

Implementing Quality Management Tools to Improve Customer's Journey at Café

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Abstract

Delivering high-quality service is critical to the café's performance in order for it to survive and grow competitively. This paper aims to identify the impact of service quality on customer satisfaction in the context of cafés before customers enter the café, during the experience, and after leaving. The paper used a mixed-method approach using a qualitative method by applying two interviews with focus groups, and a quantitative method by conducting three online questionnaires. Further, several quality management tools, namely: Affinity diagram, Interrelationship diagram, Tree diagram, Process decision program chart (PDPC), Matrix diagram, Prioritization matrix, and Quality function deployment (QFD) were implemented to assess the problems that confront the café while serving customers and to figure out solutions to solve these problems. The issues regarding the café's service quality are categorized into seven main categories which are menu, place, communication with customers, B2C customers, B2B customers, suppliers, and employees. The house of quality (HFQ) represents 22 factors of customer needs, the highest percentage refers to hiring a third party whereas the lowest percentage describes the need for providing pre-prepared food. The paper revealed that to improve the customer journey and enhance the café's performance, the café needs to always maintain a high level of quality, listen to employees' concerns, use automation systems, and collect data and plan accordingly.

Keywords

Service Quality, Affinity Diagram, Interrelationship Diagram, Tree Diagram, Process Decision Program Chart (PDPC), Matrix Diagram, Prioritization Matrix, Quality Function Deployment (QFD)

1. Introduction

With the vast growth in the services industry sector in the last few years, consumers have become more sophisticated and now integrate their decision-making toward a quality-focused society. Therefore, the competition among SMEs is stimulating and intense. Such changes in social factors and an increase in the GDP enhance the food services and hospitality industry's attractiveness to several different companies to become potential competitors (Gunden et al., 2020). Delivering high-quality service is critical to the company's performance in order for it to survive and grow competitively. Increased competitiveness and customer demand for high service quality have not spared the food business (Ramseook-Munhurrin, 2012). Customers nowadays have a wide selection of options, and service quality conditions do have an impact on a café's competitive advantage (Chow et al., 2007).

Service quality is the organization's efficiency to succeed in the targeted customer expectation, to fulfill their need (Parasuraman et al., 1985; Shokouhyar et al., 2020). In addition, the services company needs to measure the knowledge and loyalty of its employees to ensure its long-term and short-term strategic plans. Such employees can enhance the company's position in the services market (Abdullah & Rozario, 2015). Besides being interactive, quality service promotes development for the services company in keeping loyal customers (Albarq, 2013; Kandampully, 1998; Mahamad & Ramayah, 2003), and satisfying customers by exceeding their expectations about the services (Wisniewski, 2001; Woodside et al., 1989). Due to the fact that service quality is such a crucial aspect in cafes, research on service quality, customer satisfaction, and behavioral intentions in this context has been rising.

Recently in Saudi Arabia, consumers have become increasingly aware of the quality of the products and services. Furthermore, individuals' quality of life has been improved, and the increase in the qualified number of shareholders and investors in the food services industry and hospitality enhance the well-being of citizens. According to the ministry of culture, Saudi Arabia is recognized as the main importer of coffee around the world. The saturation of cafés in Saudi Arabia and the diversity of their concepts in the last years coincide with the social and economic changes (Ponnaiyan et al., 2021). In this respect, the increase of the cafés branches brought challenges to the whole industry, and there are numerous options available to potential customers in addition to creating a differentiated brand image to increase market share (Shin et al., 2015).

This paper aims to identify the impact of service quality on customer satisfaction in the context of cafés before customers enter the café, during the experience, and after leaving. The café is a Saudi trademark bakery that is specialized in the production of chocolate-based desserts. The quality of the café services has been examined using several quality management tools. According to Parasuraman et al. (1985), SERVQUAL was used as a dimension to measure ser-

vice quality in the 1980s. The most popularized dimensions are reliability, assurance, tangibles, empathy, and responsiveness (Parasuraman et al., 1988). The results of this study will entail a suggestion for a better understanding of the company's main factor in customer satisfaction. Findings from this study are expected to advance not only knowledge of the relationship between the factors but will also be able to provide additional insight to assist cafés in improving quality by directing them to better serve customers. Subsequently, they will be able to satisfy their customer expectations and improve their journey within the café.

2. Methodology

In order to identify the most critical problems that confront the café and the issues that prevent customer satisfaction, the paper used a mixed-method approach using both qualitative and quantitative methods. For the qualitative method, the research team applied several interviews with focus groups. For the quantitative method, the paper uses a survey strategy and conducts three online questionnaires.

2.1. Focus Group

As mentioned above, several interviews had been done with focus groups in order to get as much as the researchers could from the problems that confront the café while providing their services to the customers. The first interview took place virtually on Wednesday, February 23, 2022, and was moderated by the researchers. The participants involved in the study were: the Executive Manager, Finance and Product Development, Project Manager, and Operations Manager. The focus group lasted around 100 minutes. The discussion was mainly about issues associated with business growth and product development, ultimately leading to customer satisfaction.

The second focus group took place on-site on Thursday, March 17, 2022, and was moderated by the researchers. The research team was divided, and each member visits a branch of the three café branches. The participants involved in the study were: two Branch Managers, four waiters, and several customers. The focus group lasted around 85 minutes. The discussion was mainly about issues associated with menu development, customer complaints, suggestions, and issues with the work regarding the café ultimately leading to customer and employees' satisfaction. From these different interviews, the most critical problems and issues that confront the café and prevent customers' satisfaction are:

2.1.1. Issues Associated with Product Development and Menu Re-Engineering

- Lack of variation in the menu item.
- Lack of new items on the menu (desserts and savory).
- Increase the prices on the menu.

2.1.2. Issues Associated with Customers

1) B2B

- The complex buying process for B2B customers.
- Delay in payment.
- Lack of flexibility in customization of B2B customer order.
- No order application for B2B customer.

2) B2C

- Customers hold tables for a long time.
- Long waiting time.
- Lack of customers' feedback.
- Customer's resistance to trying new dishes or drinks.
- No contact phone number for customer services.
- No reservation application.
- Limited seating area.
- No waiting area.
- Short operational hours.

2.1.3. Issues Associated with Suppliers

- Out of stock raw material.
- There is no clear and agreeable payment interim.
- Lack of information about suppliers in SA.

2.1.4. Issues Associated with Employees

- Staff training is high cost.
- The cost of hiring employees, whether Saudi or foreigner.
- Lack of career development in terms of salary or position.

2.2. Survey

As stated before, three online questionnaires were conducted to identify customer complaints and suggestions, and issues regarding the café service quality and to assess the satisfaction level of customers. For this paper, the customers are the business-to-customer (B2C) which are customers who visit the café and get benefited from the café services, business-to-business (B2B) which are other cafés and restaurants that benefited from the café products, and the employees.

2.2.1. B2C Survey

The survey was built based on the service quality dimensions (SERVQUAL) of [Parasuraman et al. \(1988\)](#) to test the service quality of the café. The measurement items were adapted from [Ramseook-Munhurrun \(2012\)](#). The SERVQUAL items were modified to fit the context of a café, with additional food quality-related items added. These extras were believed to be crucial to customers' dining experiences, such as fresh food availability, well-presented food, and food flavor. All items were five Likert scales where (1) means "strongly disagree" and

(5) means “strongly agree”. The items were translated into Arabic to make them easy for participants. Both versions (English and Arabic) are available in the google form so a participant can choose the language of the survey. The link was sent to the company CIO to distribute in branches. A total of 174 responses were included in the study. After testing the validity and the reliability of the measures, one item from both the responsiveness and assurance dimensions was excluded due to their insignificance and non-correlations. Further, the price dimension was excluded regarding its low Cronbach alpha (see **Table 1**).

The mean and standard deviation were performed for the measurement items to assess the level of satisfaction as portrayed in **Table 2**. Based on the results of the mean and standard division, customer satisfaction is 3.9 out of 5 points. This indicates that customers are partially satisfied with the existing quality of café service.

2.2.2. B2B Survey

Based on the product quality dimension of **Garvin (1984)**, the measurement items were adapted from **Wimarnaya et al. (2021)**. All items where five Likert scales were (1) means “strongly disagree” and (5) means “strongly agree”. The link of the google form was sent to the CIO of the company to send it to B2B customers. A total of 18 responses were included in the study. After testing the validity and the reliability of the measures, two dimensions of aesthetic and perceived quality were excluded due to their insignificance, non-correlations, and low Cronbach alpha (see **Table 3**).

The mean and standard deviation were performed for the measurement items to assess the level of satisfaction as shown in **Table 4**. Based on the results of the mean and standard division, customer satisfaction is 4 out of 5 points. This indicates that customers are satisfied with the existing quality of café products. Yet, the paper is going to discuss the issues that confront this customer group and the problems that the café faces while dealing with them.

2.2.3. Employees Survey

The measurement items were adapted from (**Macdonald & MacIntyre, 1997**) and **Hammouri and Abu-Shanab (2017)**. All items where five Likert scales were (1) means “strongly disagree” and (5) means “strongly agree”. The link of the google form was sent to the CIO of the company to send it to the employees. A total of 21 responses were included in the study. After testing the validity and the reliability of the measures, four items were excluded due to their insignificance, non-correlations, and low Cronbach alpha (see **Table 5**).

The mean and standard deviation were performed for the measurement items to assess the level of satisfaction as shown in **Table 6**. Based on the results of the mean and standard division, employees’ satisfaction is 3.6 out of 5 points. This indicates that employees are partially satisfied with the existing café work conditions.

Table 1. The measurement items reliability and validity (B2C Survey).

Dimension	Measure	Indicator	α	TC
Tangibles	A parking area is available in the mall.	TA1		0.400**
	The café location is convenient.	TA2		0.320**
	The waiting area is available.	TA3		0.488**
	The dining area is clean.	TA4		0.700**
	The dining area is visually attractive.	TA5	0.648	0.737**
	The air conditioning in the café is convenient.	TA6		0.420**
	The dining area is comfortable.	TA7		0.462**
	The staff is well-groomed.	TA8		0.633**
	The menu is readable.	TA9		0.301*
Reliability	The provided bills are accurate.	RL1		0.970**
	The customer's orders are served exactly as ordered.	RL2	0.935	0.968**
Responsiveness	The orders are served quickly.	RS1		0.840**
	The staff handles customers' special requests.	RS2	0.864	0.907**
Assurance	The staff has the knowledge to answer customers' questions: e.g., menu items ingredients.	AS2		0.844**
	Understand customers' specific needs and wants.	AS3	0.924	0.914**
Food Quality	The order is fresh.	FQ1		0.939**
	The order is well presented.	FQ2		0.942**
	The order is tasty.	FQ3	0.920	0.956**
	The restaurant offers a variety of menu items.	FQ4		0.745**
Satisfaction	I am satisfied with my decision to visit this café.	ST1		0.726**
	I feel that my experience with this cafe has been enjoyable.	ST2	0.823	0.915**
	I will recommend this cafe to my family and friends.	ST3		0.927**

Notes: α = Cronbach's alpha, TC = Total correlation, ** P -value < 0.001, * P -value < 0.05.

Table 2. Measurement items mean and SD (B2C Survey).

Measure	Mean	SD
TA1	4.263	0.769
TA2	4.111	0.942
TA3	2.652	1.257
TA4	3.750	1.460
TA5	3.222	1.334
TA6	4.444	0.820
TA7	4.500	0.731
TA8	3.972	1.342
TA9	4.694	0.663
RL1	3.861	1.629
RL2	3.750	1.598
RS1	3.611	1.666
RS2	3.666	1.463
AS2	3.500	1.592
AS3	3.666	1.501
FQ1	3.833	1.574
FQ2	3.805	1.516
FQ3	3.791	1.600
FQ4	3.277	1.406
ST1	4.791	0.442
ST2	4.694	0.547
ST3	4.652	0.631
Total	3.932	1.203

Note: SD = standard deviation.

Table 3. The measurement items reliability and validity (B2B Survey).

Dimension	Measure	Indicator	α	TC
Performance	The ingredients have a balanced taste.	PER1	0.729	0.434**
	The ingredients have a good aroma.	PER2		0.367*
Features	Suitable product packaging.	FEA1	0.801	0.658**
	Various sizes form the products.	FEA2		0.532*
Reliability	The products are received exactly as they were ordered.	REL1	0.624	0.553*
	The delivery schedules are accurate.	REL2		0.677**
	The provided bills are accurate.	REL3		0.429*

Continued

Durability	The products have a longer shelf life.	DUR1	0.66	0.571*
Conformance	Packaging's ability to protect the product.	CON1	0.861	0.538*
	The company delivers the products safely.	CON2		0.544*
Serviceability	The product tester is available.	SER1	0.919	0.441**
	The payment procedures are flexible.	SER2		0.220*

***P*-value < 0.001; **P*-value < 0.05.

Table 4. Measurement items mean and SD (B2B Survey).

Measure	Mean	SD
PER1	4.055	0.802
PER2	4.222	0.646
FEA1	3.944	0.872
FEA2	4.000	0.907
REL1	4.277	0.669
REL2	3.444	1.616
REL3	4.166	0.785
DUR1	4.222	0.732
CON1	4.166	0.707
CON2	4.000	0.840
SER1	4.444	0.783
SER2	4.166	0.985
Total	4.092	0.862

Table 5. The measurement items reliability and validity (Employees Survey).

