A Study of online Traffic Services Appointments in the Kingdom of Bahrain

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ABSTRACT: *The main purpose of this study is to propose an online appointments services at The General Directorate of Traffic in the Kingdom of Bahrain to overcome customer satisfaction problems which are faced by the General Department of Traffic, Bahrain (GDT). The online status of the queue is provided to the customers. The customers could arrive at the GDT at the suggested time without facing any queue at parking and at the physical location at the counter. The system is managed by a team of system admin, queue admin, and queue operators. This study employed the descriptive research method which is a form of quantitative approach. Descriptive research technique is used to get information concerning the current status of the situation to describe what exists concerning variables or conditions in the present circumstances. The data were gathered from the questionnaires carried out through the structured survey. Descriptive survey method was used, since this study focused on the determination of the extent of important level of internal and external factors encountered with or surround customers of General Directorate of Traffic in the Kingdom of Bahrain and the proposed recommendations or suggestions which aim to improve the performance and increase clients' satisfaction at the General Directorate of Traffic.*

KEY WORD: *Online Traffic, Services Appointments, customer satisfaction*

I. INTRODUCTION

The General Directorate of Traffic-Kingdom of Bahrain is the central hub of all traffic related solutions for the people of Bahrain. It deals in all kinds of services and facilities in the domain of vehicular movement and control. This organization manages the records of traffic related information and updates them regularly for effective control. It deals with the customers requiring registration of vehicles, inquiry of records, payment for traffic services, and many other traffic-oriented problems.

Due to a growing list of services and facilities provided by the General Directorate of Traffic, customer management is an important problem. The organization faces an uphill task to manage flow of GDT customers and satisfy their demands in a timely manner. Being central hub of all traffic related services, the customers from all over Bahrain visit the department for managing their traffic related issues. Congestion control policies are not adopted currently and the customers have to wait for a long time for their turn. It takes a long time for customer management department to solve problems. The working staff of the organization also suffers from a hectic routine of customer management services. They have to bear a huge load of people in a single day. These considerations demand a systematic arrangement for controlling customer flow for managing their traffic services.

This is the offline service of General Directorate of Traffic.
a) My Traffic Record
b) Due Payments
This is the online service of General Directorate of Traffic.
a) Vehicle Registration Services

1.2 Statement of the problem

The problem statement explored and investigated in this research study is traffic services management for the General Directorate of Traffic at Bahrain. The main challenge is efficient traffic management services for all Traffic customers without congestion either in offices or in the parking lot. The main variable for manipulating and control is the traffic of clients in the office by managing them through proper channel. The queuing of the clients is an important issue that must be addressed for satisfaction of clients. This study will take up the challenge to solve traffic congestion at the office of the General Directorate of Traffic, Bahrain to serve demands of all customers in an effective manner (eGovernment Portal, 2019)

1.2.1 Research Questions

The study assessed the General Directorate of Traffic customer's access to services by using the online appointment system (Website),

Specifically, it seeks to answer the following questions:

1. Taking the online Traffic Services Appointments system interest into perspective, why the GDT customers have to think about the online appointment system?

2. What is the level of expectation of the online traffic appointment system (Website) customers on accessing the website appointment system at General Directorate of Traffic in Kingdom of Bahrain regarding services type, quality dimensions and satisfaction among the customers?

3. What problems do the customers identify to access the services in General Directorate of Traffic in Kingdom of Bahrain?

1.2.2 Research Objectives

The study aims to examine a number of issues regarding the ground handler impact at the Bahrain International Airport by exploring the impact of the ground handler at the facility on client satisfaction and the airport's brand image.

1.2.3 Hypothesis

H0: There is no significant relationship between the standard level of expectation of the types of services quality and the factors that influence the success of customers of the General Directorate of Traffic at Bahrain.

H1: There is a significant positive relationship between customer satisfaction and service quality.

1.3 Significance of the study

The importance of this study will be for the following:

The government of the Kingdom of Bahrain: The study will help the government as a decision maker to address ways of customer's services satisfaction in using the proposed appointment system.

E-Government Is responsible for the provision and implementation of electronic services and the proposed system will be ready for you through the process of linking the program developed on mobile devices with the general traffic management systems hosted by the Informatics & eGovernment Authority.

The study will help the citizens to manage their time by using the online appointment system which provides easy and quick services to Customers.

