 is more important, they will provide a value of 1/3. The data collected from the respondents is aggregated using the geometric mean, and the values of pairwise comparisons are presented in Table 4.3.

III. Maximum Eigenvalue Computation: Operate the formulated pairwise comparison matrices to calculate the maximum eigenvalues, which are then used to estimate the relative importance weights of the customer requirements. The Eigenvalues are calculated as mentioned in section 3.4. the final weight of the Customer requirements are shown in Figure 4.3.

IV. Consistency Ratio Evaluation: Calculate the consistency ratio to ensure the consistency of the pairwise comparisons. The calculation steps for the Consistency Ratio are discussed in Section 3.4. The Consistency Ratio for the pairwise matrix is 0.06, which is less than 0.10. This result indicates that the collected data was consistent and can be used for further calculations.

4.3.2 Quality Function Deployment

Akao (1972) proposed Quality Function Deployment (QFD), one of the most important and widely used methods developed for identifying customer requirements and needs for developing products and services (Sofyalioğlu and tunail, 2012). This method is useful in improving customer satisfaction, reducing product development cycle time, and reducing production costs (Ping et al., 2020). According to Haron et al. (2022), for understanding customer requirements, the QFD method is better than traditional methods such as brainstorming, cause and effect diagrams, checklists, and FMEA. Similarly, Kadir et al. (2020) highlighted that the QFD method is preferred over approaches like the SWOT

analysis because the QFD approach is more technical and conscientious. This method is used in different fields: the identification of passengers' needs in cabin interiors for high-speed rails in China (Chin et al., 2019), improvement of the Internet banking sector quality (Adiandari et al., 2020), prioritization of expectations of infrastructure users (Bolar et al., 2017), understanding customer requirements for healthcare services of Singapore (Lee et al., 2015).

The framework of the house of the quality diagram is shown in Figure 4.2. The QFD process steps are shown below.

I. Customer Requirements (CRs): Fixing and assigning the weights of these CRs using the AHP method. The customer requirement weights (CRW) obtained from the AHP method are used as inputs for QFD. For example, the weight of CR1, which was found to be 0.111 using the AHP method, is utilized as input in the QFD method, as shown in Figure 4.4.

II. Technical Requirements (TRs): Identification of fifteen Technical Requirements (TRs) With the help of the literature survey and expert opinion. The technical requirements are used to fulfill the customer's requirements. The selection of technical requirements was done using a literature review and expert suggestions. The selected technical requirements are shown in Table 4.2

III. Relationship between CRs and TRs: Developing a relationship matrix between CRs and TRs with expert opinion and suggestions, where 0 or space = none, 1 = weak, 3 = moderate, and 9 = strong (Murugan and Marisamynathan, 2022). The ranked relationships are shown in Figure 4.4.

IV. Correlations among TRs: The measure assesses the degree of change in one TR relative to another TR, as a change in one TR may have either a positive or negative impact on the other TRs. The roof of HOQ shows the interdependence of TRs using

the roof ranking method, denoted by symbols such as "– = strongly negative, - = negative, empty = none, + = positive, ++ = strong positive," as described by Murugan and Marisamynathan (2022). The correlations among TRs are determined based on input from experts. The input of correction from the experts are shown in Figure 4.4.

V. Importance rating of TRs: The final rating of TRs is the main attribute to meet the customer requirement. The TRs are ranked by using relative importance, as mentioned by Kowalska et al. (2018). For example, the weight of TR1 is calculated as 3 * 0.11 + 3 * 0.109 = 0.66. Similarly, the values of the remaining items are computed and presented in Figure 4.4.

