
“Implementing Quality Management Tools to Improve Customer’s Journey at Motor Company”

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ABSTRACT:

Purpose: Evaluate and improve the customer's journey at local motor company in Saudi Arabia from the moment the customer arrives at the car showroom until the first maintenance appointment during the car's warranty period.

Design\ methodology\ approach: Mixed-method approaches are implemented where qualitative data are collected through focus group interviews; quantitative data are collected through the survey; as well as applying Quality Management Tools (QMS) in order to develop the action plan and provide conclusions and recommendations that would improve the customer's journey and increase satisfaction.

Findings: Services quality issues are categorized into five categories: Inconvenient Timing, Lack of Information, Lack of Dealer Offering, Lack of Resources, and Lack of Prompt Responses. House of Quality represents the highest 16 prioritized solutions. These recommended solution's relative weights ranged between (58%- 9%). Using these tools highlights areas for improvement and the root causes of each issue. The seven essential quality tools are reliable tools to overcome challenges faced by the organization. These tools are powerful in enhancing service quality that positively increases organizational performance, customer satisfaction, and profitability. Based on the investigation, several recommendations to enhance company performance are following.

Originality / value: There are a few studies that are practically implementing the seven Quality Management Tools in order to increase customer satisfaction and improve their journey. The Saudi motor market specifically has a shortage of this type of study. Moreover, this market currently has experienced rapid growth in the last few years because of the new government regulations that allow women to drive a car, which increases the importance of this study.

Keywords: Quality Management Tools (QMS), Affinity Diagram (AD), Tree Diagram (TD), Process Decision Program Chart (PDPC), Matrix Diagram (MD), Interrelationship Digraph (ID), Prioritization Matrix (PM), Quality Function Deployment (QFD).

1. INTRODUCTION

The motor sector plays a critical role in the economy of Saudi Arabia. According to Saudi Central bank (SAMA) report (2020), this sector accounts for 8.2% of the country's GDP. Moreover, it creates approximately 10,000 jobs. According to the Ministry of Commerce (MOC) annual report (2020), there are more than 51 brands of vehicles on the Saudi market, with over 1000 model variants.

The motor sector in Saudi Arabia experienced rapid growth in the last years, with record sales of all brands being experienced as car sales in Saudi Arabia increased during 2020 by 28% to record more than 531 thousand cars, compared to 412 thousand cars during the year 2019. The increase of car brands available to the customers presents challenges to the motor companies since the potential customer has various choices, and the market share for the motor sector became divided into more players than before. Moreover, the increase of car sales presents another challenge to the companies investing in the motor sector as they are required to provide good quality of services to car owners.

The level and direction between customer service perception and expectation have been described as service quality (Newman, 2001). The assessment of the service compared to explicit or implicit standard, is defined as perceived service quality (Storbacka et al., 1994). It can also be described as how well a service meets customers' needs (Bouman and van der Wiele, 1992).

The impact of service quality can be viewed in various ways; Customer satisfaction is influenced by service quality (Arasli et al., 2005; Zeithaml and Bitner, 2003; Kandampully, 1998). According to the confirmation model, the customer will be satisfied if their perceptions (of the experience) exceed their expectations. It has an impact on customer loyalty as well (Heskett, 2002; Kandampully, 1998). When the perceived service quality exceeds that provided by competitors, the company experiences loyalty. If the organization wants to reap the benefits of customer loyalty, it must provide high-quality service to customers (Kandampully, 1998). Furthermore, service quality provides a competitive advantage for companies (Kandampully, 1998). According to Arasli et

al. (2005), many companies sell the same product of somehow similar quality, with the only difference being the level of service provided to the customer. Therefore, service quality impacts the company's relationships and relationship marketing (Zeithaml and Bitner, 2003). Finally, because service quality affects customer satisfaction, it also affects customer retention, cost reduction, and profitability in the long term (Zeithaml et al., 2006).

Various views on service quality dimensions can be identified (Buttle, 1996; Johnson et al., 1995). These service quality perspectives have not received the same attention and empirical testing as those of Parasuraman et al. (1988), who identified five dimensions associated with service quality. The dimensions identified include reliability, assurance, tangibles, empathy, and responsiveness (Zeithaml et al., 2006; Parasuraman et al., 1988). This study relies on the Parasuraman et al. (1988) approach by measuring both expectations and perceptions. This approach has a theoretical basis (Long and McMellon, 2004) while also having widespread empirical support and is discussed briefly below.

Reliability is referred to the extent to which the service provider follows through on the promises made to the customer dependably and accuracy (Parasuraman et al., 1988; O'Neill and Palmer, 2003; Buttle, 1996). Assurance refers to the level of knowledge, courtesy, trust, and confidence that the dealership can instill in the customer as a result of their interactions with employees (Parasuraman et al., 1988; Zeithaml et al., 2006; O'Neill and Palmer, 2003; Buttle, 1996). Tangibles referred to the physical facilities, equipment and appearance of personnel (Parasuraman et al., 1988) that are part of the service delivery process (Zeithaml et al., 2006; O'Neill and Palmer, 2003). Empathy is referred to caring, individual attentions to handle the customer (Parasuraman et al., 1988) in a way that makes him feel important to the company and that his requirements are also significant to the company (Zeithaml et al., 2006; O'Neill and Palmer, 2003). Responsiveness is the service provider's willingness to provide the prompt services (Parasuraman et al., 1988) and assistance to the customer at different times (Zeithaml et al., 2006; O'Neill and Palmer, 2003).

The contact point between the customer and car dealership starts from the moment a customer enters the car showroom through multiple stages, which ended up at the end of warranty time. The first stage is with the sales team that starts when a customer enters the car showroom and ends with pay the car. Then, the second stage begins with the customer services team and ends by receiving the car. The next stage is with the maintenance team starting at the first maintenance appointment and finished at the warranty time ends.

This study aims to evaluate and improve the customer's journey at local motor company in Saudi Arabia from the moment the customer arrives at the car showroom until the first maintenance appointment during the car's warranty period. To achieve this objective, mixed-method approaches are implemented in this study where several phases has been conducted include qualitative data collection through focus group interviews; quantitative data are collected through the survey; as well as applying Quality Management Tools (QMS) in order to develop the action plan and provide conclusions and recommendations that would improve the customer's journey and increase satisfaction.

2. FOCUS GROUP

The Focus group interview was held virtually on Friday, 26 February 2021. The researchers were the moderator of the focus group. Participants are 8 people; Sales representative supervisor, customer service supervisor, Maintenance shop supervisor, car showroom manager, Security supervisor, and three car owners who recently owned cars under warranty umbrella. The focus group was lasted for about 90 minutes. The main discussion topic for this interview is the customer expectation regarding the car dealer's service, which would lead to their satisfaction and the challenges that employees face achieving this customer satisfaction. In this regard, the customers have complained about the following points:

2.1 At the car showroom

- Not all cars are available in the showroom.
- Unavailability of some of the offered cars' grade
- Cars external exhibitions sell cars at a higher price than the dealer.
- Variety of car grades in an exaggerated manner that confuses the customer's choices.
- Insufficient sales staff inside the showroom, as the customer wait 20 minutes for the sales employee to serve him.

- Sales staff have a lack of information on the differences between car grades.
- Unavailability of the immediate sale for many cars.
- Unavailability of reservation option to buy a car by paying a deposit or part of its value in advance.
- Dealer does not provide any approximate time for the non-existent car arrival.
- Working hours: the showroom close at 8:00 pm.
- Working days: the car showroom is closed on Friday.
- The lack of parking for customers easily at the showroom.
- Exaggeration in closing the time for prayers, where sometimes reach 40 minutes.

2.2 At the Maintenance shop

- Lack of immediate maintenance.
- Although it is possible to book an appointment for periodic maintenance through a website, the reservation process is not done directly. Rather, the customer is informed that the maintenance department will contact him within 48 hours and this is an exaggerated time. In addition, many customers complain that this duration is incorrect as some have to wait a week without contacting him.
- Upon completion of the reservation process, the customer has to arrive early to deliver the car before 8 am.
- Regular maintenance cost is high.
- The prices of consumable spare parts are high.
- Not providing an alternative car in the case that the car would remain with the maintenance shop for more than one day, although the dealer announces this commitment constantly.
- Although the dealer offers rental cars to customers, the rental value is higher than the average market price.
- Not granting a warranty on new consumable parts installed during the maintenance period.
- The waiting time for completing the registration of the car at the maintenance shop reaches up to 40 minutes.
- The maintenance shop working hours are not appropriate, as it closes early (17:00).

3. SURVEY

3.1 Designing Survey

Based on the data collected from the focus group and Parasuraman et al. (1988) SERVQUAL dimension, the questionnaire was developed. After that, a pilot study test was conducted to test the questionnaire's reliability and validity (Table I). The reliability analysis was conducted by measuring Cronbach alpha, while the correlation method was implemented to analyze the validity of the questionnaire (Guilford, 1954).

When testing the reliability and validity for the assurance dimension, one item was deleted because its correlation is not significance, and cause decrease of Cronbach alpha for this dimension from 0.865 to 0.589. Moreover, one item was deleted from the tangible dimension because it neither correlate and nor significance with total correlation value, and it cause decrease of Cronbach alpha for this dimension from 0.710 to 0.456. Therefore, it has been deleted.

Table I. Measuring reliability and validity of the questionnaire.

Dimension	Name	Items	Cronbach alpha	Total correlation
Reliability	R1	I can find the car I intend to buy available in the showroom.	0.821	0.674**
	R2	I can find the car grade I intend to buy available in the showroom.		0.760**
	R3	I can buy my favorite car model and grade immediately		0.807**
	R4	The dealer offers me reservation option to buy a car by paying a deposit or part of its value in advance.		0.834**
	R5	The regular maintenance procedures are easy and fast.		0.803**

Assurance	A1	Sales staff have good information on the differences between car models and grades.	0.865	0.621**
	A2	The dealer offers me a warranty on new consumable parts installed during the maintenance period.		0.566**
	A3	The dealer gives me good advices regarding maintenance.		0.601**
Tangibles	T1	The location of the showroom branches and maintenance center is obvious and easy to access.	0.710	0.745**
	T2	The parking area is enough and it is easy to park my car in front of showroom.		0.407**
	T3	The show room is clean and its design is good.		0.652**
Empathy	E1	The dealer offers an alternative car for free if my car needs more than work day for repair.	0.792	0.946**
	E2	Sales staff inside the showroom is available every time upon request.		0.683**
	E3	The dealer employees are friendly and polite.		0.693**
	E4	The dealer's closing period during prayer times is reasonable and not long.		0.778**
	E5	Once I made maintenance appointment, the dealer calls me shortly.		0.494**
Responsiveness	RE1	The showroom working hours is suitable for me.	0.823	0.870**
	RE2	The showroom working days is suitable for me.		0.874**
	RE3	The maintenance center working hours is suitable for me.		0.509**
	RE4	The maintenance appointment is available upon request.		0.829**
	RE5	When making appointments for regular maintenance, the dealer offers me plenty of choices during work hours.		0.844**
Satisfaction	S1	The Car dealer makes an effort to understand my needs.	0.888	0.847**
	S2	The Car dealer is professional in repairing car faults.		0.839**
	S3	I consider this car dealer as my first choice.		0.772**
	S4	My overall experience with this car dealer services pleases me.		0.914**
	S5	I recommend this car dealer to people who seek my advice.		0.850**

** $P\text{-value} < 0.001$

3.2 Distributing Survey

The study population is the car owners who recently purchased new cars from this dealer and received regular maintenance services for one time only from the branch understudy. According to the data available to the dealer, the number of cars sold within this range was 2071 cars from both genders, which is considered as the unit of analysis. The sample framework is the dealer's database. Hence,

the survey was distributed electronically through this sample using SMS messages send to these owners including a link to the survey using a simple random sampling, which gives each element the same opportunity to participate in the questionnaire. At the end, 563 complete responses were received and used in subsequent steps. Table II shows the mean and standard deviation for each item in the survey.