The General Directorate of Traffic: The General Directorate of Traffic in order to keep pace with the strategy of 2030 for Kingdom of Bahrain, it needs to transfer all its traffic transactions to electronic services, so there will be no more personal visit to the General Directorate of Traffic, this strategy looks forward to save time and effort and ease finalizing the traffic transactions for citizens and residents.

Future Researchers: This research will be a good source of data and information for future researchers who are interested in this subject.

1.4 Theoretical Framework
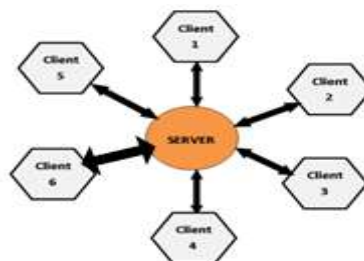
Figure 1.1 Theoretical Framework of the Research

(Source: Enhancing Traffic Flow using Vehicle Dashboard Traffic Lights with V2I Networks.Retrieved from) (M.A, 2015)

Several The server component provides a function orservice to one or several clients, who must initiate requests in order to use the services. A service is an abstraction of computer resources, and a client does not have to be concerned with how the server performs while fulfilling the request and delivering the response. The client only has to understand the response based on the well-known application protocol, i.e. the content and formatting of the data for the requested service. Clients and servers exchange messages in a request response messaging pattern; the client sends a request, and the server returns a response. For every system that use the client-server structure, a communication protocol must be defined so that the server and its clients will know what to expect when dealing with each other.

1.5 Conceptual Framework
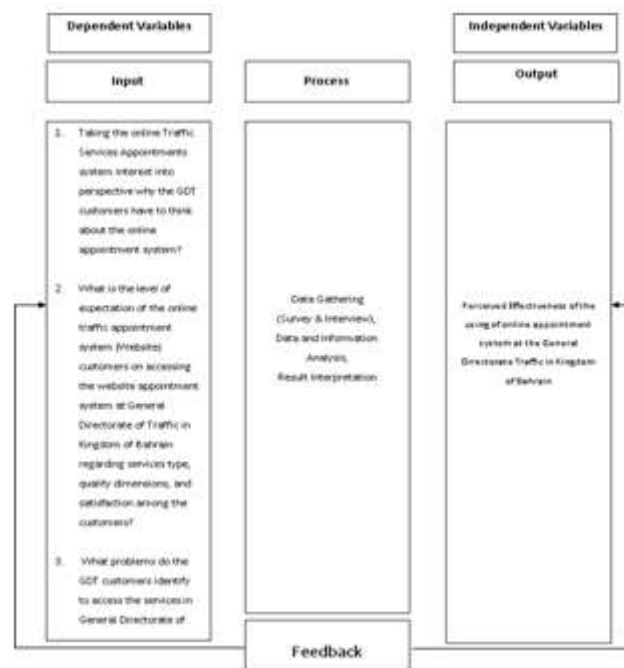
II.   LITERATURE REVIEW
2.1 Related Literature
This chapter consisted of the foreign literature, local literature and synthesis of the study. This chapter also presented selected related literature which will be reviewed to build the conceptual framework of this study. This material provided a way and served as a source of insight to examine and understand deeper the aim and objectives of the study. The researcher selected resources mostly as a management and psychological results beyond the technical articles.

2.2 Related Studies
According to Bahrain portal eGovernment, (2019)converted to Eservices the Kingdom of Bahrain launched its first eGovernment strategy 2007- 2010, which was based on strong basis that focused initially on the integration of the government's efforts to provide better and faster services to citizens. The first strategy successfully achieved more than the set key objectives and ranked up the Kingdom of Bahrain as a leader in the field of eGovernment that is committed to providing all government services that are electronically integrated, be the best of its kind and is available to all through the channels of their choice.

The most prominent accomplishment in that period was that the Kingdom of Bahrain ranked as a world leader in the field of eGovernment in the 2010 United Nations Global eGovernment Survey.Furthermore, over 300 eservices launched across multiple channels; namely, the National Portal, mobile app, Service Centers, eGovernment Kiosks and the National Contact Centre (NCC).

Today, the eGovernment is an integral part of the services system the government provides to citizens, residents, visitors, businesses and government entities. Due to these achievements, the Information &eGovernment Authority has become one of the world's leading institutions, and has been assessed by its achievement of advanced ranks in various global indicators, as well as claiming of various international awards.

Furthermore, its customer satisfaction indicators for services provided electronically has increased, as more than eight out of ten citizens/businesses have expressed their satisfaction with the level and quality of services provided.