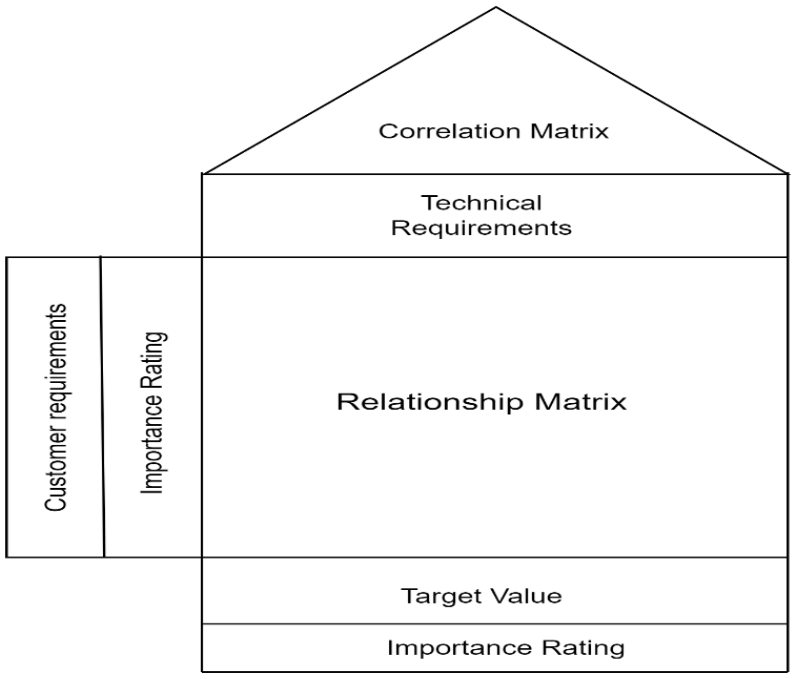

Figure 4.2: House of Quality matrix diagram (Source: Mayyas et al., (2011))

4.4 Results and Discussion

The data was collected from the customers by using the questionnaire. The customers' data were aggregated using the geometric mean method (Yumoto, 2019), and a pairwise comparison matrix was formulated, as shown in Table 4.3. The customer's responses were checked for the consistency ratio (Unver and Ergenc, 2021). The consistency ratio for customer requirement is 0.06, which is within the limit which is less than 0.1. The requirements are analyzed and provided with the relative weights for each requirement. The relative priority weight is shown in Figure 4.3.

Table 4.3: Pairwise comparison between the customer requirements

	CR1	CR2	CR3	CR4	CR5	CR6	CR7	CR8	CR9	CR10	CR11	CR12
CR1	1.00	2.54	2.54	0.97	2.40	1.24	0.89	1.22	0.85	1.78	2.14	0.48
CR2	0.39	1.00	1.02	2.56	1.54	1.05	1.25	2.73	0.89	2.40	2.10	0.32
CR3	0.39	0.98	1.00	2.64	1.56	1.20	1.50	1.20	1.29	3.06	2.42	1.24
CR4	1.03	0.39	0.38	1.00	1.36	0.85	1.25	2.44	0.85	2.54	2.36	0.67
CR5	0.42	0.65	0.64	0.74	1.00	2.14	2.16	3.14	2.14	3.15	2.65	0.95
CR6	0.81	0.95	0.83	1.18	0.47	1.00	2.08	0.96	1.50	3.14	2.12	1.56
CR7	1.12	0.80	0.67	0.80	0.46	0.48	1.00	0.73	0.40	3.06	1.06	0.66
CR8	0.82	0.37	0.83	0.41	0.32	1.04	1.37	1.00	0.92	2.44	2.15	0.86
CR9	1.18	1.12	0.78	1.18	0.47	0.67	2.50	1.09	1.00	2.42	2.10	1.24
CR10	0.56	0.42	0.33	0.39	0.32	0.32	0.33	0.41	0.41	1.00	1.56	0.36
CR11	0.47	0.48	0.41	0.42	0.38	0.47	0.94	0.47	0.48	0.64	1.00	0.27
CR12	2.08	3.13	0.81	1.49	1.05	0.64	1.52	1.16	0.81	2.78	3.70	1.00

λ_{max}= 13, CI= 0.10, CoR= 0.06<0.10 (Accepted)