Table II. Mean and Standard Deviation for questionnaire items.

Items	Mean	Std. Deviation
R1	2.30	1.20
R2	2.28	1.15
R3	2.05	1.01
R4	1.87	.85
R5	2.00	.96
A1	1.85	.66
A2	1.87	.86
A3	1.88	.82
T1	2.90	1.10
T2	2.40	.78
T3	3.25	1.03
E1	2.50	1.30
E2	2.08	.92
E3	3.62	1.15
E4	2.03	.80
E5	1.95	.87
RE1	2.17	1.04
RE2	2.70	1.20
RE3	1.62	.49
RE4	1.78	.69
RE5	1.40	.47
S1	2.03	.97
S2	2.70	.99
S3	2.65	1.23
S4	2.32	.83
S5	2.48	1.01
TOTAL	2.25	0.93

Based on the data output from table II, the current level of customer satisfaction is 2.25 out of 5. This means the customers are unsatisfied with current dealer service quality.

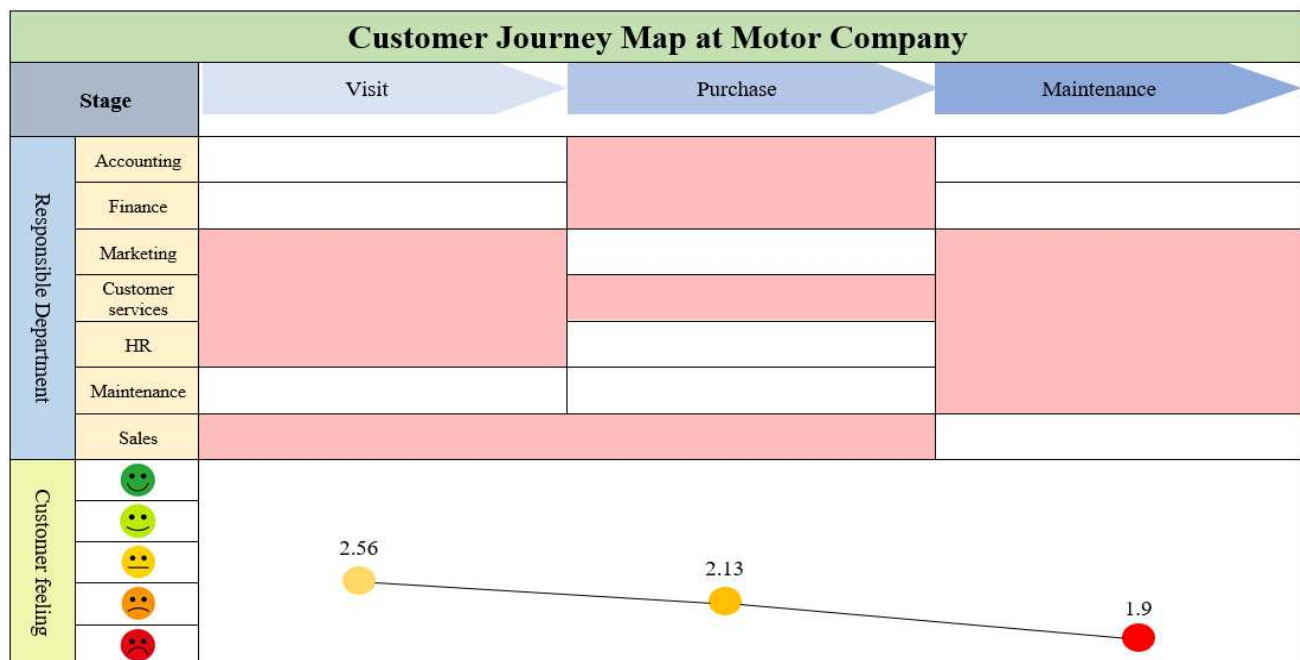
4. CUSTOMER JOURNEY MAP

The Customer Journey Map (CJM) is a diagram that illustrates the stages customers go through in their relationship with a company, from their interest to buying a product until the end of their relationship. It enables the company to optimize the customer experience, benchmarking the experience desired by customers against what they actually receive, understanding the differences in buyer personas as they move from prospect to conversion through the buying funnel. However, the biggest benefit is simply understanding customers more.

In this study, the CJM was developed by researchers (Figure 1 and 7) based on output data from previous sections. The customer relationship with the car dealer goes through the following stages: Visit, purchase, receive, and maintenance stage. In these stages, the customer interacts with employees from the different departments. In contrast, the customer feeling rate is under the responsibility of many other departments, some of which may not be the department to which these employees belong.

The first section of CJM is the customer-company relationship stages. The receiving stage was excluded because customer did not complain from its procedure. The second section is the responsible departments. Third section is the customer feelings mean extracted from survey. Following section is the gap between customer expectation and experiences. Finally, the recommended to fill these gaps.

Developing CJM required categorizing of survey items based on relationship stages, which enable to evaluate the customer feelings and moving toward the subsequent steps in CJM.



5. QUALITY MANAGEMENT TOOLS

Data analysis was conducted for questionnaire items and ended with conclusion that for subsequent steps, these items could be categorized in another way into five service quality issues categories; Inconvenient timing, Unavailable resources, Lack of information, Lack of dealer offering, and lack of prompt responses.

In this section, these issues will be studied, and analyzed by the seven quality management tools (Affinity Diagram, Interrelationship Digraph, Tree Diagram, Process Decision Program Chart (PDPC), Matrix Diagram, Prioritization Matrix, and Quality Function Deployment (QFD)) in order to improve the customer journey and increase its satisfaction and loyalty as follow:

5.1 Affinity diagram

(also known as the KJ Method) was developed by Jiro Kawakita in the 1960s (Bretz, et al., 2000). It's one of the seven tools for quality management and planning that helps to organize large numbers of data and ideas generated during interviews can be sorted, using this tool, into groups based on their natural relationships for analysis and evaluation (Oakland, 2017; Plajn, 2007; Shallito and Murle, 1992). According to Oakland (2017), the following are the steps for creating an affinity diagram:

- Gather a group of persons who are related to the issue of interest.
- State the difficulties that need to be addressed.
- Give each person in the group a stack of cards to write down as many thoughts as they can.
- Each person reads one of his or her thoughts and puts it on the table without critiques or justifying.
- Once all of the thoughts have been provided, persons should group all cards with related thoughts together, repeating this step until all of the thoughts have been clustered into a few groups.
- For each group, look for one card that encompasses the meaning of such a group.

Figure 2 illustrate the result of these steps and represent the affinity diagram of this study. The next tool to be implemented is the Interrelationship diagram.



Figure 2. Affinity diagram for service quality issues. Source: Developed by authors.

5.2 Interrelationship diagram

The affinity diagram allows for the emergence of some structured, creative styles, whereas the interrelationship diagram allows for the emergence of logical patterns. The Interrelationship diagram is a tool for mapping out the rational or successive links between relevant factors in a complicated core idea, issue, or multivariable situation. This diagram is based on Warfield (1960) research on digraphs and relational representations (DeVilbess, 2005). It starts by sketching the rational connections that appear in the affinity diagram, which calls for a very creative process (Oakland, 2017). In this study (Figure 3), the following relationship are extracted from the logical relationship between groups:

- Inconvenient timing and lack of Reasonable Promptness: There is inconvenient timing in working hours and days for both showroom and maintenance center. The early closure of the maintenance center led to the lateness of maintenance reservation appointments beside the limited choices of appointments scheduling for customer during working hours. Moreover, for maintenance center, the current working hours and days limits the immediate maintenance services offering. The prayer long closure causes the lack of prompt responses upon request from sale staff in the showroom.
- Unavailable resources and Inconvenient timing: Saudization and the minimum salary role for citizen enrolled in private sector increase the recruiting cost. The results are shortage in sales staff and other departments. Unavailability of adequate number of sales staffs in the showroom causes inconvenient working hours and days. Subsequently, the maintenance center also suffers from these issues, where the reception, customer services, cashier, and maintenance management staff are also local employees.
- Unavailable resources and lack of dealer offering: Many customers complain from the lack of alternative cars offers from the dealer in the case of that customer's car need more than one working day to repair. The alternative car is an asset for the company and the asset in general is a resource for such company that utilized to increase company's value. The lack of alternative car inhibits the dealer to offer substitute option to satisfy customer during repair time. On the other hand, there is a lack of inter-communication electronic system lets the dealer inform customers about the estimated arrival time of non-existent car, which negatively affects the sale process.
- Unavailable resources and lack of reasonable promptness: The ready for sale car, and sales staff are dealer's resources. Many customers complain from the shortage of cars stock. When such customer is ready to purchase the and have its value in hand, the dealer cannot sell him the required car because of such shortage, which prevents the immediate sales to customers. On the other hand, the long waiting time for customer at the showroom (20 minutes) happened because of the shortage of sales staff, which increases the reasonable promptness problem.
- Unavailable resources and lack of information: Many customers complain from the shortage of sales staff knowledge regarding the differences between different car models and grades. Investigating this issue led to conclude this happening because of the shortage of experienced sales staff.
- Lack of information and lack of reasonable promptness: The employee's lack of knowledge between different car grades and model negatively affects their strives to serve customer in showroom since these employees did not want to give customers bad impression about them. This issue also causes spending more times with customers to give them convenient answers of their queries; when customer did not receive reliable answers to their queries, they will continue asking sales staff until find rational answer, which in turn affect the reasonable promptness for other customers.
- Lack of information and lack of dealer offering: There is a lack of information available for the dealer regarding the estimated arrival time for non-existent cars. This lack is one cause of a lack of dealer offering such as pay in advance and car reservation.
- Lack of information and inconvenient timing: customers complaint of poor advice from maintenance staff increases the car registration process and waiting time at the maintenance center as well.
- Lack of dealer offerings lack of reasonable promptness: Dealer's refuses to accept deposit and advance payment to purchase a new car prevent the immediate response to customer request of product. Moreover, the unavailability of online booking for maintenance inhibits immediate response to customer requests for maintenance.
- Lack of reasonable promptness and unavailable resources: Currently, employees are spending too long time with customers for many reasons mentioned above. This also led to increase in the waiting time for other customer that park their cars in the parking area. Therefore, the lack of reasonable promptness led to parking unavailability as a resource for the company.

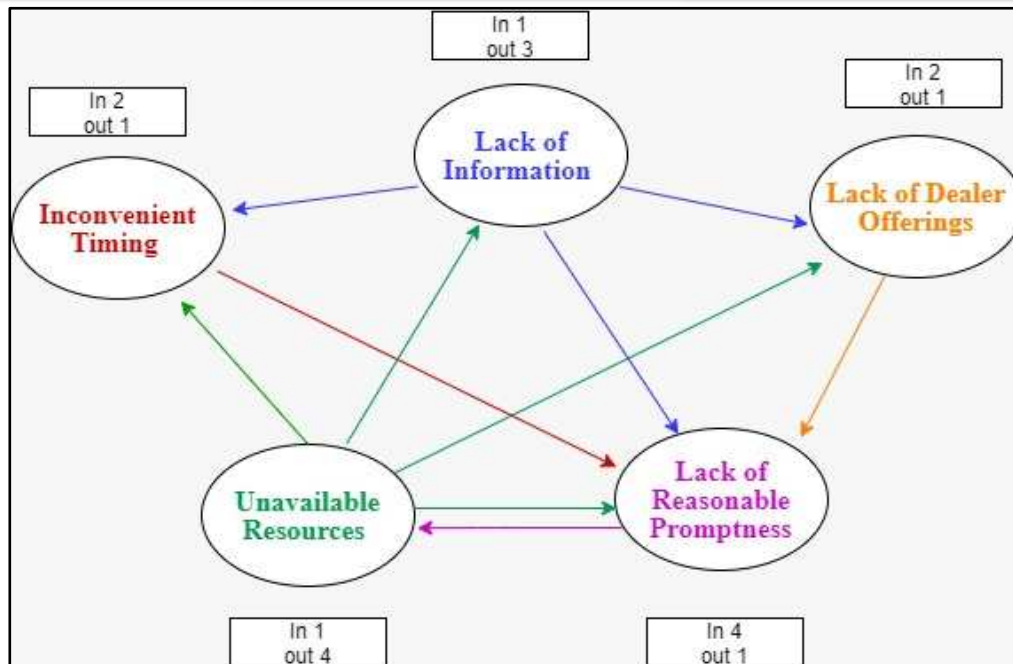


Figure 3. Interrelationship diagram. Source: Developed by authors.