2.3 Syntheses

Based on Mustafa Al-Mashhadani (2015), the study covers the use of DTL for standard traffic light intersection. This work facilitates the possibility of expanding the system to cover more than one traffic light intersection by synchronizing these intersections together. Considering vehicles that are not equipped with the DTL device as part of the system will play a vital role in getting the system to be an actual traffic light system that is deployed on the streets.

McGoon (2017) Customer flow management and control is an interesting field of research that has caught the attention of researchers for several decades. The motivation for research in this field comes from the importance of time management. Due to limitations of resources on various places like shopping malls, banks, and other customer care centers, the people have to wait for their turn and they lose precious time. Moreover, they could be waiting for a long time and at the end, they come to know that they are not prepared enough to complete their request. The challenges associated with optimizing the customer care experience in such cases are very important to address.

This research thesis will deal with the customer congestion at the General Directorate of Traffic, Bahrain. For this purpose, an extensive literature review is required to learn the already established standards and practices in the realm of customer care, queue management, routing, processing time and etc. This chapter is dedicated to reviewing the previous research efforts in the field of electronic solutions offered to control the customers' requests at the physical departments or organizations. The focus will be on exploring the techniques and methods to maximize the customer satisfaction in an environment with scarcely limited resources at government owned organizations.

Mohamed (2016) the use of technology in queue management takes the customer facilitation approach to an enhanced level. With the help of internet and technology, the service centers could establish automatic queue management system. Such a system provides services and facilities not only to customers but also reduces the burden of the staff of service providers. Tracking of products, status of queue, estimated service and processing time, prior knowledge, initial documentation and preparation could be easily managed with the help of online and automatic queue management system.

Ngorsed (2016) Innovation and technological development in customer facilitation and congestion control involves costly investment. It is not possible to design and implement such systems at large scale for small corporations. They have to deal with their customers in an archaic management way to satisfy their customers. The departments and services that cannot afford operation and management of online solutions prefer sticking with conventional ways to deal with their customer base. However, the large corporations and important sectors like hospitals, central banks, and other government offices where queue management could lead to severe consequences; it is worth spending capital on sophisticated customer management solutions (Ngorsed, 2016). The online queue management solutions could be provided by the government owned departments without putting burden on public and private firms. Moreover, the government agencies could offer role models for customer care services by leading online innovation. Research efforts in the past have evaluated the feasibility of the online and automatic queue management systems.

Ngorsed and Suesaowaluk (2016) proposed the automatic queue management system for a hospital environment for dealing with the patients and their relatives in an efficient manner. In the developing countries, the hospital services in government owned setups are not sufficient to deal with growing population. The staff is overburdened due to large flow of incoming patients. In such cases, the people waiting in the queues have to suffer a lot, waiting for their turn and get their medical treatment done. The proposed automatic system provides visual evidence of the queue online to patients where people can also reserve their appointment over the internet. This strategy saves a lot of time for patients as they can monitor status of their application from online web application. The biggest advantage of the system is that the patients and their relatives don't have to wait for long time in queues. They can apply for their appointment online and wait for their turn while tracking the status. For managing such an online queue management system, a dedicated network administration staff is required for managing the online management system. The network administrator must program the system to incorporate all services, facilities, tracking, and monitoring facilities.

Queue management mostly focuses on customer management centers. Banking sector also provides an interesting case study for managing a large number of customers such as customer management system for the banking sector in Kenya. According to his findings, most of the banks in Kenya are not satisfied with the waiting of customers in long lines. Moreover, the customers don't get their desired information in the waiting lines. They might reach the service counter after waiting a long time for their turn and at the end they would get to know that they don't have sufficient information, records, documents, and etc. for successful completion of

their request. The time of customers is wasted a lot in this way. The research on queue management in banking sector in Kenya suggested that automatic systems must be adopted to improve the customer experience of banking. The methods of automatic signaling, monitoring, free movement of people while in queue with remote status tracking, advertisement on screens, information dispatching for all facilities, improve the customer satisfaction.

Olusola et al. (2016) proposed an online queue management solution for banking sector in Nigeria. The First Bank, Nigeria is considered as the case study for managing queues. The authors designed a single-channel queuing having arrival time with Poisson distribution and exponential service times. This research effort considered the stochastic approaches for modeling of waiting systems. For improving the turnouts of the people in banks and growing the business, the customer satisfaction must be increased by facilitating them with automatic queuing system. The modern technologies must be employed to reduce the frustration due to long waiting lines and attract a wide range of customers.