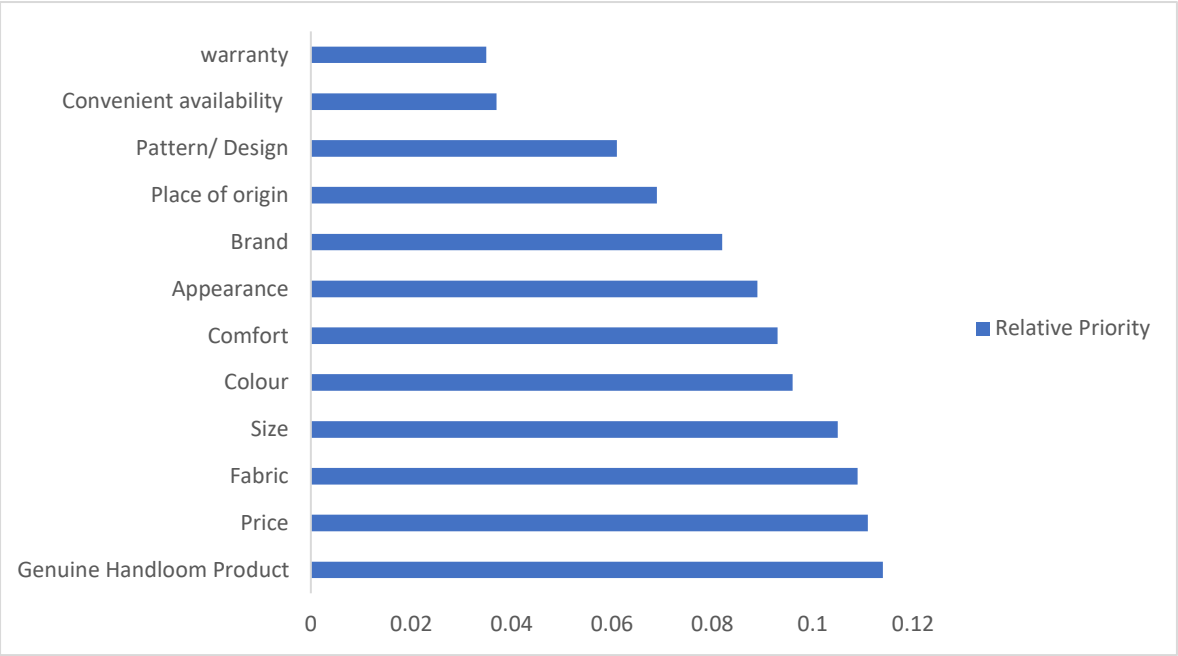

Figure 4.3: Relative priority weight of the customer requirement (CoR= 0.065)

Based on the AHP analysis, Figure 4.3 of the customer's requirement reveals that purchasing genuine handloom products (0.114) is the major criterion for customers purchasing handloom products. A study by Prathap and Sreelaksmi (2022) also reveals that the handloom consumers of India often face the dilemma of buying handloom products because customers cannot find any information on the product that can help them assess the quality of the product. The government of India has developed the Handloom mark for Handloom products. However, Verma and Mishra (2018) suggested that local and regional GI logos should be used to gain consumers' confidence and to differentiate the original products from the counterfeit products. This will help the customers to identify genuine hand products easily. The second important factor for the customer is the product's price (0.111). According to Schuitema and De Groot (2015), the product's general price will influence customers' purchase intentions, and they like to purchase at low prices. However, when the product's quality and image are good, they prefer to purchase at an even higher price. The fabric is the customer's third important factor (0.109). In the early times, cotton,

mulmul, and silk were used. But at present, they use chiffon, crepe, and georgette to make a fabric (Acharya and Samani, 2017). The products made with pure silk are famous in the handloom sector, especially the saree made of silk (Gowri and Ramachander,2018). In the handloom sector, customers show interest in products that are made of silk. Results from QFD analysis

The identified CRs and their relative priority Weight (Customer Requirement Weight: CRW) of the AHP method are used to implement the QFD method. The TR is finalized based on the literature review and eight experts' discussions, as shown in Table 4.2. Further, to formulate a relationship matrix between CR and TR, the opinions of these eight experts are obtained by explaining the QFD approach in order to have fair opinions. All eight data inputs were compiled, and HOQ was formulated, as shown in Figure 4.4.

The QFD analysis shows that importance should be given to the adoption of online marketing and sales (TR15). Tran (2017) also showed that online marketing connects companies with customers and helps develop new opportunities for customers to know about brands and products. Similarly, Bala and Verma (2018) mentioned that with the use of online marketing, sellers could provide services to customers in real-time. With the help of online marketing, weavers can connect to the customers directly by removing the intermediate traders/agents for purchasing handloom products, so profit can be quickly realized in the handloom sector. Online social media marketing is creating an impact on business, and this social media marketing is also cost-effective (Chatterjee and Kar, 2020). The weavers can also use this marketing strategy to connect with the customers to advertise and sell the products. But unfortunately, this is difficult to adopt by handloom weavers as the uneducated weavers do not have the skills to perform online marketing. So, to adapt to

online marketing and sales, weavers can use online e-commerce retailers' platforms to sell products. Also, A government initiative is required for digital training of weavers.