5.3 Tree diagram

Is the most suitable and effective method for planning to complete a task or solve an issue; events are expressed as a root-and-branch relationship. It shows the ways and paths required to achieve a specific objective or to illustrate the constituent portions that lead to the source of the issue in deep detail (Eirck, 2018). It used when the source of the issue is known, but no plan or process for finding a solution has been established, and when a task was realized to be easy but face difficulties in implementation. It is commonly used to compare and contrast many various processes and plans for problem-solving, assisting with complicated execution. It's used to determine dependencies in a circumstance and look for the best appropriate improvement opportunities, as well as when losing key events has serious consequences (Barie, et al., 2016). In this project, after the team decided the main issues by (voice of customer) the result of the focus group, survey, and affinity diagram, the tree diagram was considered complementary to determine the main and sub-causes. As a result, there were 5 leading issues, 20 main causes, and 61 sub causes, as shown in figure 4 series. All these causes are exported to the next step, which PDPC.

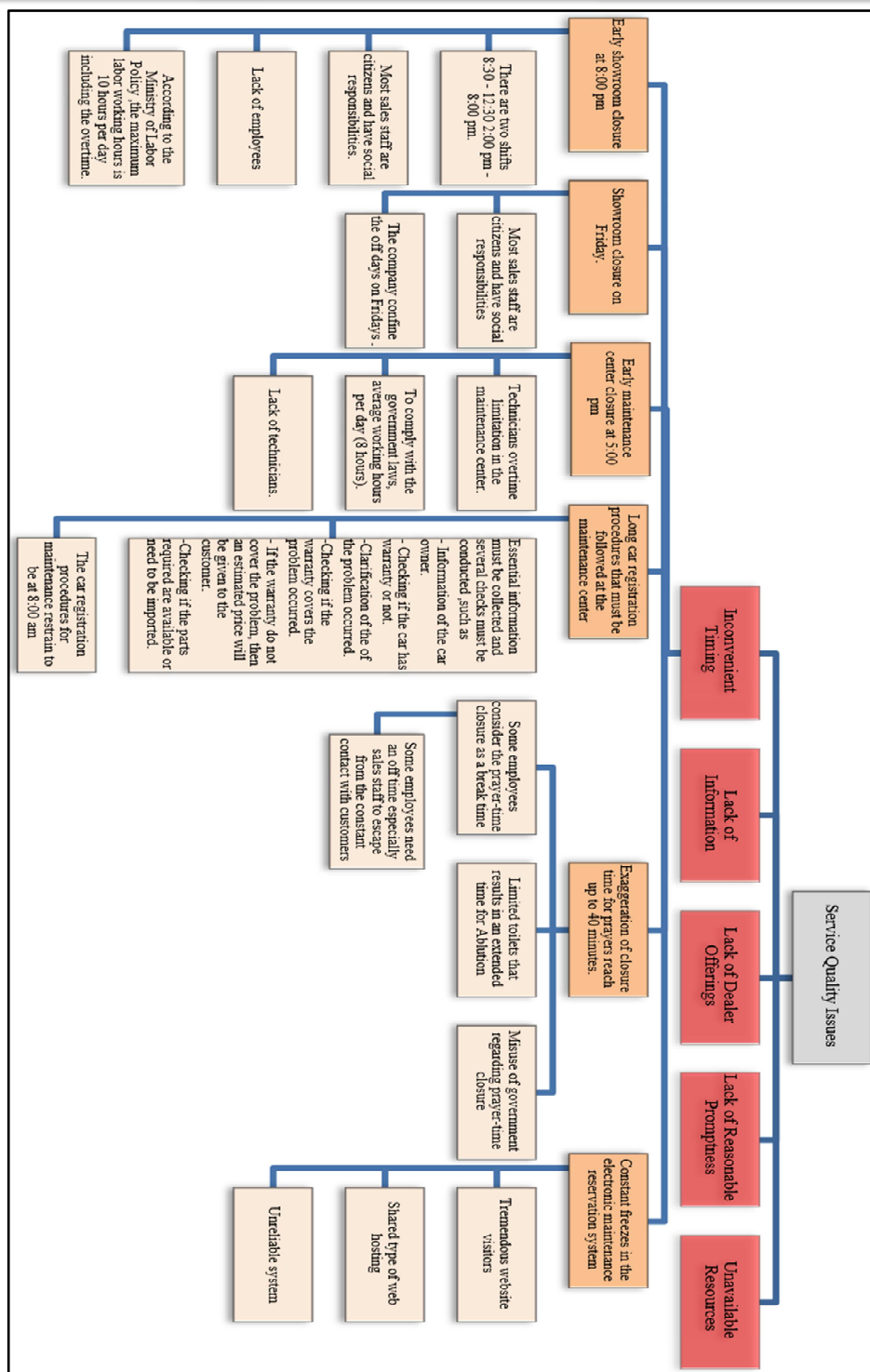


Figure 4a. Tree diagram for inconvenient timing issues

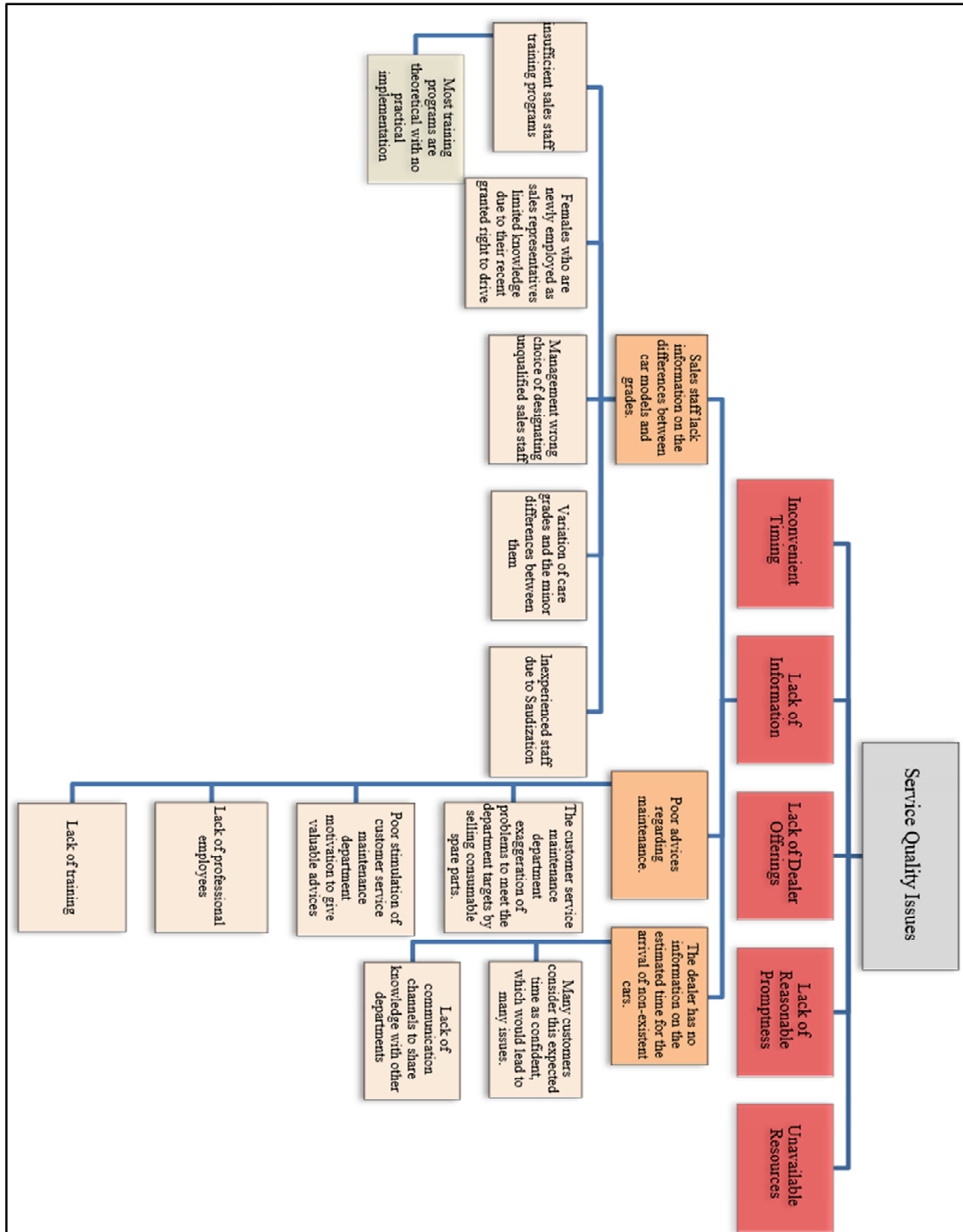


Figure 4b. Tree diagram for lack of information issues

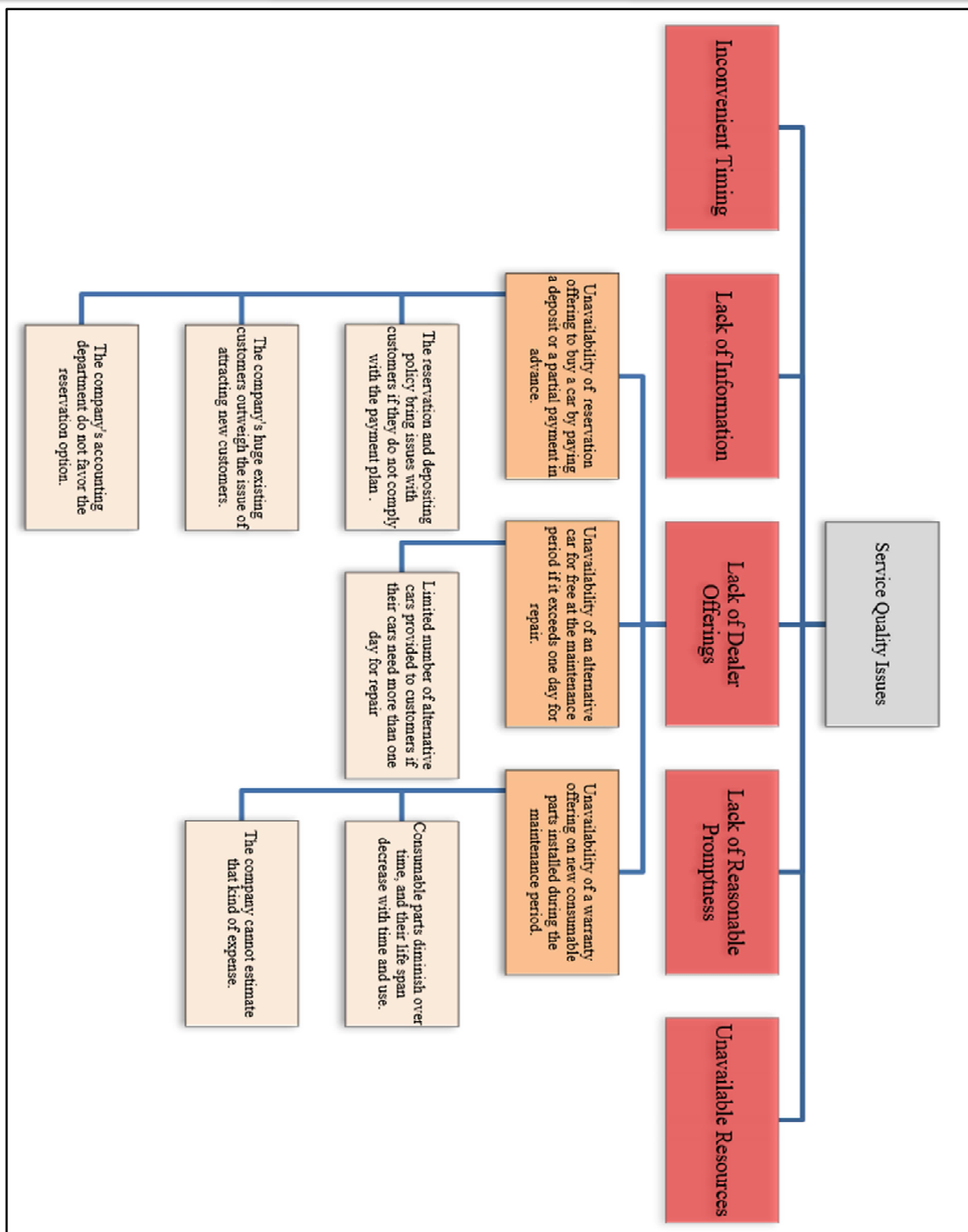


Figure 4c. Tree diagram for lack of dealer offering issues

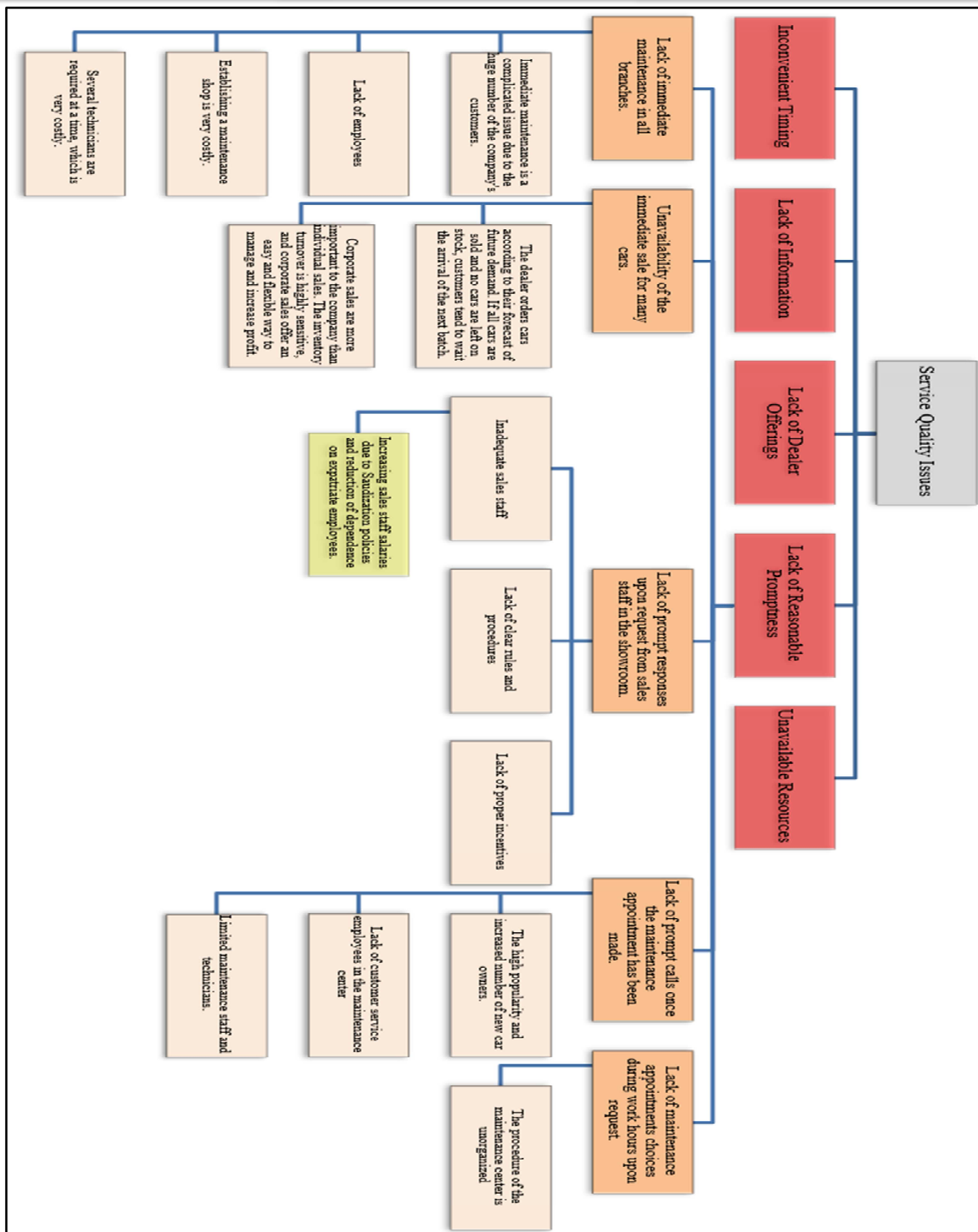


Figure 4d. Tree diagram for lack of reasonable promptness issues

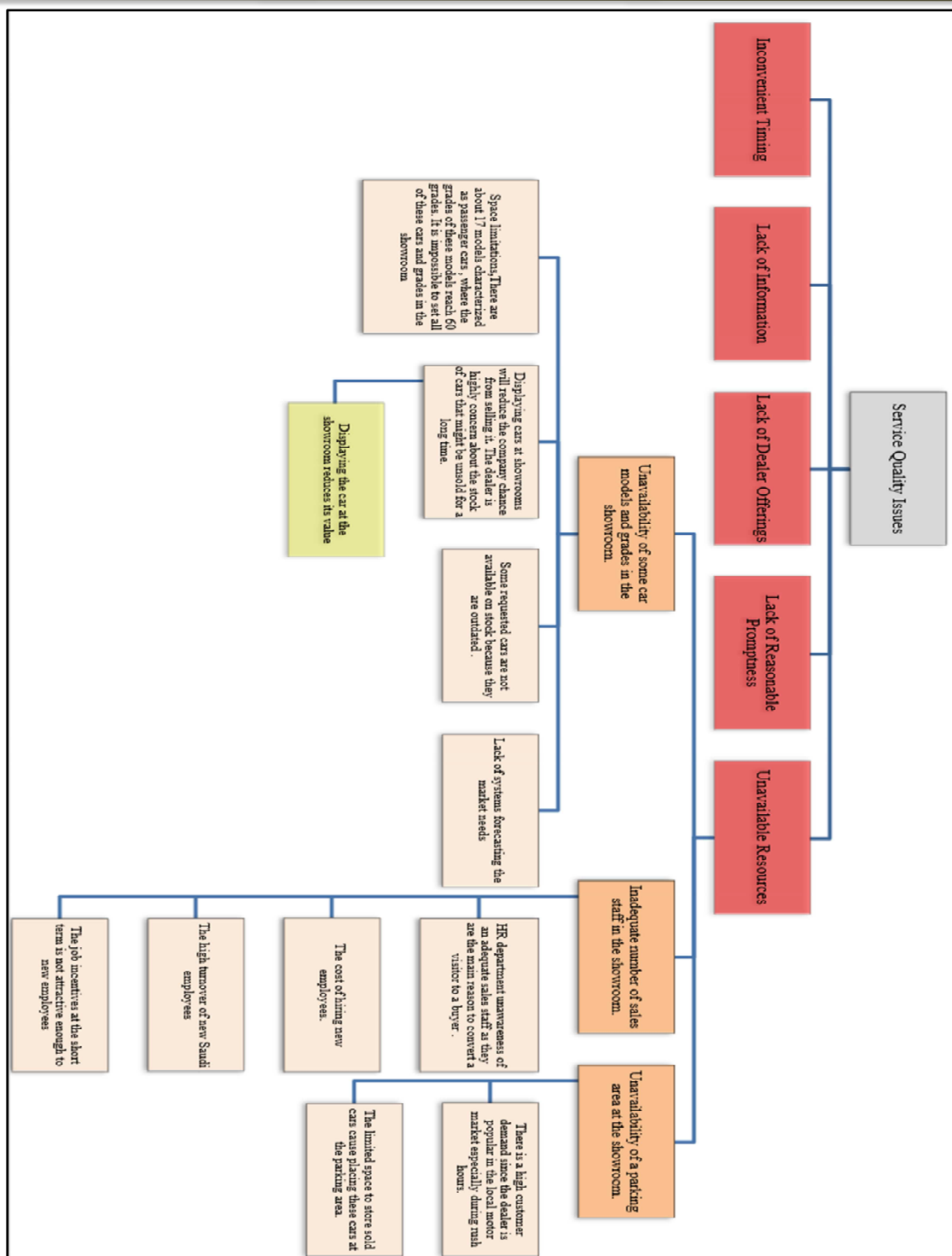


Figure 4e. Tree diagram for unavailable resources issues

5.4 Process decision program chart (PDPC)

It is used to pick the correct methods for getting the best result from an issued statement by measuring all potential events, contingencies, and results in any action plan. It is used to predict unpredictable events, develop a plan for counter-measures, and take action for such results (Chu and Tosirsuk, 1991). When the issue is uncommon, or distinctive, it is used to plan every potential chain of events that could occur.