Measures	Indicator	α	TC
I receive recognition for a job well done.	ES1	0.912	0.744**
I feel close to my colleagues at work.	ES2		0.885**
I get along with my supervisor.	ES3		0.853**
The work system procedures in the company are clear.	ES4		0.785**
The working environment is positive.	ES5		0.709**
All my talent and skills are used at work.	ES6		0.808**
The machines and tools are easy to use.	ES7		0.559*
The working hours are adequate.	ES9		0.759**
I feel good about working at this company.	ES12		0.700**
I feel secure about my job.	ES13		0.683**

***P*-value < 0.001; **P*-value < 0.05.

Table 6. Measurement items mean and SD (Employees Survey).

Measure	Mean	SD
ES1	2.785	1.577
ES2	3.357	1.984
ES3	4.071	1.141
ES4	3.785	1.121
ES5	4.000	1.037
ES6	4.142	1.027
ES7	3.785	0.974
ES9	4.071	1.071
ES12	3.071	1.591
ES13	3.000	1.519
Total	3.607	1.304

3. Customer Journey

A customer journey is a visual sequence of the direct and indirect encounters a consumer has with a product, service, or brand, and its impact on their attitude and feelings about the journey, beginning with their recognition of their need to purchase to be fulfilled. The customer journey map (CJM) is a multi-faced stage that represented the touchpoint that aims to enhance the organization's ability to respond to the voice of the customer (Micheaux & Bosio, 2019; Rosenbaum et al., 2017). In a customer journey map, touchpoints are typically listed horizontally along a timeline. Based on the data from the questionnaire items, the research team formulated two CJM of the café for the B2C and B2B.

3.1. B2C Journey Map

Figure 1 represents the CJM of the café for the B2C. It includes three phases: before visiting, during the experience, and after fulfillment of the need. In those phases, customers interact with the staff of the café in two stages—frontstage and backstage phase. In the frontstage, customers interact with tangible services provided by the company which are the location of the café, the employee interaction with the customer, and the menu. While the backstage deals with the intangible department of the café such as marketing responsibilities.

3.2. B2B Journey Map

On the other hand, the CJM of B2B includes three stages: pre-transaction, during, and post-transaction as portrayed in **Figure 2**. In those stages, customers interact with the operations manager of the café. Customer behavior in the pre-transaction stage has three phases which are awareness, consideration, and supplier shortlisting. In the next phase, purchase and delivery are the two phases that express customer behavior. The last stage of the post-transaction includes the two phases of post-sale and renewal.



Figure 1. B2C journey map.

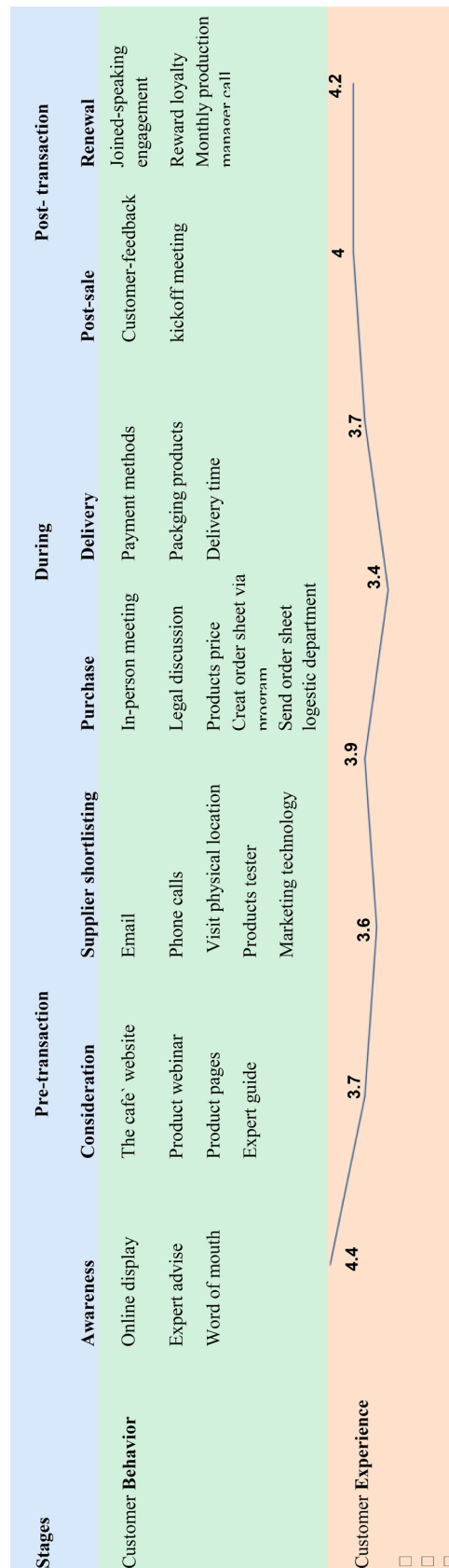


Figure 2. B2B journey map.

4. Quality Management Tools

Quality management tools are practical techniques, skills, procedures, or systems that can be used for specific activities to support positive modifications and enhancement (McQuater et al., 1995). According to Dale et al. (2007), he reported that each technique has its own characteristics and that when used together, they can emphasize facts in different ways and provide the greatest information analysis. It is feasible to analyze areas that create the most problems, give direction for regions to be prioritized, and identify failure causes by combining quality management tools. The primary point is that solving problems is difficult without the effective use of a variety of tools and strategies.

In this paper, seven quality management tools, namely: Affinity diagram, Interrelationship diagram, Tree diagram, Process decision program chart (PDPC), Matrix diagram, Prioritization matrix, and Quality function deployment (QFD), will be implemented in order to assess the problems that confront the café while serving customers and to figure out solutions to solve these problems to achieve a higher level of customers satisfaction.

4.1. Affinity Diagram

The affinity diagram, one of the “Seven New Quality Management Tools,” is used to organize and classify ideas and data. Jiro Kawakita, a Japanese scientist, invented the term affinity diagram in 1960, and it is also known as the KJ or TKJ technique, where the “T” stands for “Team” (Suárez-Barraza et al., 2016). By employing an Affinity Diagram, data may be grouped based on their natural connection via brainstorming or analysis of verbal data acquired through surveys, interviews, or feedback responses. In the beginning, it was designed as a quality management tool, but currently, it is used in a wide range of industries to generate ideas for decision making. Using the Affinity Diagram is recommended by Ishikawa when data or concepts need to be arranged (Awasthi & Chauhan, 2012). According to Foster and Ganguly (2007), the following stages are used to create an affinity diagram:

- 1) Identify the issue that needs to be expressed. Present a brief, straightforward summary of the problem that is easily understood by team members.
- 2) Distribute note cards and pens to each team member. Ask them to write down any difficulties that belong to the topic. Each card should include just one concept.
- 3) Arrange the completed cards so that all participants may see and access all of them.
- 4) Allow members of the team to sort the cards into groups that have a common theme. Carry out this activity discreetly, since discussing your ideas does not assist. Work fast and efficiently.
- 5) If you disagree with another person’s placement of a notecard, remain silent and just relocate it.

6) Consensus is reached when all the cards are grouped, and the team members have stopped moving the cards. Once an agreement has been achieved on the ordering of the cards, header cards may be created.

7) Draw a completed affinity diagram.

The result of applying these steps is revealed in a completed Affinity diagram of this study which is presented in **Figure 3**.

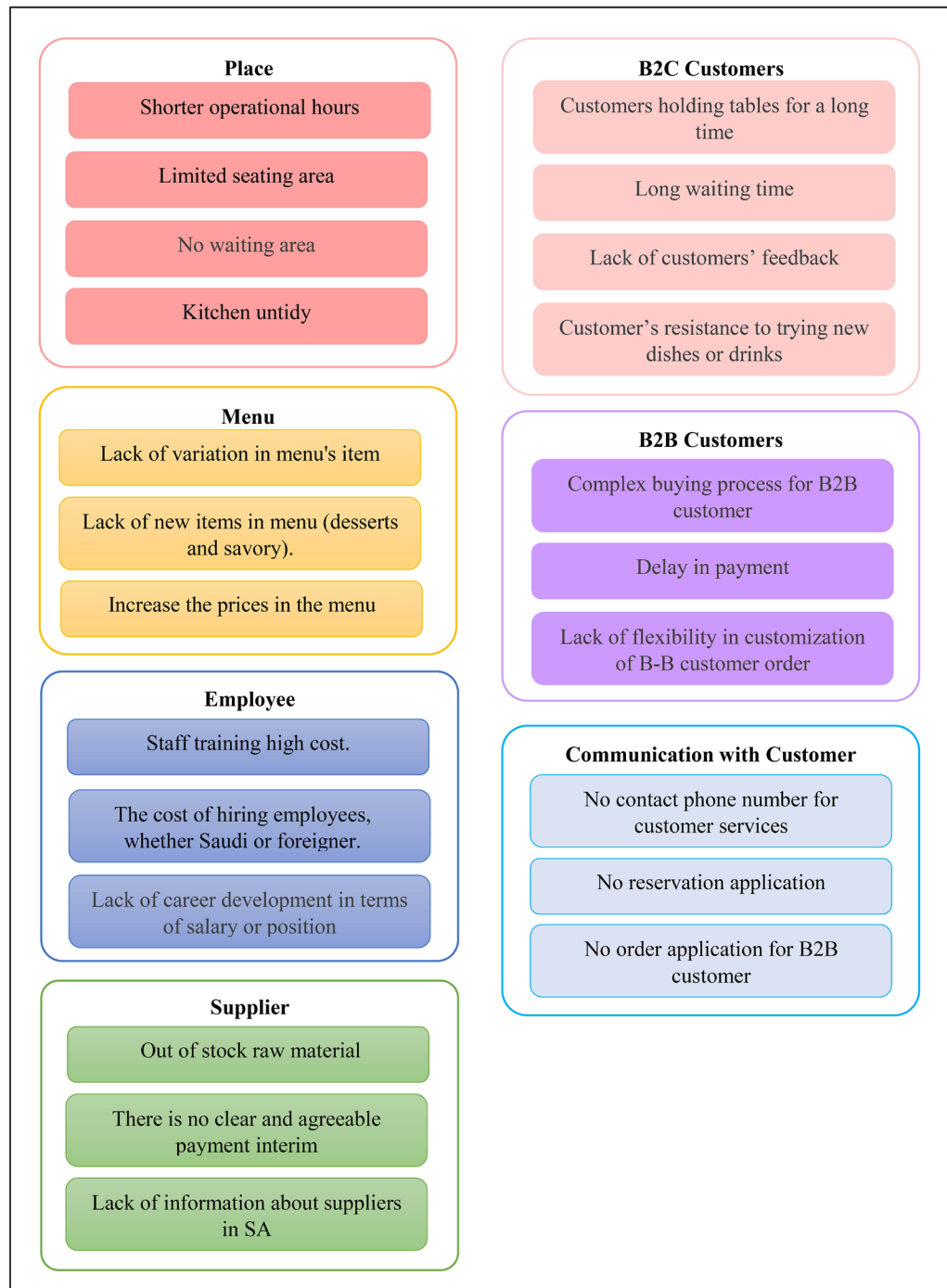


Figure 3. The affinity diagram.

4.2. Interrelationship Diagram

The interrelationship diagram is a method for prioritizing topics that have the greatest effect. The interrelationship diagram helps distinguish between causes (or drivers) and consequences (or outcomes) (Jones, 2014). The affinity diagram was utilized to determine the main influence and to identify a problem's primary underlying concerns. The primary goal of the interrelationship diagram is to improve knowledge (or drivers) and impacts (or outcomes) (Foster & Ganguly, 2007). The following relationships are retrieved from the logical connection between groups in this research (see Figure 4).

1) Shorter operational hours & the cost of hiring employees, whether Saudi or foreigner: Since all café branches are placed in malls, and all the malls have limited operating hours that comparing to cafés that are not in a mall. Hiring more employees became costly since the café cannot operate full-time to cover this cost.

2) Limited seating area & long waiting time: Due to the high cost of mall shop rental and mall policies for food and beverages places space café has a limited seating area. So, in pick times all areas will be occupied. That leads to a long waiting time until a table is available to seat customers. The café's insufficient use of space in the seating area leads to more waiting time for a customer to be served.