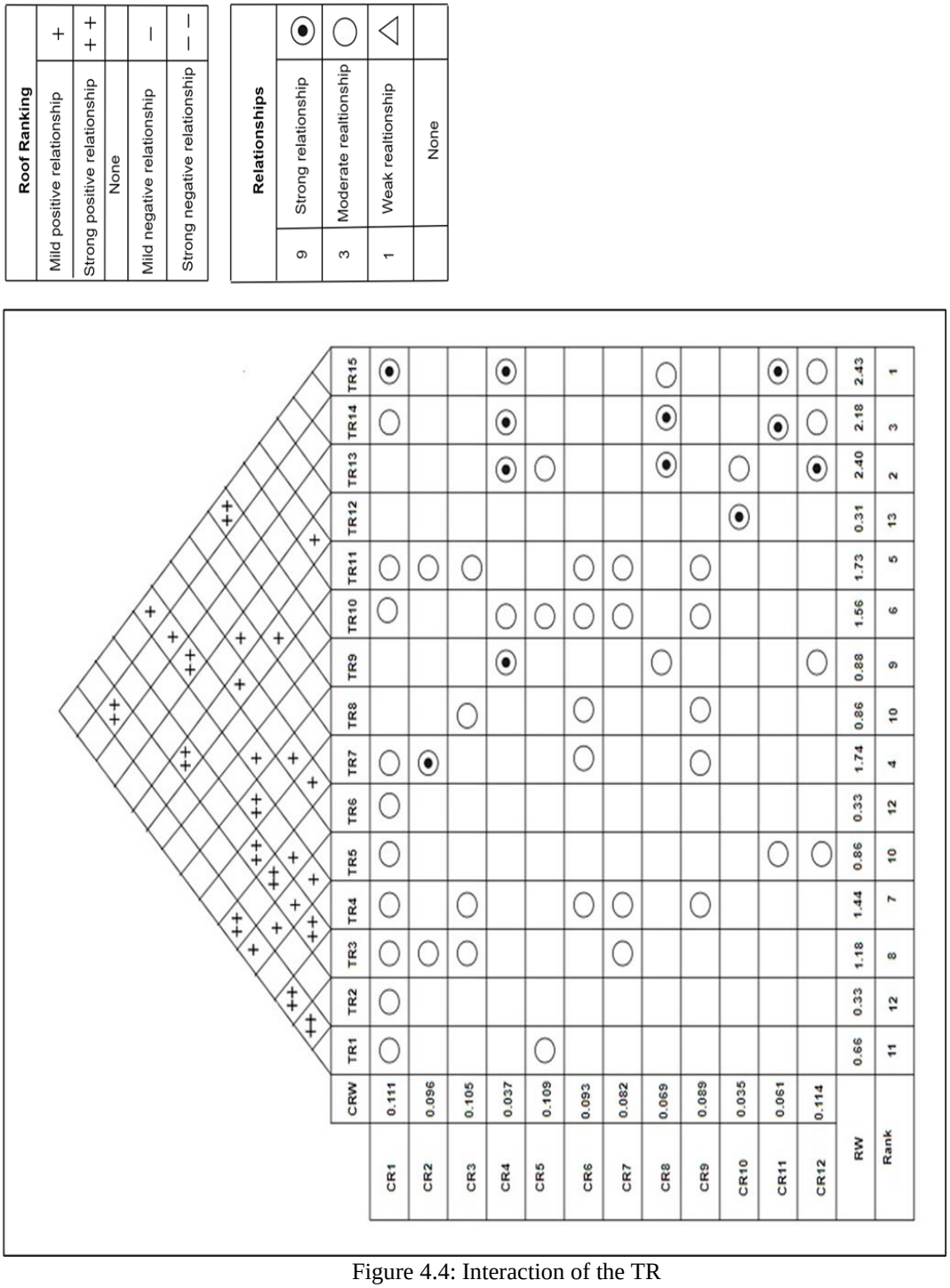

Figure 4.4: Interaction of the TR

QFD approach has identified the certification and authentication of the products (TR13) as the second important issue. According to Maniatis (2016), the certification and