In this study, 20 main causes were branching out from 5 leading issues extracted from the tree diagram. The PDPC diagram imports the 20 main causes from the tree diagram, branching out from 5 leading issues. Then, the team found many solutions for these causes and predicted the risk that could happen if these solutions were implemented. After predicting risk, alternative solutions have been suggested by the teams. There were 40 solutions, 38 risks, and 39 alternatives. As shown in figure 5 series, there are many levels of the chart. The first level the leading issues, the second level is the main causes, the third level is the solutions, the fourth level is the risks, and the last level is alternative solutions, while each level has a certain color. The next step will be to investigate the relationship between causes and solutions in the matrix diagram.

5.5 Matrix Diagram

This matrix is the heart of the seven management tools. Its purpose is to explain the relation and connecting points for both outcomes and causes or goals and methods, as well as to determine their relative significance and direction of impact through the use of codes (Taquo, 2005). The diagram can also be used to make inferences about the reasons of the consequences. It used if there are two different sets of factors and methods that may not be related, and if an accumulative numerical score is needed to make comparison between two items. The factors are organized in a chart through columns and rows, with the intersections addressing the issue and its intensity; the intersecting points serve as the foundation for future action and solution finding (Rayan, 2011). The data is displayed in a matrix diagram are used in the matrix data-analysis method to quantify and organize it in a clear way. It is a numeral analysis methodology that uses many techniques one of them is the multivariate analysis (Pakadil, 2020).

There are three levels of correlations between the customer requirements and the substitute quality attributes: strong, moderate, and possible. In this paper, the solutions imported from the PDPC were examined to find out the relation between the causes and solutions. The strong relation was determined by this symbol (●) which value is 9, the medium relation was (○) and value is 3, and the weak relation was this symbol (▽) with the value of 1, as seen in the tables III series. Then, after determined the relationship, the prioritization matrix will determine the order of these solutions.