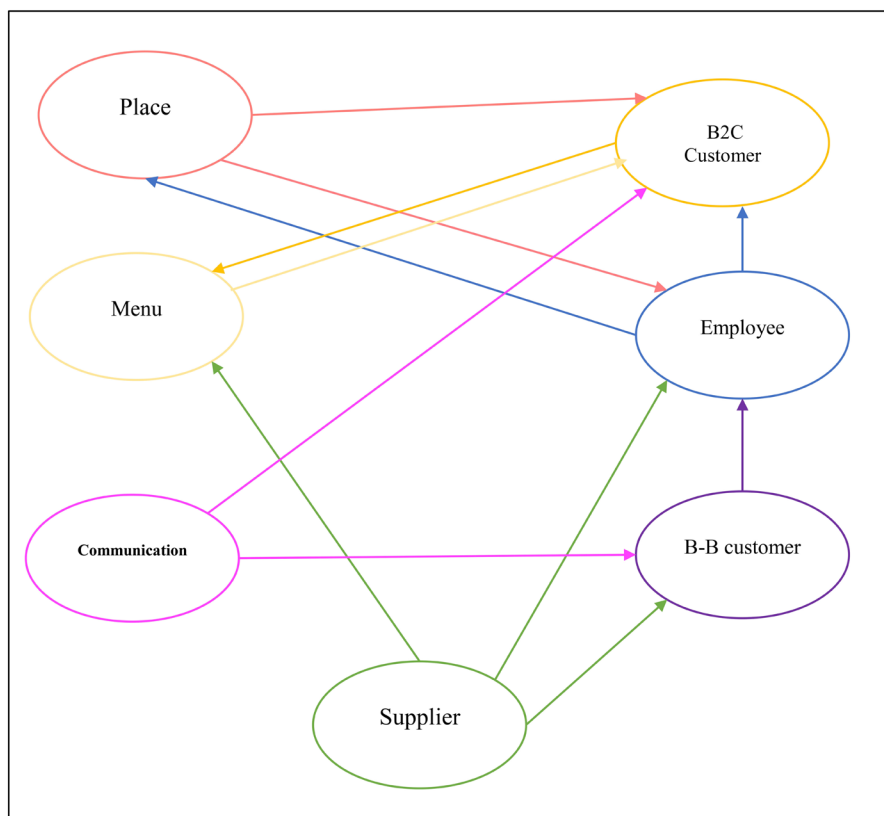


Figure 4. Interrelationship diagram.

3) Staff training high cost & kitchen untidy: To train new staff is the high cost so they were trained by senior staff. Since the staff is not well trained as waiters or coffee baristas, they lack experience in tidying the serving area (kitchen). Moreover, when there is high demand, they face a lot of fast-paced work regardless to tidy the serving area.

4) Out-of-stock raw material & lack of variation in menu items: The café faced a shortage of some raw materials from suppliers, especially during the COVID-19 outbreak. This shortage limits the ability to create new items to increase variation on menu items. Furthermore, some raw materials could not be found in the national market with the required quality, so they have to order internationally.

5) There is no clear and agreeable payment interim & increase in the prices in the menu: The café is forced to raise the prices of the menu a little to face the lack of clarity of the facilities that will be provided to them by the suppliers in the method of payment, as long as the means of payment for suppliers were more flexible, they will be able to reduce the prices of the menu.

6) No reservation application & long waiting time: Café has no reservation application or a third-party reservation application. In this situation, staff cannot estimate the number of customers that will be served and at what time. So most probably the waiting line will belong. Moreover, there is no clear ticketing system to manage the waiting line or an SMS system.

7) No contact phone number for customer services & lack of customer feedback: café has no customer service contact number due to the hiring cost for will trained operator available 24 hours. This has a great effect on listening to feedback from customers and knowing their complaints about services and products.

8) No order application for B2B customers & complex buying process for B2B customers: The company has no B2B customer application to replace their order which makes the buying process for B2B customers complex because they expect to get an immediate answer at any time they contact employee either by phone or WhatsApp.

9) There is no clear and agreeable payment interim & lack of career development in terms of salary or position: The unclear payment interim for suppliers affects the financial balance of the company which limits the development of an employee's career in terms of salary and position.

10) Lack of information about suppliers in SA & lack of variation in menu item: Very limited information is available about suppliers in SA which limit the raw materials that can be used to create new items to increase variation in the menu items.

11) out of stock raw material & lack of flexibility in customization of B2B customer orders: To be flexible with B2B customer orders café needs some special materials but if these materials are often out of stock from the supplier's café

is forced to stick to the original orders with no customization.

12) Delay in payment & lack of career development in terms of salary or position: B2B customers usually delayed payment which has a bad effect on the financial situation of the company and so on limits the career development of employees.

13) Customer's resistance to trying new dishes or drinks & lack of new items on the menu (desserts and savory): when a café tries a new item to add to the menu, they depend on water to convince customers to order the new items, but customers mostly refuse to take the risk of trying new items.

14) No waiting area & customers holding tables for a long time: Some individuals consider the café as a resting area until their families finish their shopping in the mall, so they hold the tables for long times due to the limited benches in the mall and lack of waiting area for café.

15) Employees have a great impact on customers: When a customer enters the café, the employee should greet him and give him a positive impression of the place. Customers are very sensitive to the way they were greeted and serviced. Employees should be humble and pleasant at greeting, as well as while accepting and serving orders. Sensing the client's requirements and ensuring that they are met improves customer satisfaction, such as adding seats based on the number of guests before the customer request and assisting the elderly.

16) There is a direct correlation between menu innovation and a restaurant's ability to draw in guests and whet their hunger for new items. The menu gives customers ideas about the café's vision and message while presenting the items in attractive photos, creative ingredients, and reasonable prices. Furthermore, the café should update its menu continuously with new photos and new items. Consider the dish's size while determining its pricing, preserving variety to meet the needs of all people.

4.3. Tree Diagram

The tree diagram is a structured process to issue solutions that consider the interests of all stakeholders. This strategy gives tactical planning in a particular order, which helps develop a system of strategic solutions to perceived issues. Creating a tree diagram also allows for shifting ideas from generalities to specifics step-by-step. This is a convenient tool that may be used for many applications (Tague, 2005). Tree diagrams are frequently used to show numerous branching processes, such as family trees, the structure of civilizations, institutions, taxonomies, and various hierarchical relationships (Guri-Rozenblit, 1989). The tree diagram in the study helps find major issues, and sub-causes after the team identified the core issues based on the (voice of the customer) results of the focus group, survey, and the affinity diagram. Consequently, seven key issues were identified, 23 main causes, 40 sub-causes, and 37 solutions (see **Figures 5-11**).

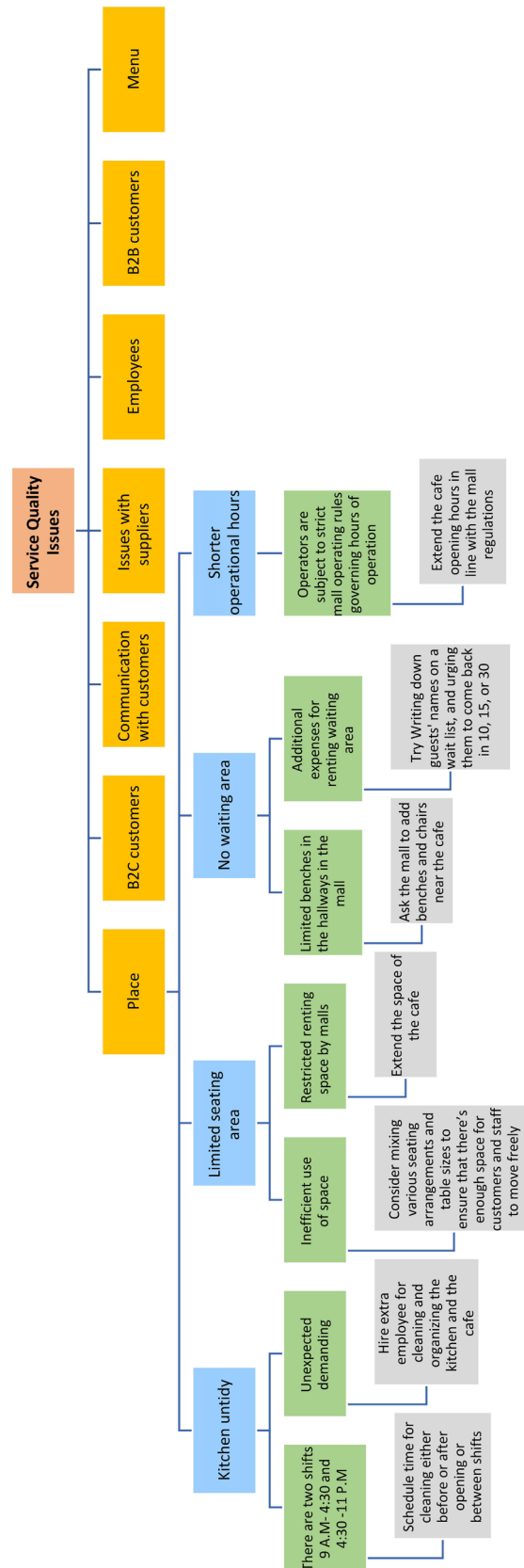


Figure 5. Tree diagram of place issues.

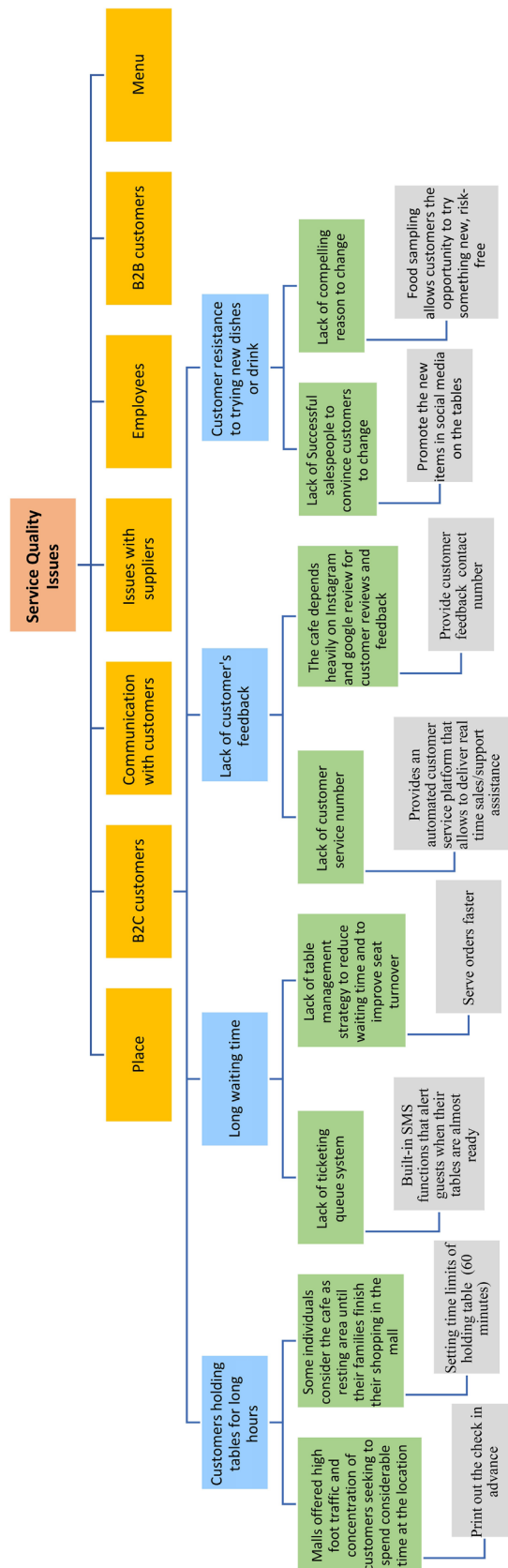


Figure 6. Tree diagram of B2C customer issues.

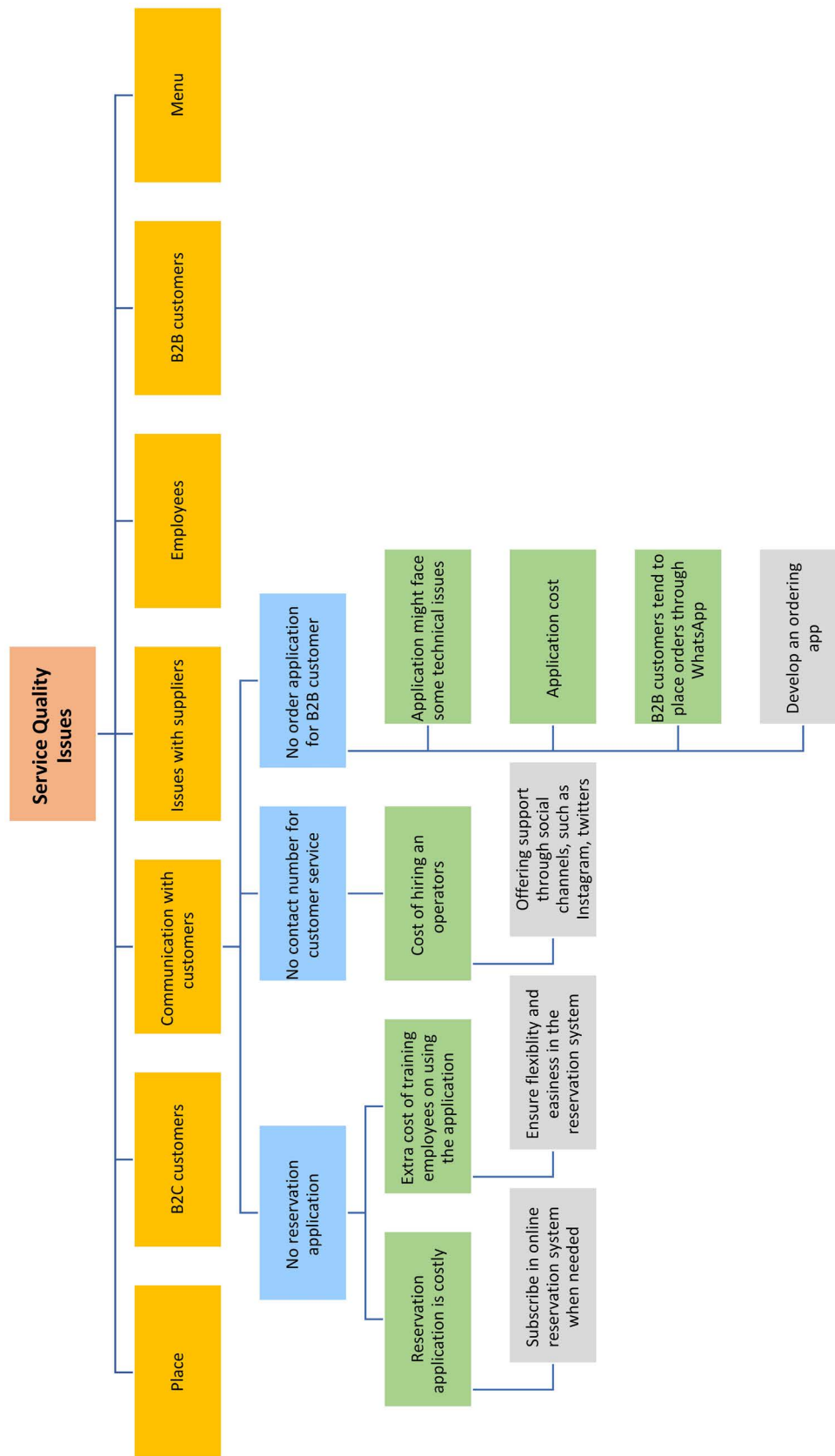


Figure 7. Tree diagram of communication with customers' issues.