Mohamed (2016) the introduction of the new technology for improving services creates value for enhancing overall productivity of the service centers. The customer experience is revolutionized with the help of smart gadgets and tools for reducing the waiting time. Many service providers have transformed their services into a value creation process (Kaushik, 2015).

Liang (2016) Queuing in any service providing company develops an environment of stress that must be relieved with entertainment and enjoyment. When the customers are anxiously waiting for their turn, enjoyment becomes their preferred choice to kill the time. The customers sit back and relax, and get prepared for their turn by managing their documents and required things.

Khong (2017) Queue management solutions have gained diverse backgrounds with the rapid innovation in the Smartphone world. These devices have become quite common these days and people are adapting to this technological advancement for solving their routine life problems. Smartphone-based queue management solution was proposed by Khong et al. (2017) for status tracking and monitoring of the queue through mobile app. The mobile application software was assumed to be Android with programming in Java language. The application provided the model of the queue in which the customers could go anywhere while still being part of the waiting line. They could manage their other tasks while the queue is moving ahead and they will be notified prior to their turn. The mobile app based queue management model provides simple solution to facilitate the customers because the service providers don't need to have any extra infrastructure in the form of ticketing machine, electronic receipts, tokens, or any other queue supporting item. The management of the service center just requires updating the application from time to time to meet the new standards of queue management.

The internet based mobile application solution to the queue management could be significantly improved by incorporating the multimedia features in the app (Khong, 2017). These multimedia items will provide guidelines and customer care assistance remotely. The customers could gather information about their issues and problems right from the app before visiting the customer service center. However, the multimedia features in the Smartphone app require speedy internet connection that is not a big issue in modern day.

Al-Jumaily (2018) the banking sector provides an ideal example of dealing with the large queues and dealing with the challenges associated with managing people in reasonable amount of time. Queue management involves optimizing a number of variables like throughput, utilization, response time, waiting time for customers, etc.

Brahma (2016) the research on queuing theory also involves exploring the aspects of customer satisfaction. The queuing theory has been extensively used in the past for monitoring various aspects like working environment, staff schedules, customer waiting time, productivity, and customer waiting environment. However, the major utilization of the queuing theory is in determination of the customer satisfaction. The success of the queuing theory is closely linked with the satisfaction level of the customers. For various customer care departments like banks, hospitals, commercial offices, the customers have to wait for their turn to get their request acknowledged. If they have to wait for a long time to fulfill their goal, they will feel less motivated for pursuing their tasks from the same service center. They will search for the customer service where they have to wait lesser.

The review of many queuing theories suggests that it has significant importance in fields where waiting time could lead to catastrophic results like death. Hospital is such a place where patients must not wait for their turn for a long time before proper treatment. The major application of the queuing theory lies in facilitating the patients, relatives of patients, and hospital staff. As the number of patients is growing with the population in various countries, the burden on the hospitals is also increasing. They feel pressure in providing service to patients due to workload. The facilities and other resources are scarce that limit the waiting time.

Maister (2015) since queuing involves a large amount of waiting for customers, psychological factors of frustration and sense of staying idle are involved. When people are waiting for their turn in long lines, their patience and determination to get the desired service is tested to a great deal. Depending on the queue

management strategies adopted by the company, the estimated waiting time will vary. Greater the waiting time, the lower will be expectation of the service quality of the customer care center and also the level of customer satisfaction. The customer care departments like hospitals, banks, traffic service offices, must reduce waiting times to put the psychological factors aligned with the productivity.

Maister (2015) the experience of waiting to be served in a non-productive manner is quite bitter and could spoil the overall service experienced from the customer care department. Even if the service center is courteous in serving the customers with politeness and other healthy aspects, the customers will remember the bitter experience of waiting uselessly in long lines. The memories of negative experience will overwhelm all the positive feelings. It is foremost important for the customer care centers to improve the customer satisfaction levels but entertaining them during the waiting periods and don't let them bored. The idea of reducing inconvenience during waiting times significantly improves customer experience.

The queue management is focused on manipulating the available resources in a manner so as to maximize the customer satisfaction. The variables available for adjusting and manipulating under a given customer care setting is very important. Scheduling queuing priority, service times, number of counters, increasing staff for taking care of waiting customers, are some of the options for efficient queue management. With the help of scheduling, it is possible to reduce the stress and anxiety of the customers waiting in line. The scheduling will help managing the customers according to a fixed criterion that minimizes the waiting time. The queues could be scheduled and segregated based on the type of requests.