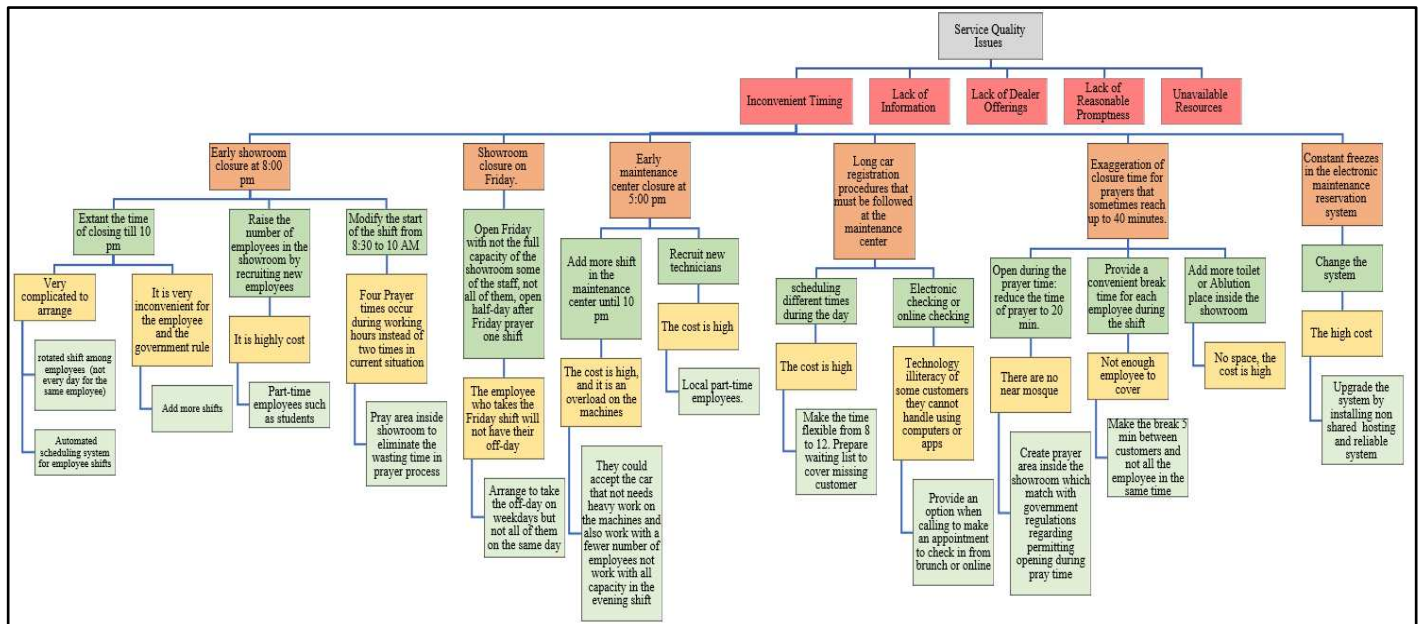


Figure 5a. PDPC diagram for inconvenient timing issues

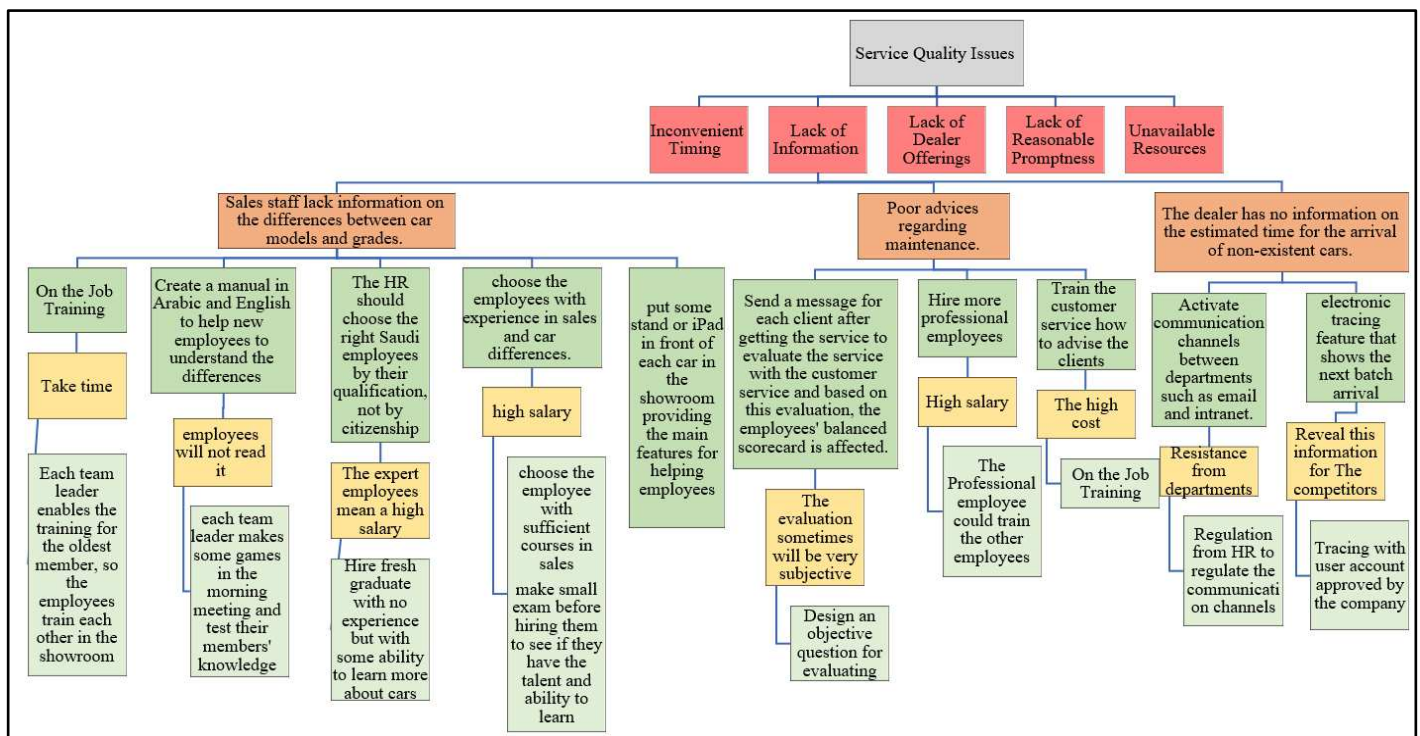


Figure 5b. PDPC diagram for lack of information issues

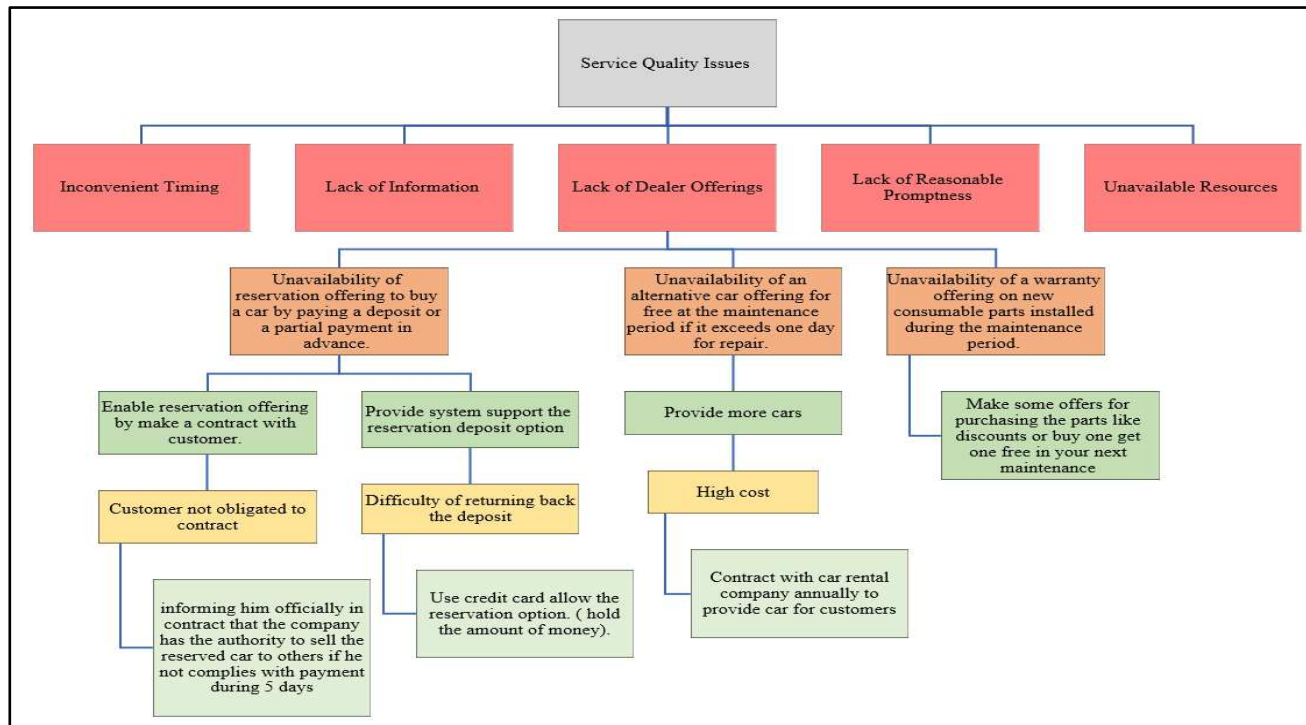


Figure 5c. PDPC diagram for lack of dealer offering issues

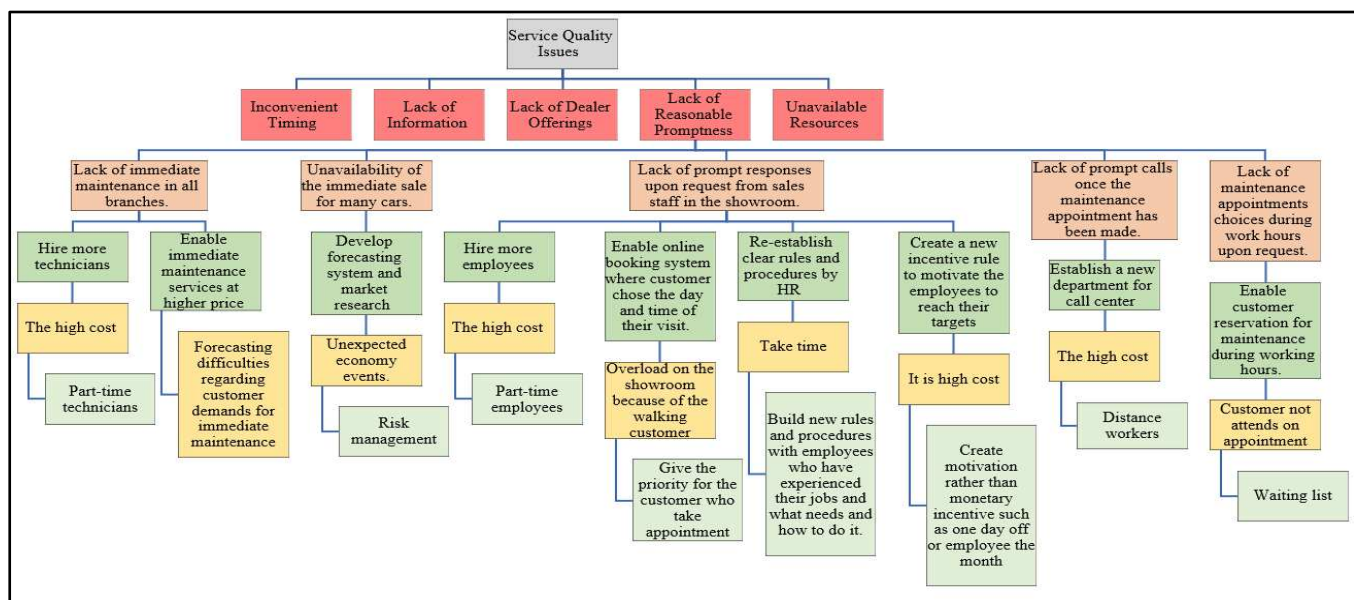


Figure 5d. PDPC diagram for lack of reasonable promptness issues

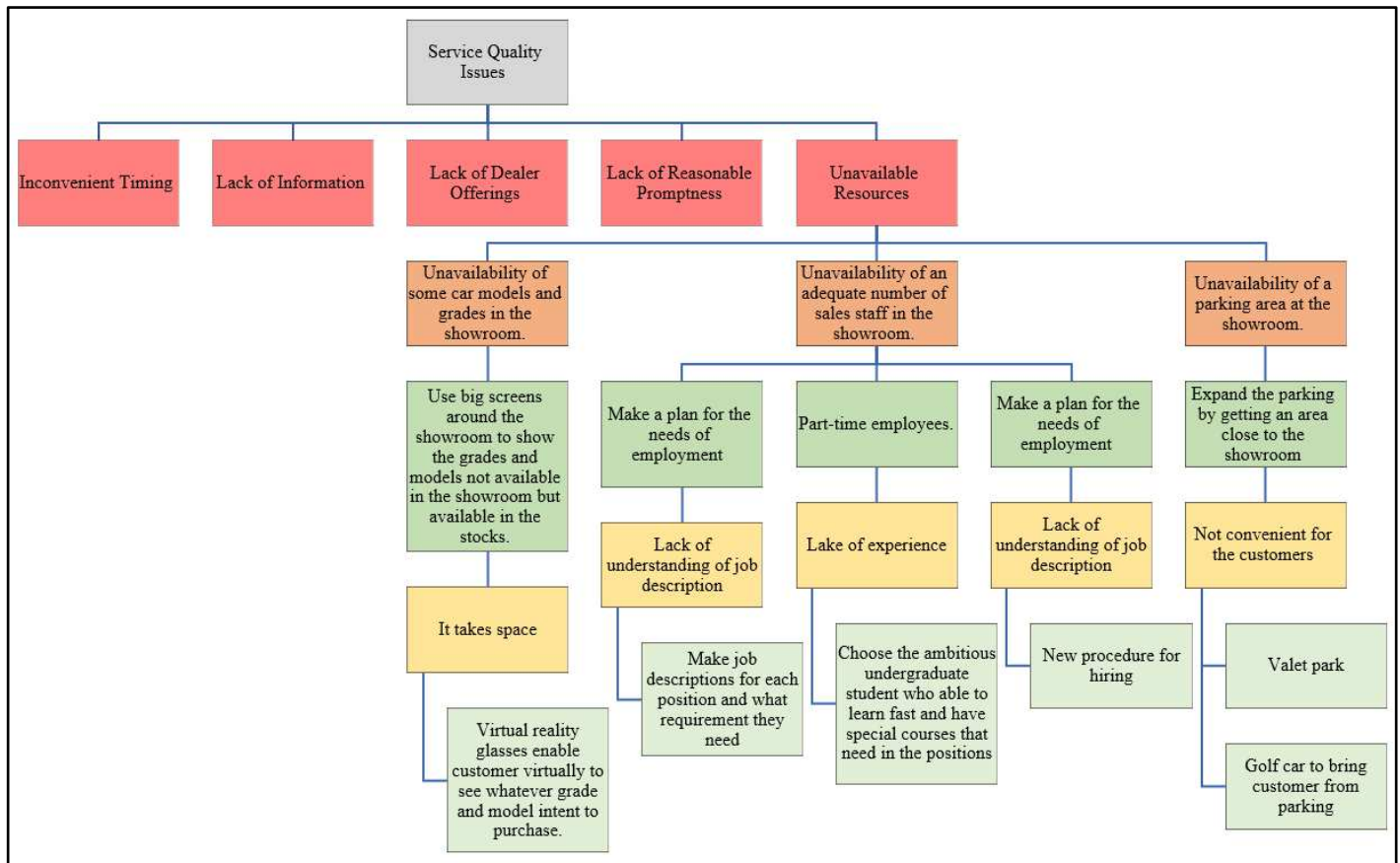


Figure 5e. PDPC diagram for unavailable resources issues

Table III. Matrix diagram symbol value

Symbol	●	○	▽
Value	9	3	1
Relationship	Strong	Medium	Weak

Table IIIa. Matrix diagram for inconvenient timing

Inconvenient timing	Delay shift start times from 8:30 to 10:00 AM	Rotated shifts among employees	Hiring Part-time sales staff	Open on Fridays with one shift only after Friday prayer	Recruit part time technicians	Add more shift in the maintenance center until 10 pm	Providing an option to online check-in or from the maintenance center.	Flexible maintenance registration time interval 8 –12 am, and waiting list to cover missing customers	creating a prayer area inside the showroom.	Add more toilets or Ablution areas inside the showroom	Upgrade the hosting to a non-shared hosting
Extending the showroom closure till 10:00 pm	●	●	●	●					○	▽	
Open the showroom on Fridays.		○	●	●							
Extending the maintenance center closure till 10:00 pm		○	●	●	●	●	○	○			○
Minimizing the time for car registration procedures that must be followed at the maintenance center		○	●	●	●	●	●	●			○
Minimizing the time of closure for prayers that sometimes reach up to 40 minutes.		▽	○	○	○				●	●	
Better electronic maintenance reservation system that doesn't freeze constantly											●

Table IIIb. Matrix diagram for lack of reasonable promptness

Lack of reasonable promptness	Hiring Part-time technicians	Enable immediate maintenance services at higher price according to the maintenance center capacity	Developing a forecasting system and conducting a market research	Enable online booking system where customer chose the day and time of their visit and give the priority for the customer who take appointment	Re-establish clear rules and procedures by the HR department with the assistance of experienced employees on how to serve customers.	Offering motivational incentives other than monetary incentives such as one day off or applauding the employee the month.	Call center department that has Remote workers	Enable customer reservation with various appointment choices for maintenance during working hours and a waiting list option.
Offering immediate maintenance.	●	●		●				○
Immediate car sale			●					
Prompt responses upon request from sales staff in the showroom.			○	●	●	●		
Prompt calls once the maintenance appointment has been made.	●	○		○	○	○	●	○
Variety of maintenance appointment choices during work hours upon request.	●	○		●			▽	●

Table IIIc. Matrix diagram for lack of dealer offering

Lack of dealer offering	Enable the reservation offering by making a contract with customers that the company has the authority to sell the reserved car to others if he/she did not comply with the payment during 5 days.	Provide a system that supports the reservation deposit option, such as accepting payments via credit cards that holds the amount of money	Provide more cars by contracting with car rental companies annually	Make some offers for purchasing the parts like discounts or buy one get one free in your next maintenance.
Reservation offering to buy a car by paying a deposit or a partial payment in advance.	●	●		
Alternative car offering for free at the maintenance period if it exceeds one day for repair.			●	
Warranty offering on new consumable parts installed during the maintenance period.				●

Table IIIId. Matrix diagram for lack of information

Lack of information	On the Job Training by more experienced employees	Interactive activities in the morning meetings to test employee's knowledge	Hiring experience sales employees in car models and grades differences.	stands or iPads in front of each car shows main car features to help employees	Collecting electronic feedback evaluating maintenance center employees	The Professional employee could train the other employees	Active comm channels between departments such as email and intranet.	Tracing feature availability of the next batch arrival
Sales staff must have rich information on the differences between car models and grades.	●	●	●	●		●	○	
Good advice regarding maintenance.	●	●			●	●	▽	
The dealer has information on the estimated time for the arrival of non-existent cars.							●	○

Table IIIe. Matrix diagram for unavailable resources

Unavailable Resources	Virtual reality glasses enable customer virtually to see whatever grade and model they intent to purchase.	Make job descriptions for each position that states the requirements needed from each job position	Hiring only ambitious undergraduate students who are fast learners and have special courses that are needed in the positions.	Adopting new procedures for hiring	Expanding the parking area by renting an area close to the showroom and having a valet parking service or golf cars
Availability of all car models and grades in the showroom.	●				
The presence of an adequate number of sales staffs in the showroom.		●	●	●	▽
Availability of enough parking spaces at the showroom.					●

5.6 Prioritization Matrix