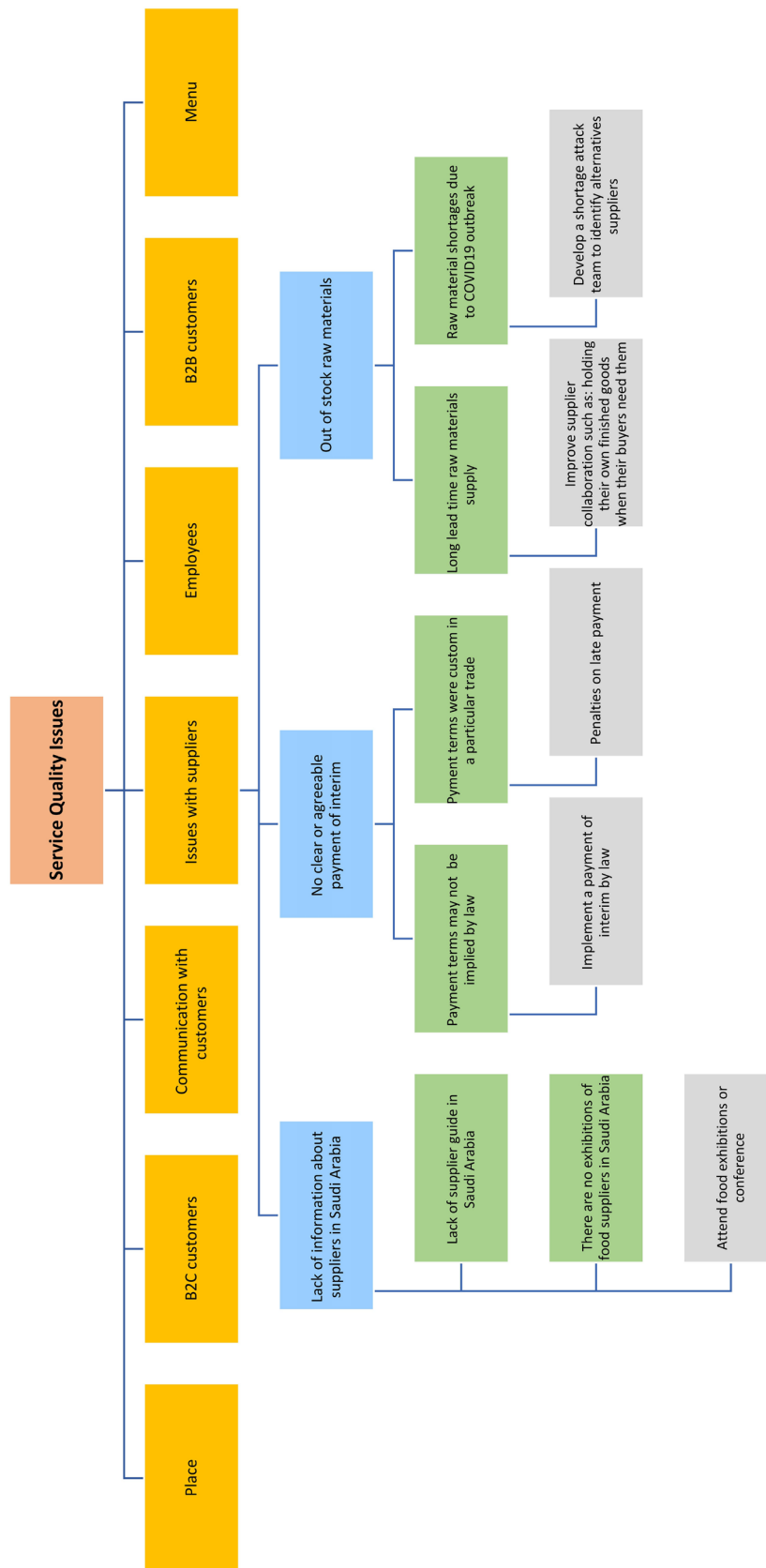


Figure 8. Tree diagram of suppliers' issues.

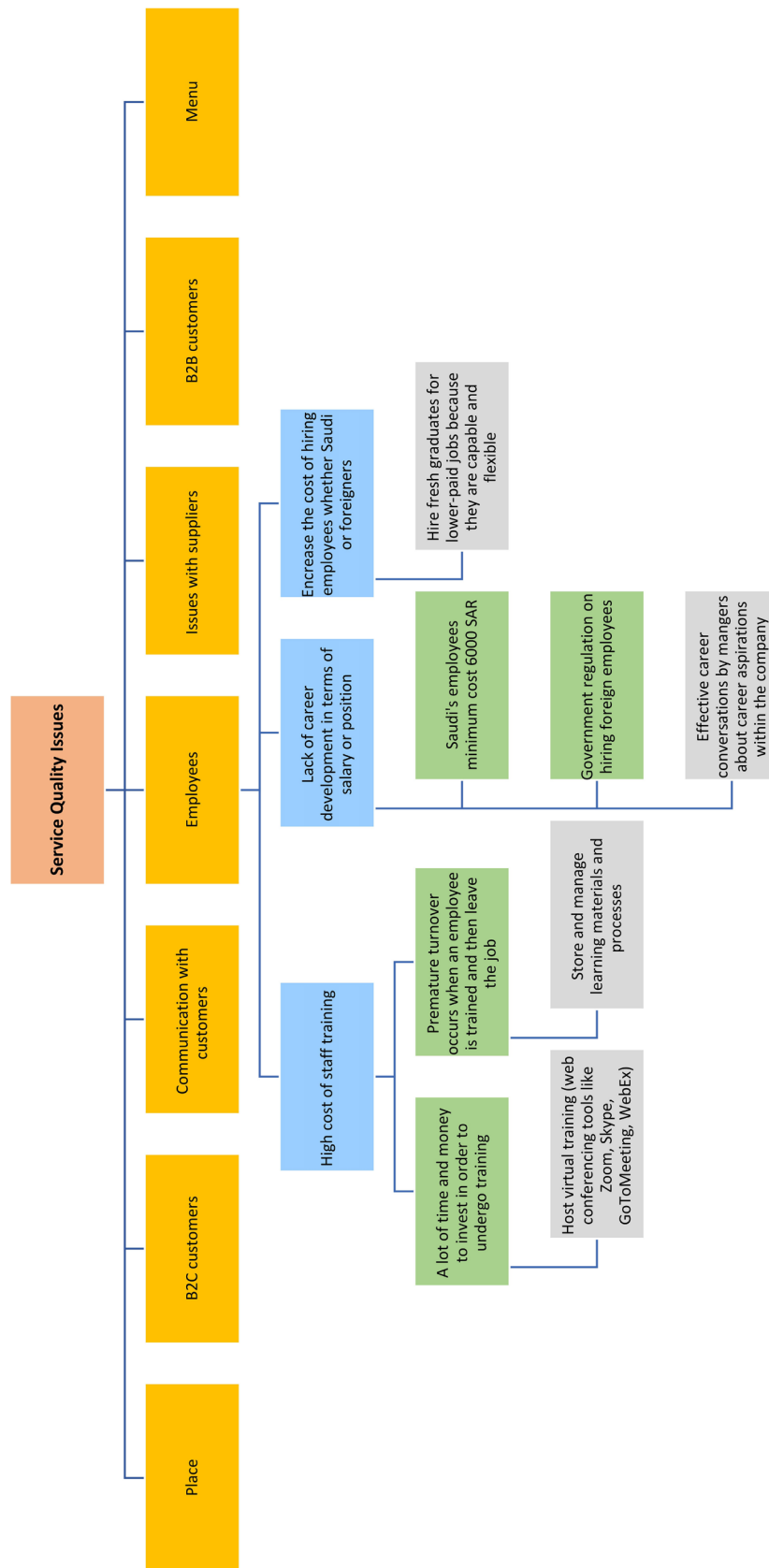


Figure 9. Tree diagram of employees' issues.

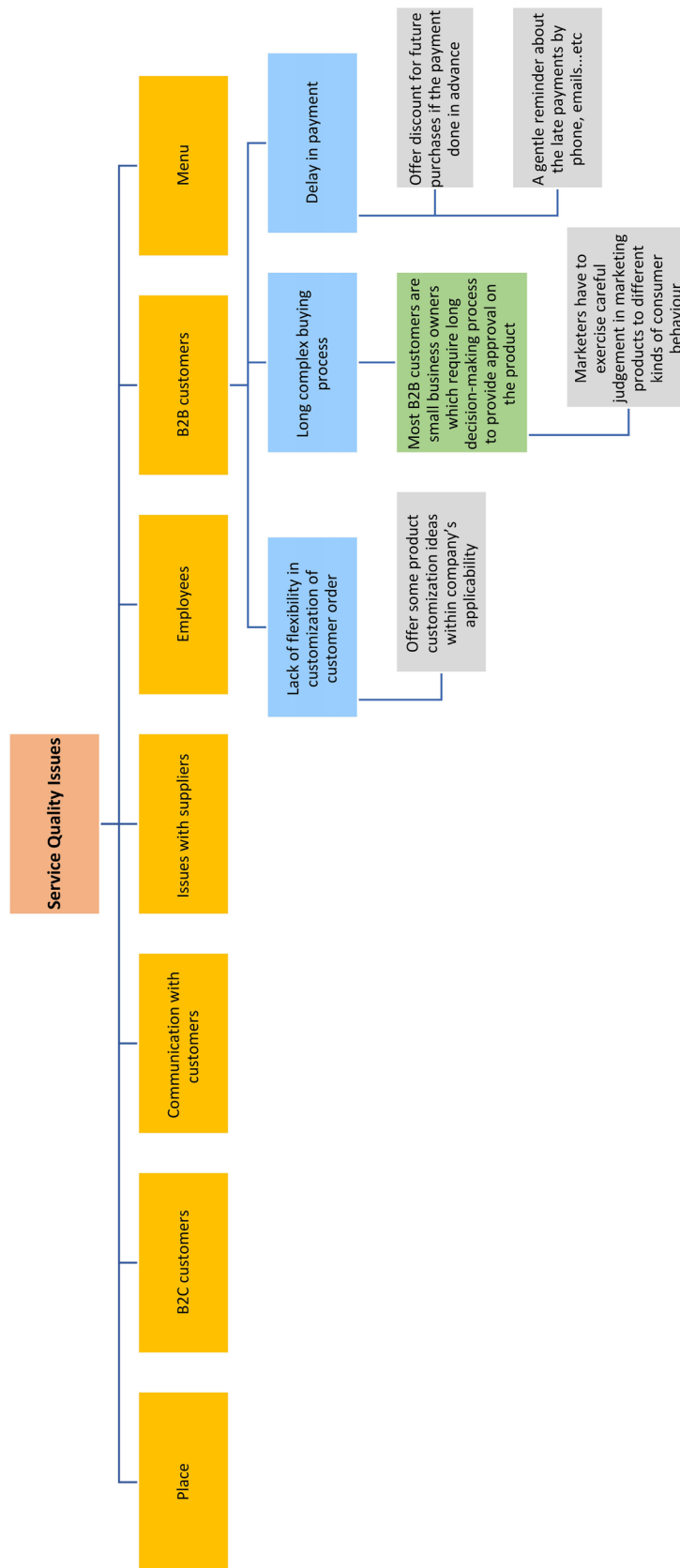


Figure 10. Tree diagram of B2B customers' issues.