The important point for consideration in queue management is balance between perception and reality. Both these factors are basically the psychological phenomenon. These factors are not fictitious though and have close connection with the queue management. The balance between perception and reality must be ensured by the service providers to facilitate the customers as much as possible. The managers must pay attention to the following factors:
• What actions are taken to facilitate the clients during their queuing?
• What is the perception of the client regarding waiting and the expected time?
• What is the expectation of the client regarding management of services and facilities?

The customer care service center management must meet the aforementioned factors for proper queue management. The psychological factors involved in the customer satisfaction related to queue management suggest that the initial stages of the lining up in the queue are very important. If the customer care persons can hold the clients in good mood by offering them some other services and entertainment opportunities, the waiting time will become quite pleasant. The customers must be engaged in some useful and healthy activity so that they find productivity in their time. Take example of a hotel in which the initial phase of the waiting time is very important. If the management serves the customer with complimentary meals or beverages during this time, the customers will wait with good mood. Otherwise, they will criticize even the good services.

Overall, psychological factors play a vital role in assessment of the quality of services and facilities of the customer care services. The customer care centers should keep the clients motivated all the time. If waiting time is not pleasant, even the excellent services will turn into the negative impression. The clients will feel less motivated to come again and feel the same hassle of useless waiting time.

As far as the customer satisfaction is concerned, queuing theory provides insight into the fact that the average waiting time for customers should be minimized by using various methods like scheduling, getting them engaged in other activities while waiting, online status monitoring, rescheduling, etc. The requirement of automation of queuing and congestion control is stringent in government service centers where resources are limited. The reputation of the government is also at stake because economic conditions are dependent on the success of the customer care centers like traffic services.

ESII (2017) the psychological cost is indirectly linked with the cost paid by the business or economic impact on the governmental resources. Some researchers have provided guidelines for decreasing the wait perception bias without having to increase the resources of the company. This aspect is exercised by increasing the opportunities of entertainment during the waiting time so that frustration doesn't creep into the customers. The modeling of the customer satisfaction was provided by a French customer management provider in the form of $S = P - I$ (Satisfaction is equal to the Enjoyable Perception minus the Inconveniences). The positive value of satisfaction will occur when the convenience for customer in the form of ease in waiting time is more than the inconvenience of waiting in the lines. The customer care services should facilitate the waiting persons with opportunities of leisure for increasing their satisfaction. Eliminating the inconvenience of the long and idle waiting time could be removed by engaging customers in healthy activities like sports, meals, recreation, music, and other entertainment opportunities.

Sundarapandian (2015) Queuing theory is basically the mathematical modeling of waiting times, congestion, arrangements and facilities in queues, etc. In this theory, a mathematical model is developed for estimating the waiting times based on various factors like queue lengths, service time, duty hours, staffing at service centers, and many others. The estimated waiting time plays a significant role on the minds of the

customers. The satisfaction level is correlated with the waiting time. However, the research suggests that it is not the actual waiting time, but the idle waiting time is a negative factor for arousing frustration (Karu, 2015).

It has been previously described that the minimizing waiting time is not the actual goal, but facilitating the customers. They are satisfied even with longer waiting times if they are informed, busy and entertained in other tasks. The research work is not concentrating on managing queues remotely and customers don't have to stay near the customer care center. Automation of queuing and service facilities will provide good opportunities not only to customers but also to the service centers for working without pressure. The government owned departments like traffic service management suffer from scarcity of resources and staff, so automatic queue management is a feasible solution for it.

Karu (2015) the accuracy of the waiting time is very important for keeping the interest of the customers. However, it is not easy to predict the waiting time due to uncertainties about services and facilities practiced on a range of customers. For example, if a person is standing in a line with 9 persons before him and the average processing time is 10 minutes, then the average waiting time is 90 minutes. However, this waiting time is also a function of uncertainties associated with each customer's goals. It is quite possible that some customer takes more than 10 minutes due to more work, while some other one takes less than 10 minutes. If the estimated waiting time is not accurate, the customer will be anxious about it. Moreover, the customer care department will also be under pressure to facilitate the clients within the estimated waiting time. The unforeseen circumstances aren't in their control though.

The predictive or probabilistic models could be established for estimating waiting time considering the factors of uncertainties present in a given setting. For example, for traffic services management, the uncertainties related to registration of vehicles or payment of taxes could be estimated from the historical data or logs maintained in the servers. The behavior and attitude of the customers play an important role in providing customer care services within proper time frame. The modeling of waiting time must consider complex algorithms and calculations to improve accuracy and enhance customer satisfaction level.