It is a set of L-shaped Matrix Diagrams used to prioritize or order alternatives. Investigating how each alternative links to different operational and improvement criteria provides a quantitative and efficient approach of prioritizing either the available options or the different tasks that must be completed.

In this study, after the matrix diagram explaining the relationship between causes and solutions, the prioritization matrix ordered these solutions. It can be seen that there are 16 solutions their importance percentage over 9%. The other solutions, less than 9%, have been excluded. Each solution was ranked to ordered the solutions by their importance to solve the problems. According to the Pareto principle, 80% of problems are solved by 20% of solutions, as seen in tables IV series.

5.7 Quality function deployment (QFD)

It is used for determining customers' requirements and aspects to focus on in order to fulfill those needs. The house of quality (HOQ) was the primary tool employed. Using QFD, the customer preferences and requirements are converted to technical

requirements, which can be measured, quantified, and investigated (Dale, et al., 2007). By discovering and analyzing the 'voice of the customer,' the QFD helps to enhance proactive development instead of reactive development (Chen and We, 2002). Figure 6 shows the HOQ for this study.

In this study, the HOQ has been established step by step. First, the five categories of the voice of the customer was imported from the Affinity diagram with some modifications (Timing, Knowledge, Offers, Services promptness, Resources). Under these categories, there was a list of 18 requirements derived from customer statements. The importance weight of each requirement has been defined from 1 to 5. Next, the technical requirement's part imported from the PDPC with 16 solutions. The part of relation imported from prioritization matrix tool. The percentages of each technical requirement have been calculated, the highest percentage was 58% for hiring solutions and the minor percentage was 9% for booking an appointment during day-hour solutions. The bench marketing part consisted of three companies: the company under study and two other companies targeted the same customer segments and the same country of origin. The company and competitors' services were tested against the customer requirements before implementing the improvement actions; the scale of this test is from 0 to 5. The roof was used to identify where technical requirements support (+) or impede (-) each other in the implementation. To sum up, the HOQ used many management tools to build and provide the best solutions for the customer requirements and to compete with the competitors in the market.

Table IVa. Prioritization matrix

		Technical requirements (TR)																															
customer needs (CN)	importance																																
	TR1: Delay shift start times	TR2: Rotated shifts among employees	TR3: hiring new employees	TR4: hiring part-time employees	TR5: open on Fridays	TR6: add more shift	TR7: online click in	TR8: Flexible car maintenance registration time	TR9: creating a prayer area	TR10: Add more toilets	TR11: Upgrade the system	TR12: On the Job Training	TR13: activate morning meeting	TR14: use stand or iPad	TR15: balanced scorecard	TR16: Activate communication channels	TR17: Tracing availability	TR18: Enable the reservation	TR19: system supports the reservation deposit	TR20: contracting with car rental companies	TR21: offers for purchasing the parts	TR22: higher price for immediate service	TR23: forecast system and market research	TR24: online booking	TR25: non-monetary incentive	TR26: call center with distance worker	TR27: book appointment during work hours	TR28: VR for car experience	TR29: job discretion	TR30: qualified employees	TR31: HR procedure	TR32: Expanding the parking area	
CN1: late close	5	9	9	9	9	9	9	0	0	3	1	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
CN2: open at Friday	5	0	3	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
CN3: short Maintenance procedure	3	0	3	9	9	9	9	9	0	0	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CN4: open in prayer time	3	0	1	3	3	3	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CN5: reliable reservation system	5	0	0	0	0	0	0	0	0	0	9	0	0	0	9	0	1	0	0	0	0	0	0	0	9	0	1	1	0	0	0	0	0
CN6: knowledgeable employees	4	0	0	9	9	0	0	0	0	0	0	9	9	9	9	9	1	0	0	0	0	0	0	0	0	0	1	0	0	9	9	9	0
CN7: estimated time for new car	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
CN8: reserve car	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	9	9	0	0	0	1	0	0	0	0	0	0	0	0	0	0
CN9: alternative car	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	1	0	0	0	0	0	0	0	0	0	0
CN10: warranty	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0
CN11: immediate maintenance	5	1	3	9	9	9	9	9	9	0	0	3	1	0	0	1	0	0	0	0	0	1	9	0	9	0	0	0	0	0	0	0	0
CN12: immediate car sale	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0
CN13: immediate response	4	0	0	9	9	3	9	0	0	1	0	0	1	1	1	1	0	0	0	0	0	0	9	0	9	9	0	0	0	0	0	0	0
CN14: immediate call for appointment	3	0	0	9	9	0	1	0	3	0	0	1	0	0	0	1	0	0	0	0	0	0	3	0	3	3	9	3	0	0	0	0	0
CN15: appointment during work hours	4	0	3	9	9	3	3	9	9	0	0	1	0	0	0	0	0	0	0	0	0	3	0	9	0	1	9	0	0	0	0	0	0
CN16: cars availability	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	9	0	0	0	0	9	0	0	0	0	0
CN17: adequate number of employees	4	0	0	9	9	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	3	1	0	0	0	0	9	9	9	0	0
CN18: parking	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	9
Importance rating		50	99	342	342	195	172	108	117	50	36	85	48	40	44	96	54	15	39	39	18	41	102	86	182	45	42	55	27	72	72	72	18