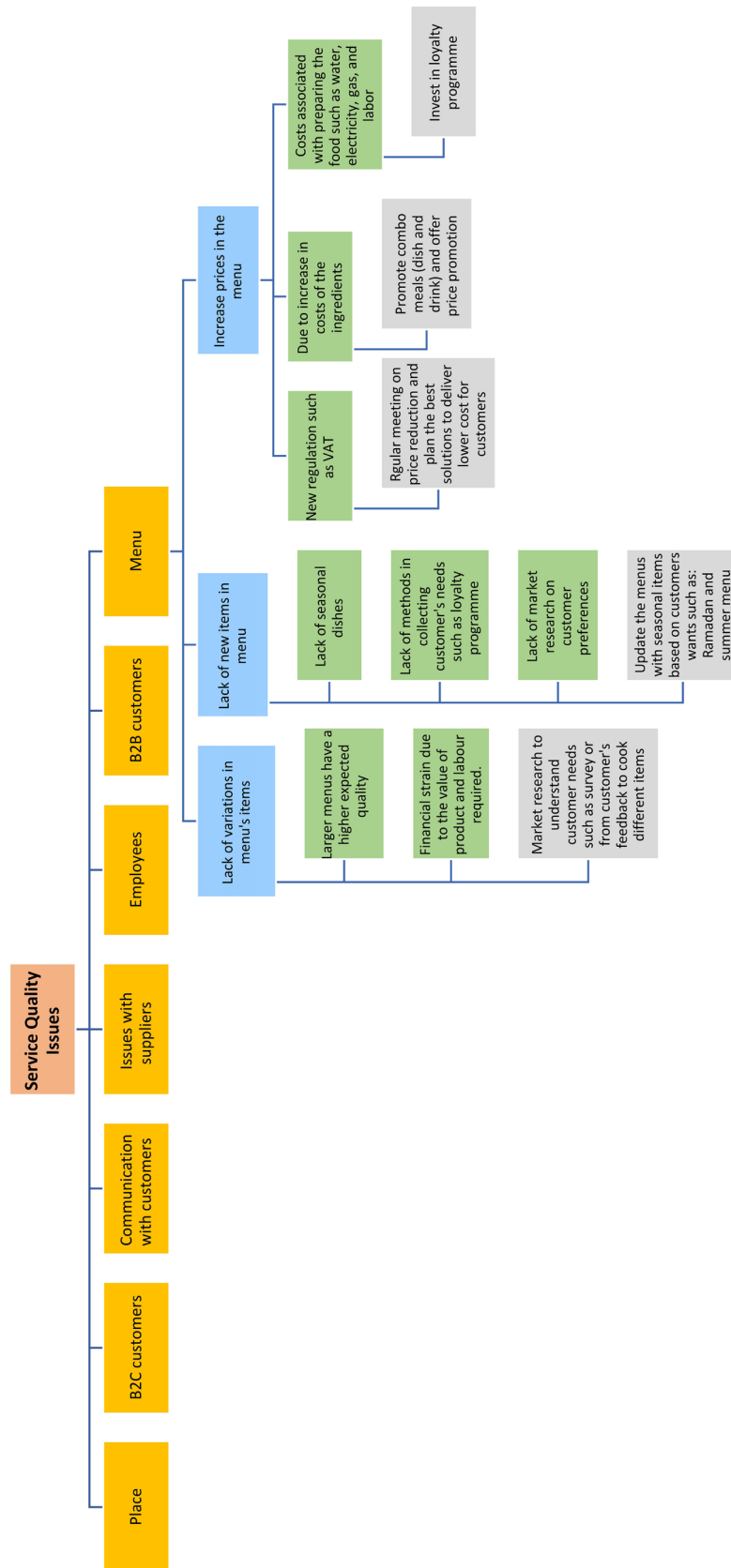


Figure 11. Tree diagram of menu issues.

4.4. Chart (PDPC)

The process decision program chart (PDPC) is a tool for mapping all possible solutions to a given problem. It is used to plan each possible solution activity set. The PDPC has been used to select the best techniques for obtaining the best result from a given statement by weighing all possible events, contingencies, and outcomes in any action plan (Chu & Tosirisuk, 1991). Therefore, the PDPC diagram imports the tree diagram's 23 primary causes in the study, which branch out from seven leading issues. Subsequently, many solutions have been identified for each issue and the forecasted risk if these solutions were applied. As a result, there were 35 solutions, 37 risks, and 38 alternatives. The PDPC illustrates the different chart levels, starting from the main issues, the next level is the causes, the risks, and finally, the alternative solutions (see Figures 12-18).

4.5. Matrix Diagram

The matrix diagram is a systematic approach for a planning tool to select, organize and rank a problem, solution, and the roots of related issues from a list of options (Tari & Sabater, 2004). It is created by comparing each component, resulting in a logical and consistent arrangement. The matrix diagram is classified as the most important matrix of the quality management tools due to its role in determining the significance and direction of impact through the use of codes. By making a connection between two different factors in a schedule, those factors intersect on rows and columns to manage the related problem and its intensity to start finding the solution and development (Ryan, 2011). In terms of quality management tools, the matrix diagram is called a decision diagram, referring to its ability to visualize the complex relationship and facilitate the understanding of the cause-and-effect problem the managers are observing, and also when a relationship is established between two factors represented by a symbol in the cell (Mizuno & Bodek, 2020). The diagram represents three relationship levels between the voice of the customer and alternative qualities which are strong, moderate, and weak. 9 reflected the strongest relation and symbolled as (●), while (o) illustrated a moderate relation and the value was 3, and (▽) reflected the weak level of relationship and valued as 1. However, the empty cells demonstrate that no relationship exists between the factors (see Tables 7-13).

4.6. Prioritization Matrix

The prioritization matrix is a quantifiable matrix framework classified as one of the quality improvement tools. It's crucial for the company's assessment process because it provides an organization with a high-level view that reveals where to place resources and how to change policies and procedures (Bamford & Greatbanks, 2005). Since this matrix emphasizes the relative weight of a project's factors, the matrix also creates a relationship among those operational and improvement criteria through an L-shaped diagram. The prioritization matrix

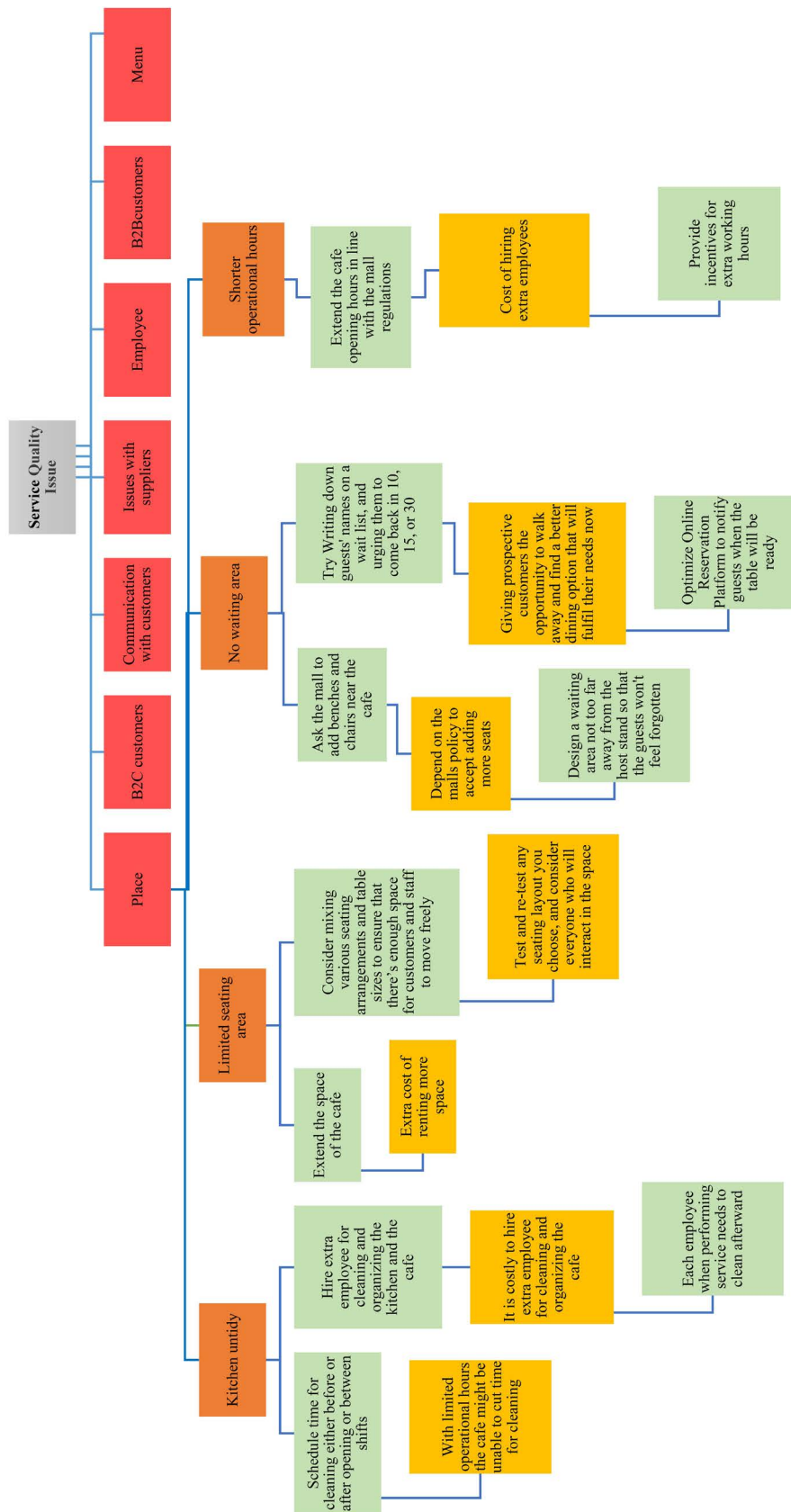


Figure 12. PDPC diagram of place issues.

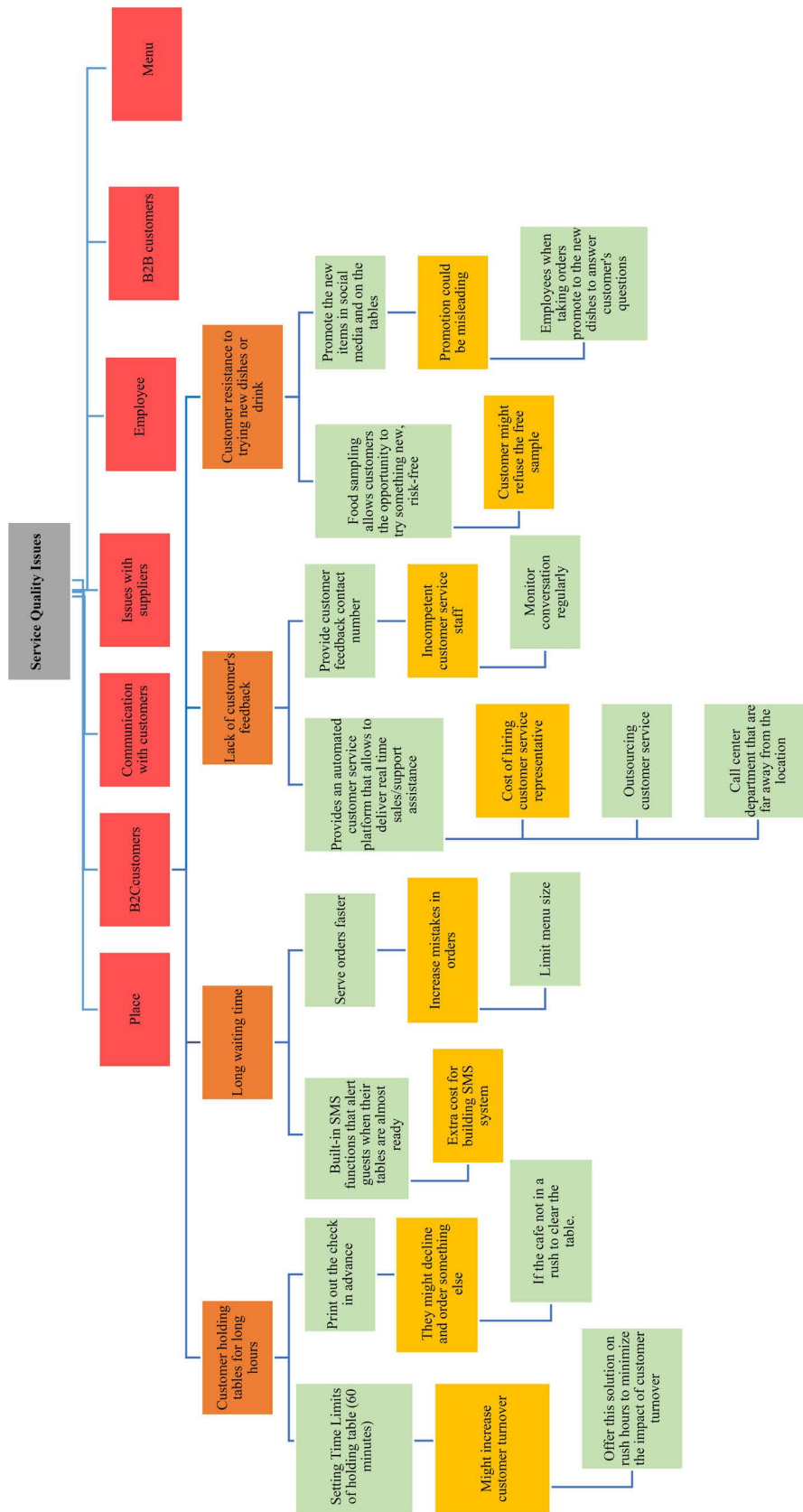


Figure 13. PDPC diagram of B2C customers' issues.