labeling of the products will gain the customer's trust and will also positively affect the product's purchasing decision. A similar study conducted by Wang et al. (2022) on young consumers of the apparel sector in the US also revealed that the certification of products with labels could help consumers identify the products and will attract customers by enhancing the product's public image. So, in the handloom sector, it is also necessary to provide certification of the product with all the details of materials used in manufacturing and a certificate of warranty of the product in case of exchange or return of the product or making necessary modifications to the size of fitting. The third crucial technical requirement is the store location (TR14). According to Chen and Tsai (2016), store location is one of the most critical factors for business development. The study of Xhema et al. (2018) shows that the store's location will affect customer purchasing behavior. A similar survey by Bayram and Xu et al. (2016) study also reveals that store locations near the center of a city usually attract more customers. The store location will increase the footfall of the customers. Equally important issues are modern tools and techniques for dyeing (TR7) and Skilled weavers (TR11). Skill weavers are not only required for online marketing and sales but also to operate the loom efficiently. It is binding that the weavers must have good health and skill to operate the loom for long hours. Their environment must be quite conducive and supportive to their operations. Modern techniques must also be adopted for dyeing in order to reduce waste and hazards to the environment. Also, important issues are Loom upgradation (TR 4) and the use of different fabrics (TR10). Making a variety of low-price products, it is essential for weavers to work out for various types of fabric in order to attract more customers. There is a need to find approaches to weave a variety of products with mass production under labor-intensive loom production.

The roof of HOQ in Figure 4.4 shows the qualitative correlation between one technical requirement and another. TR 15: Online marketing and sales strongly correlate

to TR 9: Advertisement and highlight that online advertising is becoming essential for these weaving houses to build their customer base. Similarly, TR 14: Certification and authentication and Government support/incentives are correlated. This correlation shows that there is a need for government support to develop a network of stores to provide an opportunity for the weavers to sell their products directly. Kumar (2023), in his study, showed that by developing such a network, the government can promote handloom as tourism by developing a network of collection centers, warehouses, and selling stores along the tourist locations. TR 14 is strongly correlated to TR2: optimize transportation cost, showing that such a network will give the advantage of reduced cost of transportation. Similarly, TR 13: Certification and/or authentication is highly related to TR5. This is another important dimension that requires government support. Customers must strongly believe that their rights are preserved when they purchase a certified product.

4.5 Conclusion

The sector's development will depend on the level of satisfaction of customer requirements. Even though the handloom sector is ancient, the sales of the sector are very low in the present conditions. The study aimed to identify the customer requirements that influence handloom product purchasing decisions. The study concluded that customers require genuine handloom products and are price-sensitive. Their purchase is also influenced by the type of fabric used in the product. To fulfill these customer requirements, the handloom weavers must provide certification of the products, which have to contain silk mark logos, handloom marks, and geographical indication marks, and they have to use an online marketing strategy to avoid the mediators and reduce the intermediate cost of the product. Another important technical factor is the store location, which will help the customer to ease accessibility and increase the loyalty of the sellers. Developing a network

of stores at places of high footfall will allow Weaver to sell their products directly, curbing the role of the middleman. To this extent, the role of the government will be very important.

This study sheds light on the challenges faced by handloom weavers in competing with other sectors, emphasizing the importance of understanding and meeting customer requirements. Through the application of the Analytic Hierarchy Process (AHP) and Quality Function Deployment (QFD) methods, customer requirements (CR) and technical requirements (TR) were identified, ranked, and analyzed. The findings highlight the significance of online marketing and sales, certification, product authentication, and store location in satisfying customer requirements. These issues were selected for further research work. Decision-makers can leverage these insights to prioritize strategies and enhance competitiveness within the handloom industry. By aligning with the highest-ranked technical requirements to fulfil customer needs, such as adopting omnichannel marketing and sales, managers can effectively address market demands and enhance customer satisfaction.

Building on these insights, the subsequent chapter delves into the imperative of embracing omnichannel marketing/sales as a strategic response to customer requirements in the handloom sector. Recognizing online marketing and sales as pivotal strategies, the chapter explores the intricacies of omnichannel marketing and identifies key barriers to implementation within the handloom industry. Addressing these challenges aims to provide handloom businesses with actionable insights to navigate the dynamic landscape of online sales effectively. Through a comprehensive understanding of omnichannel strategies and the removal of implementation hurdles, handloom businesses can cultivate a seamless customer experience, thereby strengthening their competitive position in the market.