Table IVb| Prioritization matrix

Customer Needs (CN)	Importance	Technical Requirements (TR)															
		TR2	TR3	TR4	TR5	TR6	TR7	TR8	TR11	TR15	TR22	TR23	TR24	TR27	TR29	TR30	TR31
CN1	5	9	9	9	9	9	0	0	3	0	0	1	1	1	0	0	0
CN2	5	3	9	9	9	0	0	0	0	0	0	1	0	0	0	0	0
CN3	3	3	9	9	9	9	9	9	3	1	0	0	0	0	0	0	0
CN4	3	1	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0
CN5	5	0	0	0	0	0	0	0	9	9	0	0	9	1	0	0	0
CN6	4	0	9	9	0	0	0	0	0	9	0	0	0	0	9	9	9
CN7	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
CN8	4	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
CN9	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
CN10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CN11	5	3	9	9	9	9	9	9	3	1	9	0	9	0	0	0	0
CN12	3	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0
CN13	4	0	9	9	3	9	0	0	0	1	9	0	9	0	0	0	0
CN14	3	0	9	9	0	1	0	3	1	1	3	0	3	3	0	0	0
CN15	4	3	9	9	3	3	9	9	1	0	3	0	9	9	0	0	0
CN16	3	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0
CN17	4	0	9	9	0	1	0	0	0	0	0	3	1	0	9	9	9
CN18	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Importance rating		99	342	342	195	172	108	117	85	96	102	86	182	55	72	72	72
Ranking		8th	1st	1st	2nd	4th	6th	5th	11th	9th	7th	10th	3rd	13th	12th	12th	12th

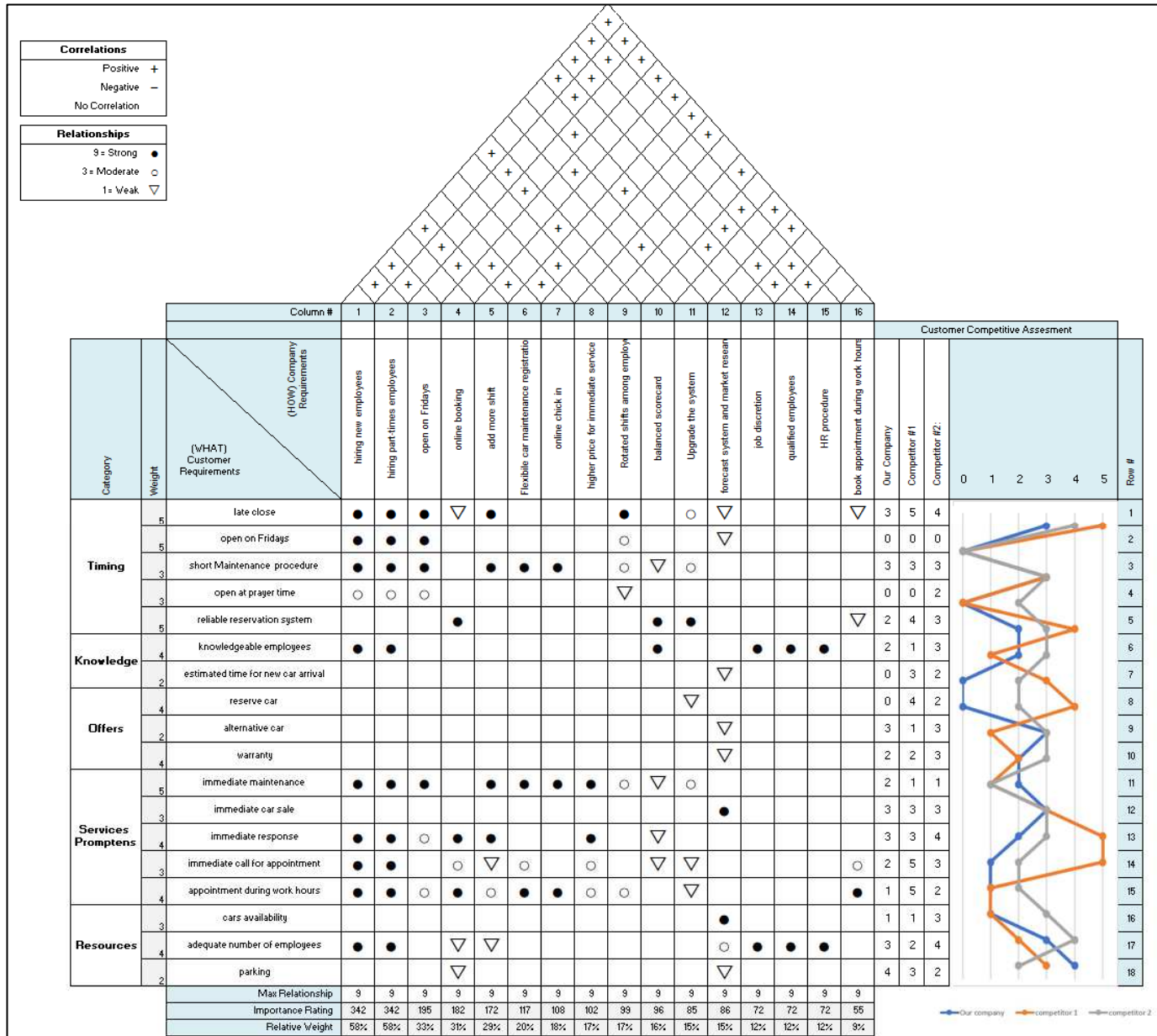


Figure 6. HOQ

6. AREA FOR IMPROVEMENT

As stated earlier, service quality issues were related to the showroom and maintenance services. These issues were sorted in five categories: Inconvenient Timing, Lack of Information, Lack of Dealer Offerings, Lack of Prompt Responses, and Unavailable Resources. In the following, we will list some areas for improvement that may increase the service quality provided:

6.1 The Inconvenient Timing Issue

One of the obvious wastes that can be recognized and simply eliminated is the waste of time. Whether it was the waiting time to get a customer service representative or through prayer times, inconvenient working hours or days. Also, Problems concerning timing of the maintenance center working hours, online reservation, and car registration. This can be remedied by concentrating on the following areas for improvement:

- Create an online booking website that allows customers to book their visit to the show room in advance with specific timeframe.
- According to the government regulations, creating a prayer area inside the showroom permits opening during the prayer time. As a result, customers' waiting time will be reduced from 40 to 15 minutes. Also, adding more toilets or Ablution areas inside the showroom will accelerate the process.
- More flexible work days and work hours framework are needed to suit customers' needs. Delaying shift start times from 8:30 to 10:00 AM since the early working hours is inconvenient for most customers, and will increase customer satisfaction.
- Rotated shifts among employees can improve productivity.
- Hiring Part-time employees can **reduce the workloads of other employees** and prevent the negative effects of stress and fatigue. Also, it will save the costs of full-time hiring.
- Opening on Fridays with one shift only after Friday prayer could be a convenient solution for both customers and employees.
- Upgrading the hosting of the online reservation system to a non-shared hosting will reduce the constant freezes of the maintenance reservation system.
- After reserving on the maintenance reservation website, some customers reported long periods waiting before getting contacted by the maintenance department. The website should be updated to allow customers to pick time and date of maintenance without the need to be contacted by the maintenance staff.

6.2 The Lack of Information

Another issue was the sales staff and their information; there was a shortage in both. Aside from the fact that there weren't enough sales staff to provide service, they did not have any information concerning delivery times of none existent cars. They have lacked the knowledge concerning differences between car grades. Also, poor advices regarding maintenance were given to customers. The following few points are recommended as possible area for improvement to this problem:

- Effective communication will resolve the lacked knowledge concerning the differences between car models and grades. Qualified knowledgeable employees will share their experience through participative practices, such as Kaizen, business meetings, and public speaking.
- Poka Yoke will resolve the problem of poor advices regarding maintenance since the interaction with more experienced employees could help in identifying the root causes of the poor advices and resolving them.

- Providing informative stands where customers can choose between car models and see different grades, which minimized the need for sales staff. These stands could have interactive screens that provide an abundance of information as well as illustrative videos which will provide the customer with a unique experience.
- Educating employees through extra courses out of working hours, assigning them to study relevant to their work subjects, and relocating employees to other business teams will expand their experience and perspective while also motivating newcomers to reach this stage.
- Hiring experienced employees or employees with specialized courses in sales.
- Activate communication channels between departments such as email and intranet so that the estimated time for the arrival of non-existent cars is known at all branches.
- The company should have a fixed and clear system that has a tracing feature that shows customers the delivery dates of none existent cars and the next batch arrival dates taking into consideration any possible delay occurrences.
- Collecting electronic feedback from customers that will affect the maintenance center employees' balanced scorecard.

6.3 The Lack of Dealer Offerings

The other section of problems reported by the focus group concerned the unavailability of car reservation services by paying a deposit or part of its price in advance. Also, they suffered from the unavailability of alternative cars in case maintenance takes more than a day, and no warranty was offered on new consumable parts. This can be easily remedied by concentrating on the following areas for improvement:

- Allow customers the option of reserving certain cars by paying part of the price in advance whether it was in the local dealer's or online. Providing a system that supports the reservation deposit option, such as accepting payments via credit cards that holds the amount of money could facilitate the reservation process.
- In the case of maintenance that requires more than a day, the company is obligated, as announced, to provide the customer with an alternative car.
- Make some offers for purchasing the consumable parts like discounts or buy one get one free in your next maintenance could enhance customer satisfaction.

6.4 The Lack of Prompt Responses

Customers complained from the absence of immediate sales and maintenance services. Also, there were neither prompt responses from the sales staff in the showroom nor from the maintenance center after the appointment has been made. Furthermore, there is no appointment choices at different time intervals in the maintenance on-line reservation system. Although it is possible to book an appointment for periodic maintenance, but the reservation process is not done directly. The customer is informed that the maintenance department will contact them within 48 hours which is not the case since many customers complain that this duration is incorrect as some have to wait a week to get a response. In the following few lines, we will provide some areas for improvement that my help increase the quality of this section.

- Applying quality controls to non-production business operations increases output in the same way as product quality controls do. To achieve the desired results, quality control is applied by defining how the organization expects the staffing process to operate and putting in place controls that monitor efficiency. Setting time limits for each phase and tracking output for continuous improvement could be used to achieve quality control.
- Enabling immediate maintenance services at a higher price will enable to offer this service according to the maintenance center capacity.
- Developing a forecasting system and conducting market research will enable to estimate the future demand of car models and grades and providing them in advance.

- Re-establish clear rules and procedures by the HR department with the assistance of experienced employees on how to serve customers will increase prompt responses from sales staff.
- Offering motivational incentives other than monetary
- Call center department that has remote employees to respond back to customers once the maintenance appointment made. A remote employee works outside of the traditional office setting, but is employed by the company.
- Enabling online customer reservation with various appointment choices for maintenance during working hours, and offering a waiting list option.