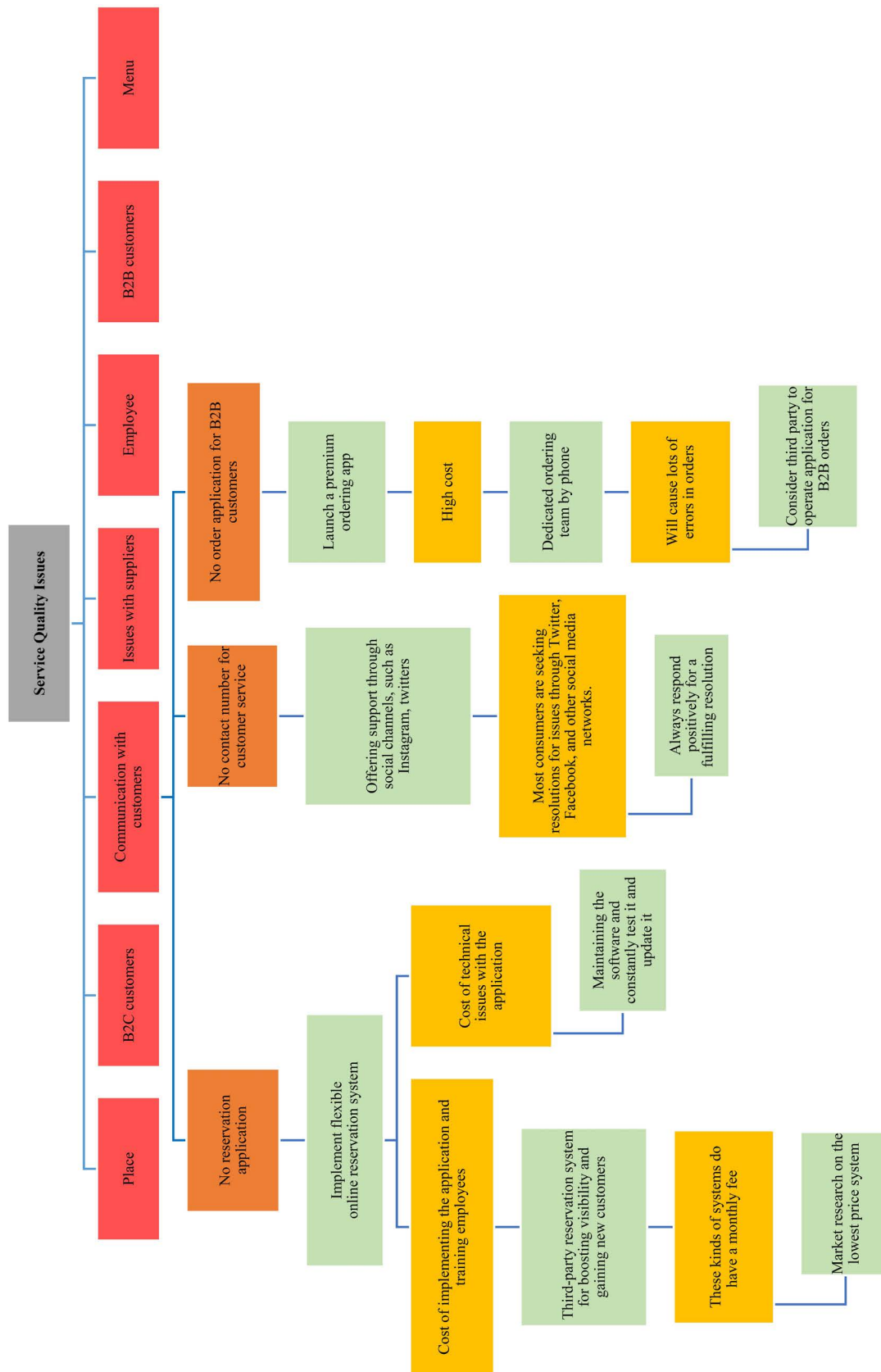


Figure 14. PDPC diagram of communication with customers' issues.

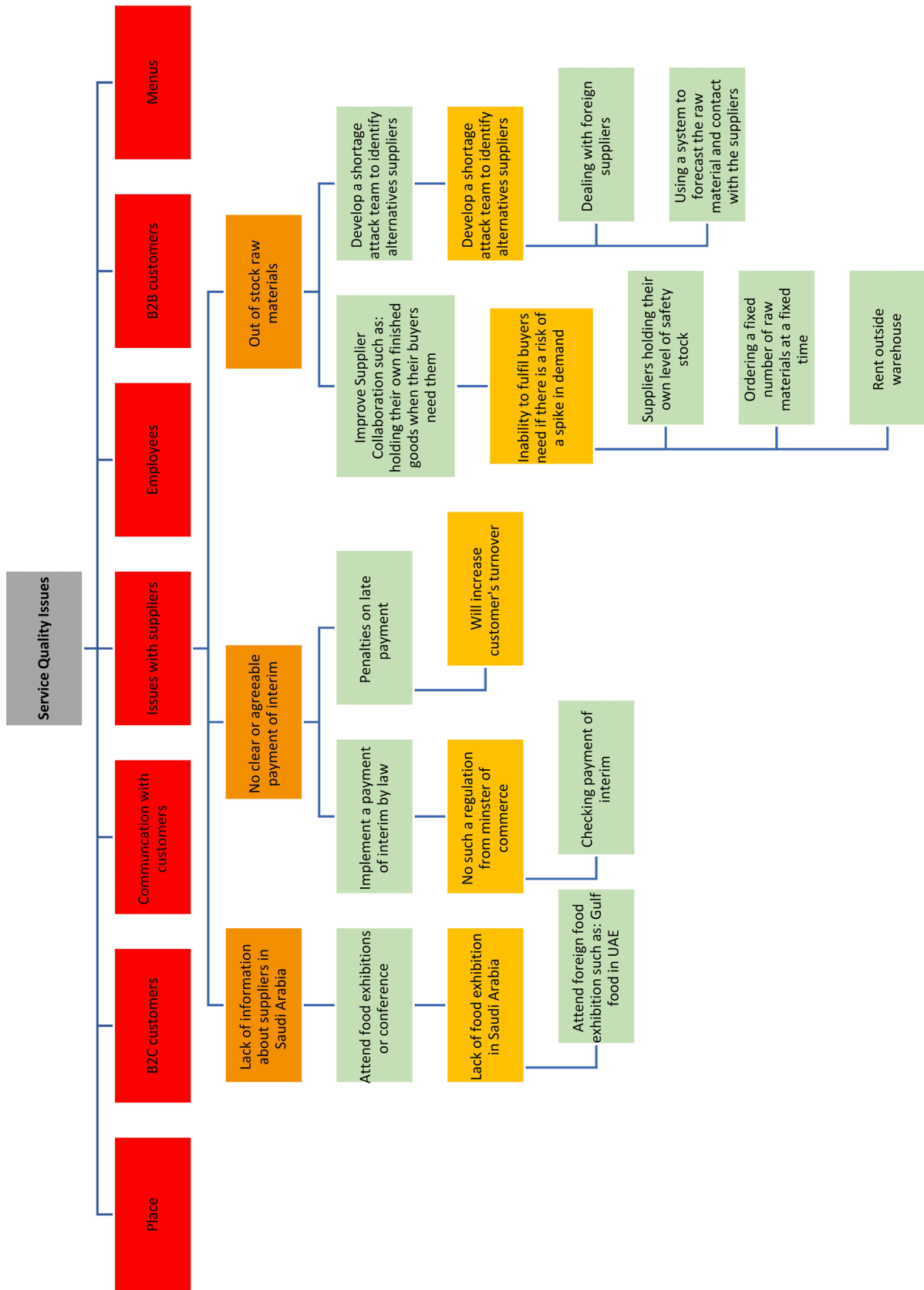


Figure 15. PDPC diagram of suppliers' issues.

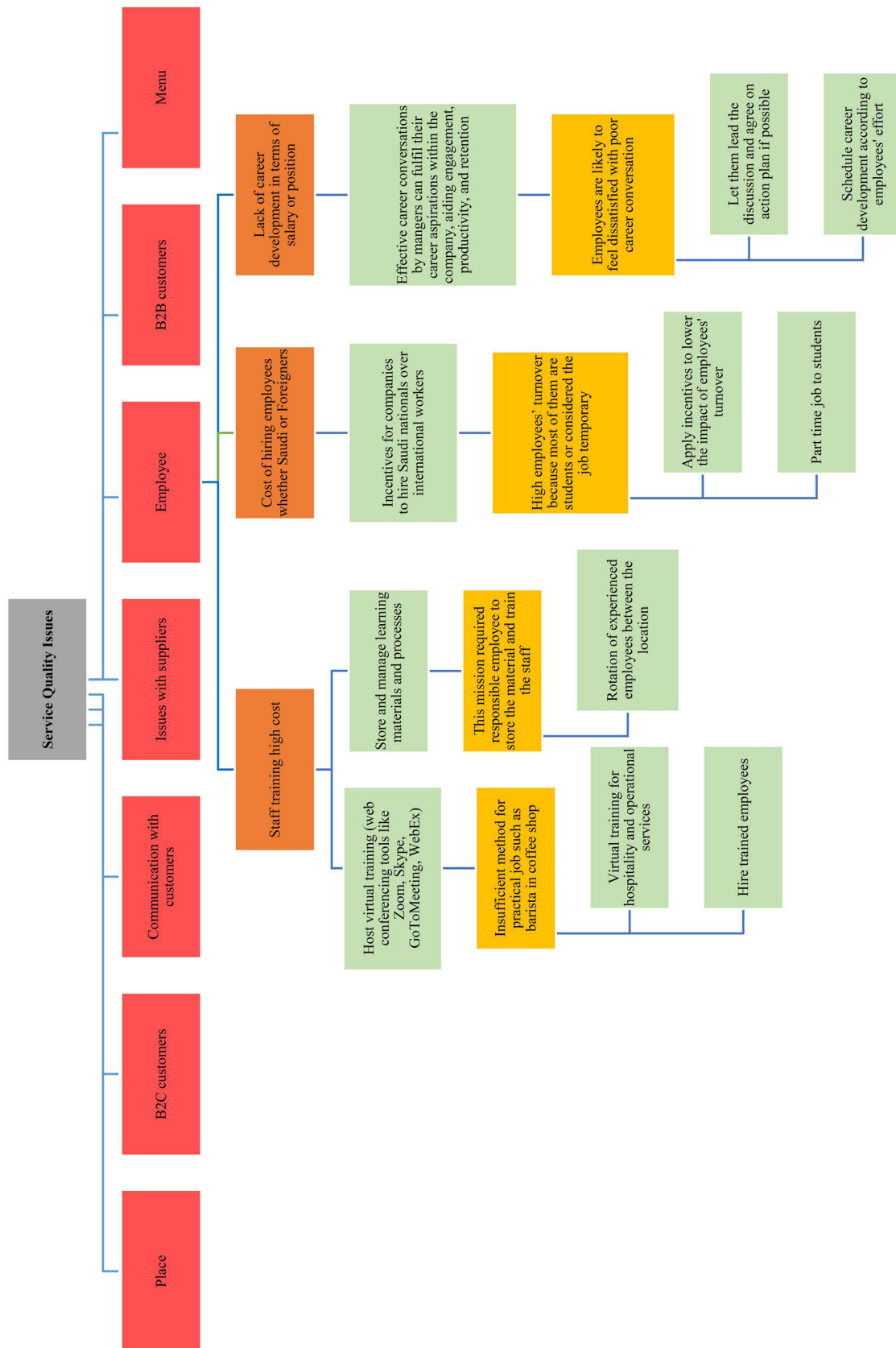


Figure 16. PDPC diagram of employees' issues.