Karu (2015) as initially stated, the remote queuing and automation in the field of queue management is quite possible with the help of internet and technology. The concept of remote queuing is required to flourish in business setups and government owned agencies to reduce frustration and other psychological factors creeping into the mind of the customers. When customers go to traffic service centers, banks, or hospitals, they have to wait for their turn for accomplishment of their request. The government offices must encourage remote queuing facilities for facilitating customers as much as possible. The frustration of the customers will be minimized because they will not wait in long lines. The remote queue management system will schedule the services for traffic cases for customers. The customers would be informed about their tentative schedule for arriving at the service center and get their work done in time.

Ngorsed (2016) the concept of remote queuing could be established with the advancement of technology in various business service centers and government agencies. The advanced networking, programming, online communication, LCD displays, scheduling, and many other complexities are involved in designing remote queuing system. Some researchers have proposed innovative designs for managing queues remotely with the help of online status monitoring. The system provides low-power customer management system in public places while increasing order and discipline, resulting in improved convenience.

III.   RESEARCH METHODOLOGY AND DATA ANALYSIS
This Chapter includes the data gathering methods which were used to collect the information needed for this study and the data analysis techniques used to analyze the data gathered in hierarchy sequence to meet the targeted points of this study.

3.1 Data Gathering
This study is a descriptive research method. The study research technique used to get information concerning the current status of the situation to explain what exists about variables or conditions in the current conditions. The data was collected from the questionnaires carried out through a structured survey.

Descriptive survey method was used since this study focused on the determination of the extent of important level of internal and external factors encountered with or surround customers of General Directorate of Traffic in the Kingdom of Bahrain and the proposed recommendations or suggestions that can be considered to improve the performance and increase the chances for more smooth services in General Directorate of Traffic in the Kingdom of Bahrain.

3.2 Population of the Study
The respondents of this study as shown in Table 3.1 were the customers and the regular customers of General Directorate traffic located in the Kingdom of Bahrain, both male and female. Out of the estimated total

population of customers in the entire the Kingdom of Bahrain, a stratified sample of 1,000 respondents were chosen.

Due to the structured and formal nature and the presence of clearly stated hypothesis and investigative questions, this study used the descriptive type of research. The study is descriptive because the purpose of this study was to measure the online appointment system for the General Directorate traffic benefits and users satisfaction to avoid crowding during the working days.

Top Management, all the GDT Mangers involved in the top management within the higher level.

Staffs, employees who work in the General Directorate of traffic.

GDT Customers, The customers who visit the General Directorate of traffic for their services.

Table 3. 1

Respondents of the study

Types of Respondents	Top Management	Staff	Customers	Sampling Size	Population per Year
GDT Customers	9	51	940	1,000	40,000
Total Respondent	9	51	940	1,000	40,000 (30% per month)

3.3 Research Instrument

The primary instrument which was used for gathering data is a survey questionnaire which is the sufficient tool concerning time to collect such data and according to the limitation that was encountered during the development of this study. The survey was adopted and modified depending on the type of data required to reach the aim of this study to prove the benefits of using the online appointment system. The questionnaire was composed of five parts.

The first part was about the status of the access to the facilitated services at the General Directorate Traffic. The second part described level of expectation of the online traffic appointment system (Website) customers on accessing the website appointment system at General Directorate of Traffic in Kingdom of Bahrain regarding services type, quality dimensions, and satisfaction among the customers. The third Part was about problems do the customers identify to access the services in the General Directorate of Traffic in the Kingdom of Bahrain. The last part was the recommendation that can be proposed to increase the customer's satisfaction. The questions were structured by usingLikert-type Scale. There was five selection provided to the respondents for every question or statement based on the level of effectiveness in which the answer will be anchored in their perception to the concerned statement or question. The scale below was used to interpret the total responses for every problem by computing the average mean. The below table illustrates that gap, width/number of the group as gap width = 4/5 = 0.8. (See Tables 3.2, 3.3 and 3.4)

The Formula used to calculate the Mean & Interval:

$$x = \frac{\sum_{i=1}^{n}(x_i * w_i)}{\sum_{i=1}^{n} w_i}$$

Mean:
Interval:

$$= \frac{HV - LV}{No.\,ofOptions} = \frac{5-1}{5} = \frac{4}{5} = 0.80$$

Table 3. 2 Five-PointLikert-type Scale Used to Measure the Status of General Directorate Traffic Services