6.5 The Unavailable Resources

Many car models and grades were not available in the showroom which limited customer's options. In addition, the number of sales staffs was not sufficient, which increasing customer dissatisfaction. Also, the parking area at the showroom was not enough during rush hours. This can be simply remedied by focusing on the following areas for improvement:

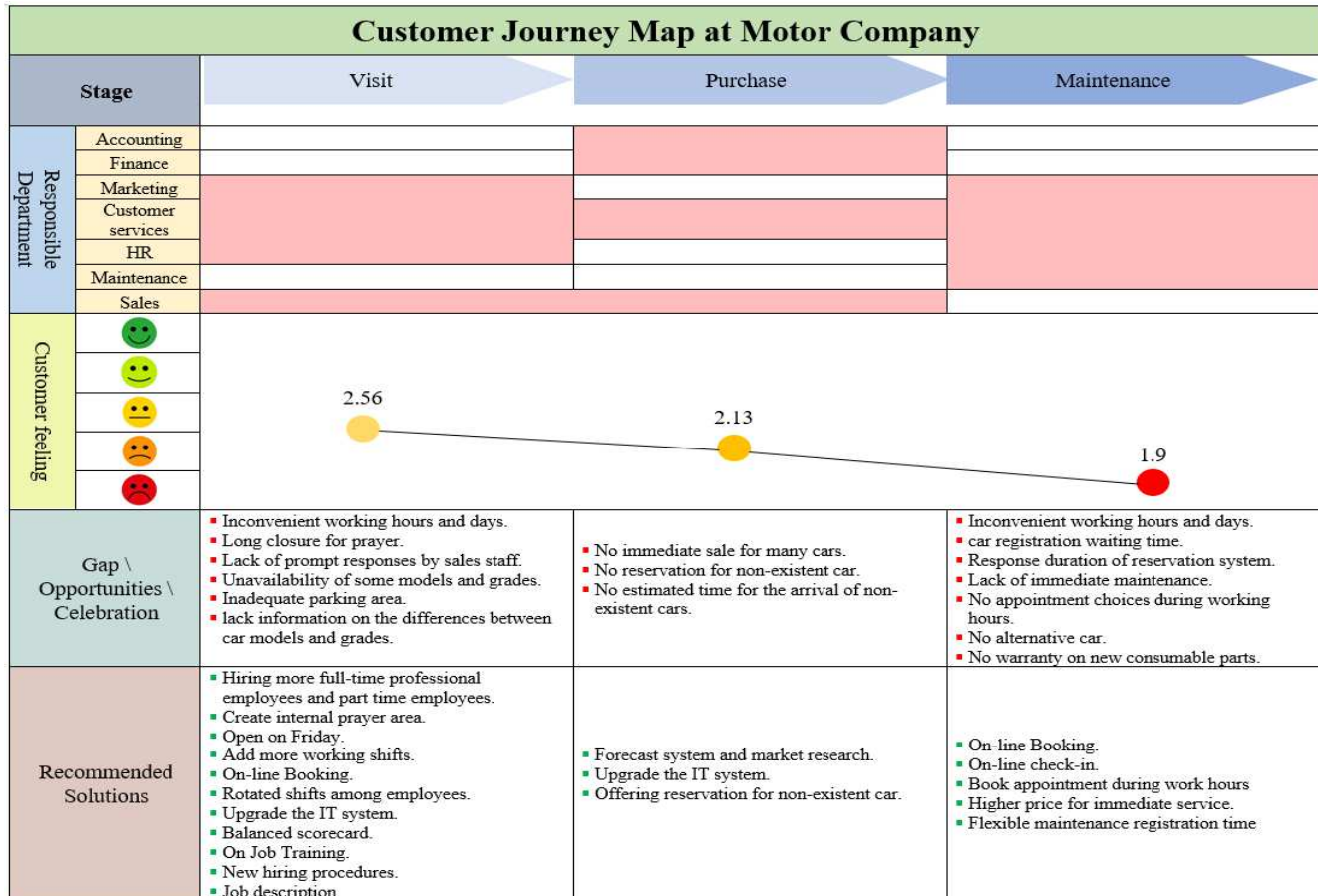
- For non-existent models or car grades, Virtual Reality Technology is a possible answer to this problem.
- Making clear job descriptions for each position will reduce the duties ambiguity that some newcomers face when applying for a new job.
- Adopting new procedures for hiring by analyzing each job and concentrate on required skills and qualifications.
- Expanding the parking area by renting an area close to the showroom and having a valet parking service or golf cars to transport customers from the parking area to the showroom.

Customers are the reason why the business was established in the first place. Whether its corporate sector or individuals, it all comes at the end to the decisions of one; the individual or the customer. Companies should strive to increase customers' satisfaction. We are in a competitive, fast growing and fierce market environment. We need to excel in order to survive and prosper.

7. ACTION PLAN

Table V. Corrective action plan

Goal						
Action description	Priority	Responsible department	Start Date	Due date	Required resources	Potential blockers
Hiring new employees	1	HR	1 \ 7	30 \ 12	Financial \ Official Arrangement	Financial \ Government regulations \ Lack of commitment
Hiring part-time employees	1	HR	1 \ 7	30 \ 12	Financial \ Official Arrangement	Financial \ Government regulations \ Lack of commitment
Open on Friday	2	Operations \ HR	1 \ 9	1 \ 10	Financial \ Human	Organizational barriers
Add more shift	2	Operations \ HR	1 \ 9	1 \ 12	Financial \ Human	Organizational barriers
Online check-in	2	IT \ Customer Services	1 \ 8	1 \ 9	Financial \ IT	Technical
Online Booking	2	IT \ Customer Services	1 \ 8	1 \ 9	Financial \ IT	Technical
Flexible maintenance registration time	2	IT \ Customer Services	1 \ 8	1 \ 9	Financial \ IT	Technical
Higher price for immediate service	2	Maintenance \ Customer Services	1 \ 9	1 \ 10	Accounting \ IT	Customer's reaction
Rotated shifts among employees	3	Operations \ HR	1 \ 9	1 \ 12	Human	Organizational barriers
Upgrade the system	3	IT	1 \ 6	1 \ 8	Financial \ IT	Financial \ Technical
Balanced scorecard	3	HR	1 \ 6	1 \ 12	Customers' feedback	Lack of accuracy
Forecast system and market research	3	Marketing	1 \ 6	1 \ 9	Financial \ IT	Financial \ Qualification
Book appointment during work hours	3	IT \ Customer Services	1 \ 8	1 \ 9	Financial \ IT	Technical
Job description	3	HR	1 \ 6	1 \ 7	Financial \ Human	Duties' ambiguity
Qualified employees	3	HR	1 \ 7	30 \ 12	Financial \ Human	Financial \ Human \ Organizational
HR procedure	3	HR	1 \ 6	1 \ 7	Financial \ Human	Financial \ Human \ Procedures' ambiguity



8. RECOMMENDATIONS AND CONCLUSIONS

This study attempts to evaluate and improve the customer's journey at a local motor company in Saudi Arabia. The data collection process went through focus group interviews. Then, an online survey was distributed to customers based on (Parasuraman et al., 1988) SERVQUAL dimension. Researchers analyzed the collected data by applying seven quality management tools: Affinity Diagram, Tree Diagram, PDPC, Matrix Diagram, Affinity Diagram, Interrelationship Digraph, Prioritization Matrix, and QFD.

The Affinity Diagram was applied to organize survey results. Services quality issues are categorized into five categories. Next, the Interrelationship Diagrams are prepared for logical correlations between variables. After that, each of the five service issues illustrated in a Tree Diagram to analyze the cause of the issues in deep detail and provide practical solutions for each. Subsequently, (PDPC) illustrated to represent each recommended solution's possible risk or potential preventing circumstances. Following, the matrix diagram for the five issues previously discussed displays analyzed data in an L-shape matrix. Finally, (QFD) used to determine customers' preferences and their technical requirements. House of Quality represents the highest 16 prioritized solutions retrieved from the Prioritization Matrix. These recommended solution's relative weights ranged between (58%- 9%).

These tools are powerful in enhancing service quality that positively increases organizational performance, customer satisfaction, and profitability. Based on the investigation, several recommendations to enhance company performance are following.

First, each department strategy should be aligned and complementing the business strategy. The corporate has a customer-centric approach represented in "guest first" principle, which directs its activities to satisfy their customer. Combining departments' efforts guided by focusing on enhancing customer journey would enable the company to meet its vision. Therefore, the company is recommended to emphasize its customer-center approach in daily supervision by ensuring the alignment of each department plan with its main vision.

Second, HRM has an excellent opportunity to contribute to enhancing the customer journey. Starting with recruiting and hiring an adequate number of qualified employees enables the company to extend its working hours and open on Friday. Moreover, detailed job descriptions and effective job positioning enable the company to acquire qualified sales staff with proper skills and knowledge to enrich the customer's journey with high-quality services.

Third, investment in technological systems provides the company a cross-department communication opportunity that enhances the required information flow. Furthermore, building a well-established system facilitates customer communication effectively. Company then is recommended to upgrade the current system booking for visiting showroom and maintenance center. Additionally, the upgraded system enables the marketing department to forecast and study the market appropriately.

Moreover, upgrading the system would offer a powerful tool for forecasting the market demand. This agility in sharing information permits the company to gain a competitive advantage and exceeds its competitors.

Without diminishing their importance, all of these recommendations would not play a dominant role in achieving the desired objectives without the top management's support by allocating various resources and adopting new service quality culture.

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المخلص

الغرض: تقييم وتحسين رحلة العميل في شركة سيارات المحلية في المملكة العربية السعودية من لحظة وصول العميل إلى صالة عرض السيارات حتى موعد الصيانة الأول خلال فترة ضمان السيارة.

التصميم | المنهجية | النهج: تم تنفيذ مناهج مختلطة حيث تم جمع البيانات النوعية من خلال مقابلات مجموعات التركيز؛ تم جمع البيانات الكمية من خلال المسح؛ بالإضافة إلى تطبيق أدوات إدارة الجودة من أجل تطوير خطة العمل وتقديم الاستنتاجات والتوصيات التي من شأنها تحسين رحلة العميل وزيادة الرضا.

النتائج: تم تصنيف مشكلات جودة الخدمات إلى خمس فئات: التوقيت غير الملائم، نقص المعلومات، نقص عرض الوكيل، نقص الموارد، نقص الاستجابات السريعة. يمثل بيت الجودة أعلى 16 حلاً من الحلول ذات الأولوية. تراوحت الأوزان النسبية للحلول الموصى بها بين (58% - 9%). استخدام هذه الأدوات يسلط الضوء على مجالات التحسين والأسباب الجذرية لكل مشكلة. أدوات الجودة الأساسية السبعة هي أدوات موثوقة للتغلب على التحديات التي تواجهها المنظمة. هذه الأدوات قوية في تحسين جودة الخدمة التي تزيد بشكل إيجابي من الأداء التنظيمي ورضا العملاء والربحية. بناءً على التحقيق، تم اقتراح عدد من التوصيات لتحسين جودة الخدمة.

الأصالة / القيمة: هناك عدد قليل من الدراسات التي تنفذ عملياً أدوات إدارة الجودة السبع من أجل زيادة رضا العملاء وتحسين رحلتهم. يعاني سوق السيارات السعودي على وجه التحديد من نقص في هذا النوع من الدراسة. علاوة على ذلك، شهد هذا السوق حالياً نمواً سريعاً في السنوات القليلة الماضية بسبب اللوائح الحكومية الجديدة التي تسمح للمرأة بقيادة السيارة، مما يزيد من أهمية هذه الدراسة.

الكلمات الرئيسية: أدوات إدارة الجودة، مخطط التقارب، مخطط الشجرة، مخطط برنامج قرار العملية، مخطط المصفوفة، الرسم البياني للعلاقات المتبادلة، مصفوفة الأولويات، نشر وظيفة الجودة.