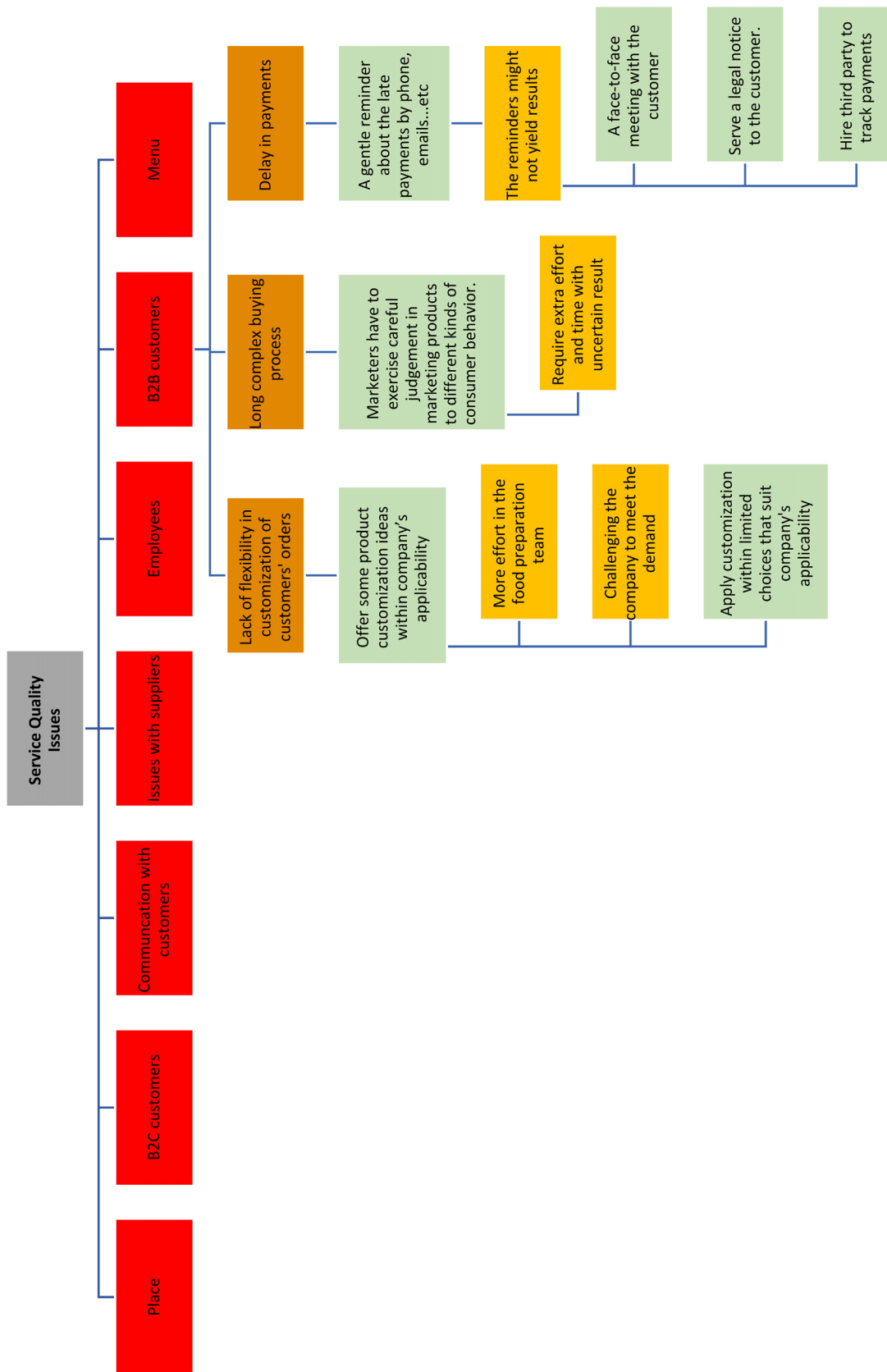


Figure 17. PDPC diagram of B2B customers' issues.

suggesting the solutions to the cause-and-effect issues was observed on the matrix diagram. 38 related solutions were generated in **Table 14**, then, ranking the solutions in order of importance to solve the problem was demonstrated in **Table 15**.

Table 7. Matrix diagram of the place issues.

Place	Increase the cleaning responsibility for employees	Redesigning the café space	Establish a waiting area near the cafe	Providing a Platform to notify guests when the table will be ready	Hiring a part-time employee	provide incentives for extra working hours
Tidy kitchen	●	○	▽	○	●	○
Expand seating area	▽	●	●	●		
Make waiting area		●	●	●		
Better allocation for operational hours	○				●	●

Table 8. Matrix diagram of the B2C customers' issues.

B2C customers	Setting Time Limits of holding table	Using SMS application for reservation	Serve orders faster	Outsourcing customer services	Call center departments that are far away from the location	Provide customer feedback contact number	Enhance customer experience through the food sampling	Training the employees in the communication and promotion
The maximum time for a customer in the place	●	○	●					
Minimize the waiting time	●	●	●			○		▽
Enhance customers to express their feedback		●	○	●	●	○	●	●
Customer willingness to try new dishes or drink			○				●	●

Table 9. Matrix diagram of the communication with customers' issues.

Communication with customers	Find a suitable application price	Training the employees to use the technological program	Hire a customer service employee	Hire a part-time technician
Use an existed reservation application	●		●	●
Provide a contact number for customer service	○		○	●
Rely on order's application for B2B customer	▽		●	○

Table 10. Matrix diagram of the suppliers' issues.

Suppliers	Attend foreign food exhibition	Scheduling Payment of interim	Ordering a fixed amount of raw material at a scheduling time	Rent outside warehouse	Dealing with a foreign supplier	Using a system to forecast the raw material and contact the suppliers
A database about the related supplier in Saudi Arabia	●	▽	▽		○	
Agreement on the payment of interim	○	●	○		○	▽
Increase the raw material stock	●	○	●	●	●	●

Table 11. Matrix diagram of the B2B customers' issues.

B2B customers	Apply the customization within limited choices that suit the company's applicability	Pre-request for the customized order	Training the sales employees to deal with the payment process	Using a reminder system for the payment of the buyers	Hire a third party to track the payment
Flexibility in customization of customer orders	●	●	▽		
Better buying process that is easy and saves a time		○	●	●	●
Promptness payment	○	●	●	●	●

Table 12. Matrix diagram of the employee issues.

Employees	Virtual training for hospitality and operational services	Hire a trained employee	Rotation of experienced employees between the locations	Part-time job for students	Scheduling career development according to the employee's effort
The presence of employees training with minimal cost	●	●	●		○
Hiring a new employee		●		●	○
Availability of development in terms of salary or position		●	●		●

Table 13. Matrix diagram of the menu issue.

Menu	Choosing food mainly comes from pre-prepared	Creating simple new items and easy prepare	Constant supervision of cost control	Create a loyalty program and promotion program	Invest in the market R&D to lower the cost
Expand the menu items	●	●			▽
Constantly adding new dishes	●	●	○		▽
Price stability in the menu		●	●	●	●

Table 15. Prioritization matrix (Ranked).

Customer Needs (CN)	Technical Requirements (TR)															
	TR2	TR4	TR5	TR7	TR8	TR13	TR14	TR17	TR18	TR21	TR24	TR25	TR26	TR27	TR33	TR34
	3	3	3	3	3	3	3	4	4	5	4	5	4	4	4	4
CN1	3	3	3	9	1	0	0	0	0	0	3	0	0	0	3	1
CN2	9	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0
CN3	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CN4	0	0	9	0	0	3	3	0	0	0	0	0	0	0	0	0
CN5	0	0	0	3	9	0	0	0	0	0	0	0	0	0	0	0
CN6	9	3	9	9	9	1	0	0	0	0	0	0	0	0	1	0
CN7	0	3	0	9	3	9	0	0	0	0	0	0	0	0	0	0
CN8	0	0	0	0	3	9	0	1	0	0	0	0	0	0	1	9
CN9	0	0	3	0	9	0	9	3	0	0	1	0	0	1	0	0
CN10	0	0	3	0	0	9	3	0	0	0	3	0	0	3	0	0
CN11	0	0	3	0	1	0	9	0	0	0	1	0	0	0	0	0
CN12	0	0	1	0	0	0	3	9	1	3	0	0	0	0	0	0
CN13	0	0	0	0	0	0	0	3	9	3	0	0	9	9	0	0
CN14	0	0	1	0	1	0	0	9	3	9	0	0	0	0	0	0
CN15	0	0	1	0	1	0	0	0	0	1	9	1	0	0	0	0
CN16	0	0	1	0	0	0	0	0	9	0	3	9	9	9	0	0
CN17	0	0	0	0	0	0	0	0	3	0	9	9	9	9	0	0
CN18	0	3	0	0	0	1	9	0	0	0	0	3	0	0	0	0
CN19	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0
CN20	0	0	0	0	0	0	0	1	0	0	0	1	0	0	9	9
CN21	0	0	0	0	0	0	0	1	0	0	3	1	0	0	9	9
CN22	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1
TOTAL VALUE	90	90	102	93	111	99	117	108	100	95	128	120	108	124	92	116
TOTAL VALUE %	2.7%	2.7%	3.1%	2.8%	3.4%	3.0%	3.6%	3.3%	3.0%	2.9%	3.9%	3.7%	3.3%	3.8%	2.8%	3.5%
Ranking	14th	14th	8th	12th	6th	10th	4th	7th	9th	11th	1st	3rd	7th	2nd	13th	5th

4.7. Quality Function Deployment (QFD)

The QFD is a visualized matrix that identifies the resources needed to satisfy their demand and increase the product quality based on a customer-oriented viewpoint. House of quality (HFQ) is the most employed tool to enhance the fulfillment of customer need technically. **Figure 19** illustrated the HFQ of this paper. We designed this diagram by importing the main categories from the affinity diagram (place, B2B, B2C, communication, suppliers, employees, and menu) and represented the voice of the customer. Moreover, the relationship is intersected with 22 factors of customer need categories. The customer importance row was ranked from 1 to 5 according to each requirement. Then from the PDPC diagram, we used the solutions of technical requirements. In the middle of HOQ, we used the relation ranking from the prioritization matrix. The right of the matrix compares the company with two main competitor companies which are named as

the marketing part. The correlation matrix identifies how the requirements enhance or hinder each other. The upper part of HOQ identifies whether the relationship between technical requirements facilitates or hinders each other during implementation. At the bottom, based on the percentages for each of the technical requirements, the highest percentage refers to hiring a third party whereas the lowest percentage describes the need for providing pre-prepared food.

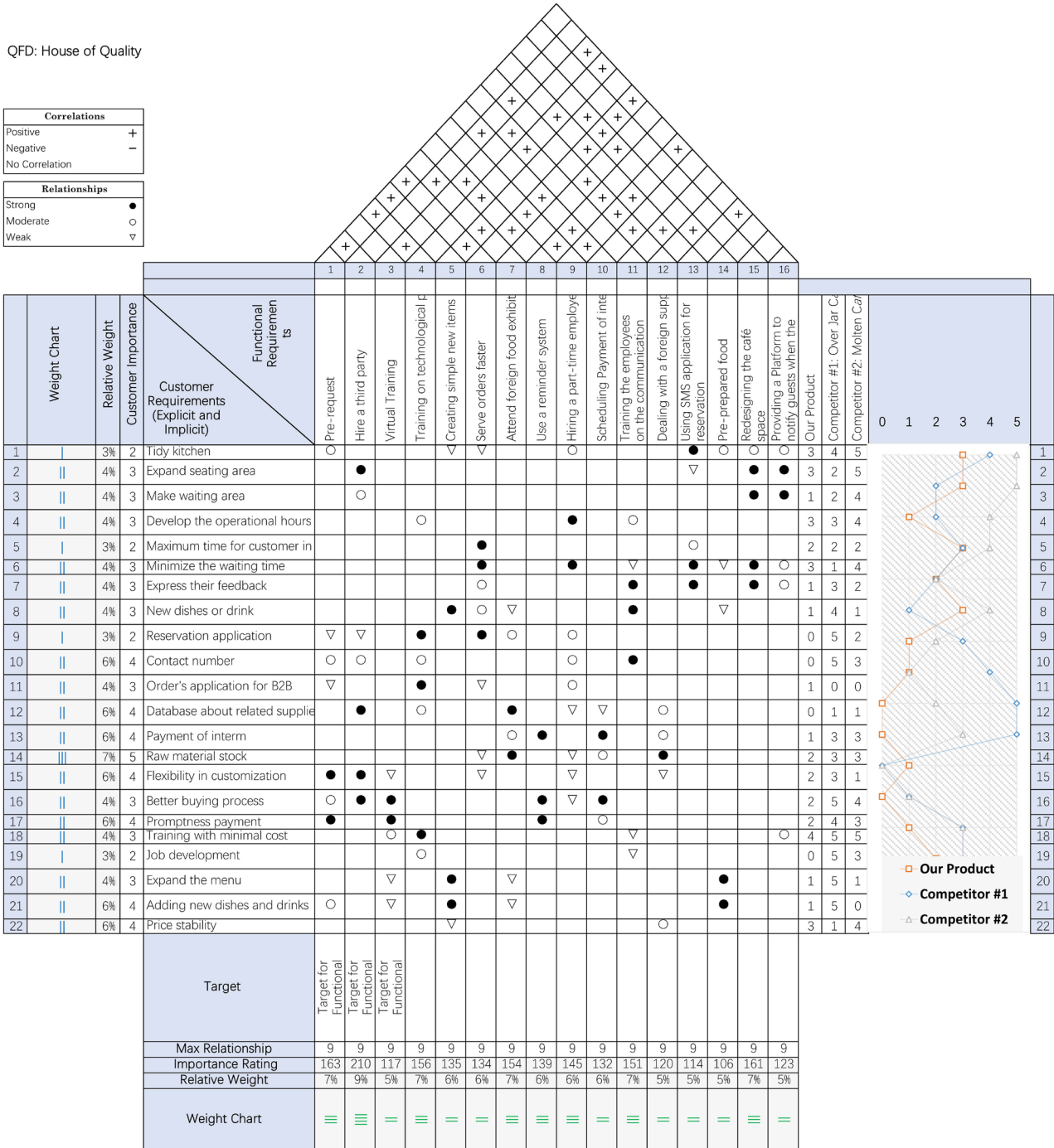


Figure 19. HOQ.

After employing the QFD, the new customer journey map of B2C and B2B are presented in **Figure 20** and **Figure 21**, respectively. The new maps are illustrated in terms of gap/ opportunity and recommendation.