Scale	Rank	Description
5	4.20 − 5.00	Very High / The respondents strongly agree
4	3.40 − 4.19	High / The respondents agree
3	2.60 − 3.39	Moderately High / Moderately agree
2	1.80 − 2.59	Low / Slightly agree
1	1.0 − 1.79	Very Low / The respondents strongly don't agree

Scale	Rank	Description
5	4.20 – 5.00	Strongly Satisfy / The respondents strongly Satisfy
4	3.40 – 4.19	Agree / The respondents Satisfy
3	2.60 – 3.39	Moderately Agree / Moderately Satisfy
2	1.80 – 2.59	Disagree / Slightly Satisfy
1	1.0 – 1.79	Strongly Disagree / The respondents strongly don't Satisfy

Table 3. 1 Five-Point Likert-type Scale Used to Measure the Level of Satisfaction of Using Current General Directorate Traffic Services

Scale	Rank	Description
5	4.20 – 5.00	Very Effective / The respondents strongly agree
4	3.40 – 4.19	Effective / The respondents agree
3	2.60 – 3.39	Moderately effective / Moderately agree
2	1.80 – 2.59	Slightly effective / Slightly agree
1	1.0 – 1.79	Not effective / The respondents strongly don't agree

Table 3.4 Five-Point Likert-type Scale Used to Measure the Level of Effectiveness of Using Online appointment Services

3.4 Validity and Reliability

In this study, the researcher viewed the possible potential respondents in the Kingdom of Bahrain and the decision to choose customers of General Directorate Traffic in the Kingdom of Bahrain to answer the questionnaire. The questionnaire was reviewed and amended by the thesis advisor. Softcopies of the survey was sent by SMS, WhatsApp and e-mailing system to most of the customers who are regular customers of the General Directorate of Traffic in the Kingdom of Bahrain. The questionnaire was in Arabic and English for more accurate response and feedback.

3.5 Data Gathering Procedure

The questionnaires were distributed to the one thousand customers of General Directorate Traffic. The target participants are familiar with the questions included in the questionnaire. This provided the researcher the chance to collect the accurate response and to conduct observations.

3.6 Data Processing and Statistical Treatment of Data

The Data collected was edited and coded for General Directorate Traffic services proposed to be available there. The mean was calculated to determine the respondent average perception on the different variable investigated. The average mean was used as the statistical tool in this study which is defined as an average was calculated by giving different weights to some of the individual values.

3.7 Statistical Treatment of Data

The data gathered was organized, analyzed and interpreted using the NOVA to find an accurate number of mean, median, and mode.

In the statement of problem, the average mean was used to find the customers satisfaction at the General Directorate Traffic in the Kingdom of Bahrain in terms of types of services gained from the online appointment system.

The average mean was used to find the status of the access to the facilitated services at the General Directorate Traffic located in the Kingdom of Bahrain.

The average mean was used to find analyze the level of expectation of the online traffic appointment system (Website) customers on accessing the website appointment system at General Directorate of Traffic in Kingdom of Bahrain regarding services type, quality dimensions, and satisfaction among the customers.

The problems which the customers identify to access the services in General Directorate of Traffic in Kingdom of Bahrain were determined through their feedback as indicated in the result. The customer's feedback on the proposed recommendations of the online appointment system to be facilitated at the General Directorate Traffic in Kingdom of Bahrain questions was evaluated and noted according to rank or priority.

IV. PERSENTATION, ANALYSIS AND INTERPRETATION OF DATA

4.1 Presentation of Data

The survey results show that most respondents were GDT customers and Mangers &Staff, the age of 18-59 years' old which is 86.8% males and females of the entire population and 60+ years old which is 13.2% males and females of the entire targeted population.

4.1.1 Respondents' Ages Summary

The survey results show the ages of the respondents were GDT customersand Mangers & Staff showing in (Chart 4.1A) are:

• 86.8% for (18-59 Years old) where the number of respondents was 870 for GDT customers and 9 for the Mangers and 51 for the Staff.

•13.2% for (60+ Years old) with number of respondents of GDT Customers was 130.

4.2 Interpretation and Discussion

Presented below is the Five-Likert Scale with the following quantitative equivalents as used in the survey questionnaires.