5. Areas for Improvements

Knowing what businesses can improve will help them concentrate on improving their deficiencies and become better businesses. As mentioned before, quality issues were related to café customers, B2B customers, and the employees. These issues were classified into seven categories: place, menu, B2C customers, employees, communication, B2B customers, and suppliers. In this section, the research team will provide suggestions that café can develop or enhance.

5.1. Place Issue

The café has place issue as shorter operational hours, limited seating area, no waiting area, and kitchen untidy. These issues can confront by focusing on the following areas of improvement:

- Consult experts to rearrange the seating area to serve more customers.
- Set a strategy for table occupation in peak time from the customer for example: one hour for each table to eliminate waiting time for new customers.
- Implement an SMS system to minimize the waiting time for the customer and allow them to move into the mall while they are waiting to be served.
- Train employees to serve customers quickly and to clean servicing area (kitchen) after each order to keep the serving area tidy and clean.
- Suggest on mall management to add more benches nearby the café. So, waiting for customers could use them.
- Hiring part-time employees to increase the speed of service providing and cleaning.

5.2. Menu Issue

Another issue category is the menu such as lack of variation on menu items, lack of new items, and increased prices. This can be improved by concentrating on the following areas:

- Reengineer the menu to contain a variety of food (savory and dessert) and beverages (hot and cold).
- Consult experts for advice about the menu items.
- Present a new menu edition with new concepts and photos.
- Create new sessional dishes for instance in Ramadan, Eid, winter, and summer.
- Reconsider the prices of dishes compared to size. Serving different size of the dishes with different prices could be a good idea.

5.3. Customers Issue

The café has some customer issues consisting of customers holding tables for a



Figure 20. The new B2C journey map.

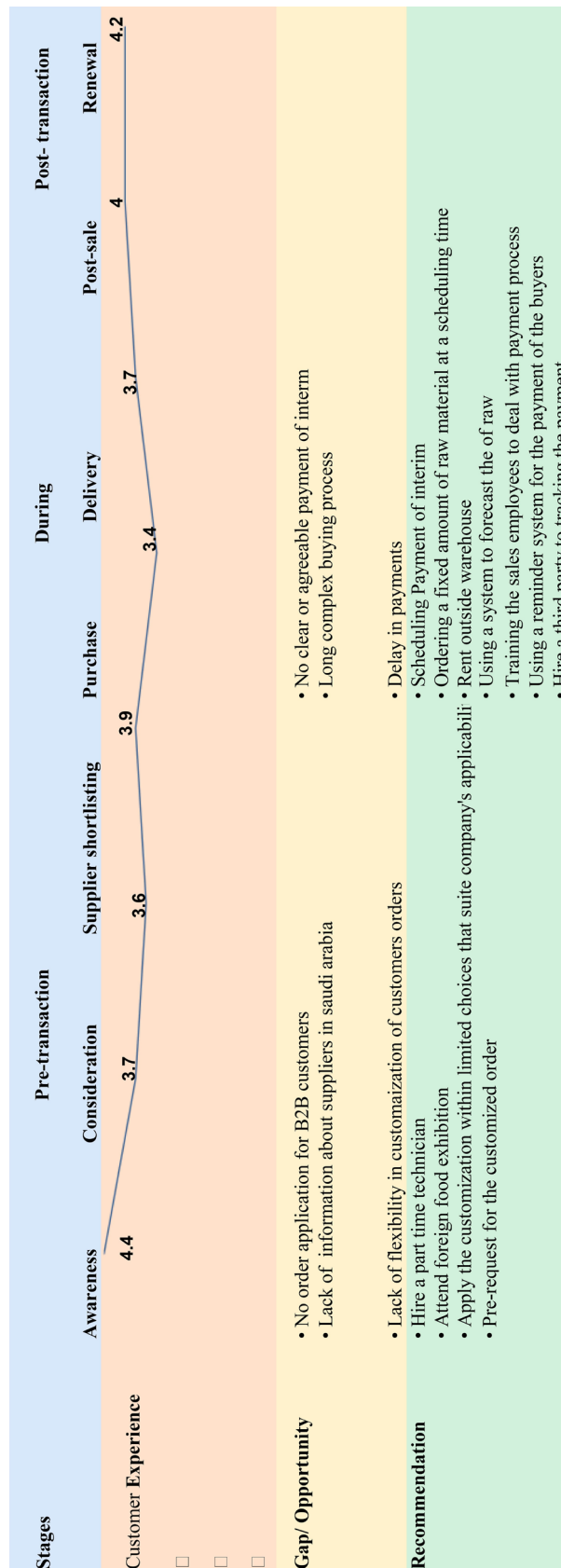


Figure 21. The new B2B journey map.

long time, long waiting times, lack of customer feedback, and customer resistance to trying new dishes or drinks. This can be controlled by focusing on the following areas of improvement:

- Put a strategy for using tables for a maximum time in peak times and announce it on tables and waters for example one hour only for one bill.
- Implement a customer service center to know about customers' complaints and feedback. It could be through third parties or by social media applications.
- Provide food sampling for new dishes to get their feedback.
- Train employees on marketing to promote the new dishes.
- Conduct marketing research to understand customer behavior for changes.

5.4. Employees Issue

Staff training's high cost, cost of hiring new employees, and lack of career development in terms of salary or position are the employees' issues they have. To come over this issue improvements areas are:

- Reduce the cost of employees' training by using virtual training in hospitality and services or hire trained employees. Also, rotation of experienced employees between locations could increase the experiences of other employees.
- To reduce the cost of hiring new employees, the café could hire part-time employees in seasons.
- Set a plan for developing employees' careers according to their effort and experiences.

5.5. Suppliers Issue

Facing some issues from the suppliers' side like out-of-stock raw materials, there is no clear and agreeable payment interim, lack of information about suppliers in SA. The effect of these issues can be reduced by possible areas for improvement as the following:

- Deal with more than one national supplier and international supplier to reduce the effect of unavailable raw materials.
- Use a system to forecast the need for raw material and contact suppliers to order a fixed amount of raw material at scheduling time.
- Increase their knowledge about suppliers and their provided material through attending foreign and national food exhibitions.
- Create a database for suppliers' information such as contact numbers, Emails, and the provided materials.

5.6. B2B Customers Issue

Dealing with B2B customers has some issues such as the complex buying process for B2B customers, delay in payment, and lack of flexibility in customization of B2B customers. To confront these issues, they can focus on the following areas of improvement:

- Create a B2B customer application to facilitate the buying process.
- Set a system reminder for payment or hire a third party to track the payment.
- Put penalties on payment delays on customers.
- Apply customization on B2B customer orders with limited choices that suit the company's applicability.

5.7. Communication Issue

Companies and cafés need to concentrate more on listening to the voice of the customer. They have major issues of communication such as no contact phone number for customer services, no reservation application, and no order application for B2B customers. They can focus on some areas for improvement to solve this problem:

- Implement a customer services call center or use a third party for customer services.
- Make a contract with an existing reservation application to manage this service and have a clear view of the number of customers that will be served and know about customer feedback.
- Hire well-trained information technology employees to manage the applications and train the staff.

6. Action Plan

Table 16 represents the recommended action plan that the research team advised the café to work on in order to address the weaknesses and improve their customers' satisfaction. The plan is formulated based on 13 actions that need to be performed by 8 departments.

Table 16. The action plan.

Action Description	Priority	Responsible Department	Start Date	Due Date	Required Recourses	Potential Blockers
Customer services Phone number	1	Customer Services/HR	1/7/2022	1/10/2022	Financial/Human	Financial/Lak of training
Build a database for suppliers in SA.	1	IT/operation	1/6/2022	1/7/2022	Financial/IT	Technical
Set a strategy for payment for B2B customers	1	Accounting/Marketing	1/6/2022	1/7/2022	Human	Higher management agreement
Set a strategy for table occupation in peak time	1	Marketing/Operation	1/6/2022	1/7/2022	Human	Customer's behaviour
Renew the menu	1	Production/Marketing	1/7/2022	1/12/2022	Financial/Human	Raw materials availability/ Customer's reaction
SMS system to manage waiting time	1	IT/Customer Services	1/7/2022	1/12/2022	Financial/IT	Technical

Continued

Reservation application	2	IT/Customer Services	1/12/2022	1/17/2022	Financial/IT	Technical
Marketing training for workers	2	Marketing/HR	1/8/2022	1/9/2022	Financial/Human	Financial/ Human
Put a plan for career development for employees	2	HR/Financial	1/7/2022	1/10/2022	Human/Financial/Organizational	Financial/Qualification
B2B customers application	2	IT/Operation	1/9/2022	1/3/2022	Financial/IT	Technical
Hiring part time employees at peak time or at seasons.	3	HR	1/7/2022	1/9/2022	Financial/Human	Financial/ Government regulations/ Lack of commitment
Market research on customer motivation to change	3	Marketing	1/7/2022	1/8/2022	Human/Financial	Customer response
Create seasonal dishes	3	Production/Marketing	1/6/2022	1/7/2022	Financial/Human	Raw materials availability/Customer's satisfaction

7. Recommendations and Conclusion

The present paper aims to identify the impact of service quality on customer satisfaction in the context of cafés. More specifically, the paper integrated and conceptualized the multidimensionality of SERVQUAL and the several quality management tools to assess customers' satisfaction with the café's service quality. Besides, the focus group interviews and surveys conducted in the study, the quality management tools included in the paper are affinity diagram, interrelationship diagram, tree diagram, process decision program chart (PDPC), matrix diagram, prioritization matrix, quality function deployment (QFD). Based on the affinity diagram, the issues regarding the café's service quality are categorized into seven main categories which are menu, place, communication with customers, B2C customers, B2B customers, suppliers, and employees. The interrelationship diagram shows how these categories with their issues are logically associated with each other. Creating the tree diagram allows for shifting the issues from generalities to specifics with 23 main causes, and 40 sub-causes. After that, the PDPC is employed for mapping all possible solutions starting from the main issues, the next level is the causes, the risks, and finally, the alternative solutions. As a result, there were 35 solutions, 37 risks, and 38 alternatives. Also, the matrix diagram was implemented to select, organize and rank a problem, solution, and the roots of related issues. In the prioritization matrix, 37 related solutions were generated to the cause-and-effect issues observed on the matrix diagram through an L-shaped diagram. Lastly, QFD was employed to identify the resources needed to satisfy customers' demands and increase service quality. House of quality (HFQ) was used to enhance the fulfillment of customers' needs technically, which were 22 factors of customer need, and the highest percentage

refers to hiring a third party whereas the lowest percentage describes the need for providing pre-prepared food.

Concerning the analysis, the paper provides several recommendations to improve the customer journey and enhance the café's performance.

- Always maintain a high level of quality. This entails obtaining the appropriate equipment, employing qualified personnel, and utilizing the highest-quality materials and products. While quality is paramount, it is also critical for cafés to recognize that they are offering more than just the menu. Customers visit a café for a variety of reasons, ranging from seeking to escape the stress of the office to simply wanting to connect with people. Therefore, providing a high level of service quality is an impertinent aspect of satisfying the customers, as well as increasing the chances of success and consistent growth.
- Listen to employees' concerns. Because employees are the business's internal consumers, management needs to be approachable and listen to their problems in order to keep them satisfied. The cost of replacing an employee, both in terms of time and money, is considerable. The management needs to be clear about job descriptions, expectations, and mission. This can be done by holding frequent staff meetings and communicating clearly what you expect from your employees, as well as discussing policies and issues.
- Use automation systems wherever possible in the cafes' operations. Automation saves time and money while also improving team communication. There are several activities to be automated like B2B customer replacement orders, reservation service, the queue line, supply orders, social media marketing by planning forward a month and using the platforms' automated properties to manage the café's social media. Investing in technology benefits the café in every time-consuming activity and has a direct impact on the experience of customers and staff.
- Collect data and plan accordingly. Cafés create a good deal of data about peak client hours, employee turnover and absenteeism, squandered inventory, popular menu items, uncovered items, seasonal dishes and drinks, and employee conflicts. The most important approach to discovering what customers desire, what supplies to order, and how the recruiting process is functioning is to track these data using a café management system. A data-driven café will be more efficient, successful, and profitable than one that continues to do the same thing without questioning if it is working.
- Start a loyalty or rewards program. The café should not be afraid that implementing loyalty or rewards programs cost them money. On the opposite, it saves money. By starting the loyalty program cafés well generated more money than it cost them to run it.

8. Theoretical and Practical Implications

This paper makes several contributions. First, the findings contribute to the creation of a service quality framework that aids in the identification of customer

requirements, needs, and expectations, as well as performance improvement in café settings. Second, the study's findings suggest that measuring service quality has a wide range of potential benefits for cafés. Third, this paper is including all the types of café customers which are the external customers (i.e., B2C customers and B2B customers) and the internal customers who are the employees. When management knows consumer expectations, and how they perceive the quality of service for a certain café, it can better adjust marketing efforts to achieve customers' expectations. Lastly, the results may increase knowledge of café service in this setting, as this is the first time the SERVQUAL instrument has been used in the Saudi café industry. Improving service quality in Saudi cafés would improve customer satisfaction and loyalty, as well as improve the café's image, reputation, performance, and profitability.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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