Table 4.1 Scale Description Used to Measure the quantitative equivalents as used in the survey questionnaires

Scale	Rank	Description
5	4.20 – 5.00	Very Effective
4	3.40 – 4.19	Effective
3	2.60 – 3.39	Moderately Effective
2	1.80 – 2.59	Slightly Effective
1	1.0 – 1.79	Not Effective

Table 4.2: Scale Description in Details

| Scale	Rank	Description
5	4.20 – 5.00	Very Satisfied
4	3.40 – 4.19	Satisfied
3	2.60 – 3.39	Moderately Satisfied
2	1.80 – 2.59	Slightly Satisfied
1	1.0 – 1.79	Not Satisfied

Table 4.3: Scale Description in Details

Scale	Rank	Description
5	4.20 – 5.00	Very Low
4	3.40 – 4.19	Low
3	2.60 – 3.39	Moderately Low
2	1.80 – 2.59	Slightly High
1	1.0 – 1.79	Very High

Part 1: On the status of the current services at the General Directorate of Traffic. Presented below are the results:

Table 4.4: The status of the current offline services at the General Directorate of Traffic

1. On the status of the current offline services at the General Directorate of Traffic			
	Mean	Description	Ranking
1.1 New Vehicle Registration services	1.87	Slightly Effective	1
1.2 Change vehicle Plate Number services	1.68	Not Effective	3
1.3 Transfer vehicle Ownership services	1.66	Not Effective	4
1.4 License services for +60 years	1.73	Not Effective	2
1.5 Eyes test services	1.53	Not Effective	6
1.6 Accidents reports services	1.61	Not Effective	5
Total Average	**1.68**	**Not Effective**	

Figure 4.2: The status of the current services at the General Directorate of Traffic in the Kingdom of Bahrain.
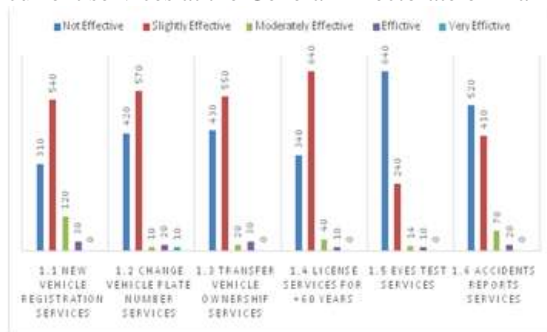

Part 2: On the level of customer expectations of accessing the online traffic appointment system (Website) at General Directorate of Traffic in Kingdom of Bahrain.

Table 4.5: Level expectations of the online traffic appointment system (Website)

Figure 1 Percentage of responses the value for money

2. On the level of customer expectations of accessing the online traffic appointment system (Website) at GDT in Kingdom of Bahrain regarding services among the customers			
	Mean	Description	Ranking
2.1 New Vehicle Registration services	1.75	Not Satisfied	3
2.2 Change vehicle Plate Number services	1.24	Not Satisfied	6
2.3 Transfer vehicle Ownership services	1.83	Slightly Satisfied	2
2.4 License services for +60 years	1.75	Not Satisfied	4
2.5 Eyes test services	1.92	Slightly Satisfied	1
2.6 Accidents reports services	1.65	Not Satisfied	5
Total Average	**1.69**	**Not Satisfied**	

Figure 4.3:Level expectations of the online traffic appointment system
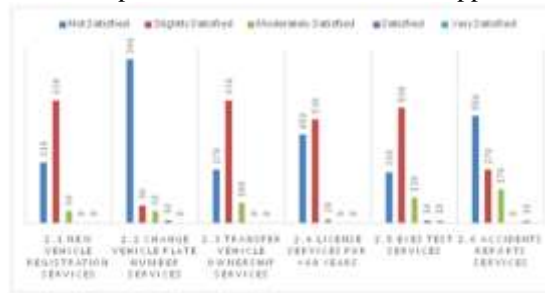
Part 3: On the degree of problems do the customers identify to access the services in General Directorate of Traffic in Kingdom of Bahrain.

Table 4.6: Types of problems do the customers identify to access the services

3. On the degree of problems do the customers identify to access the services in General Directorate of Traffic in Kingdom of Bahrain?			
	Mean	Description	Ranking
3.1 Difficulties of accessing Directorate of Traffic in Kingdom of Bahrain	2.05	Slightly high	2
3.2 Lack of time for attending at the Directorate of Traffic in Kingdom of Bahrain	1.59	Very high	5
3.3 Difficulty of getting services with long queues	2.01	Slightly high	1
3.4 Delay in getting the services	1.62	Very high	4
3.5 Difficulties in getting access to the parking area	1.9	Slightly high	3
Total Average	**1.83**	**Slightly high**	

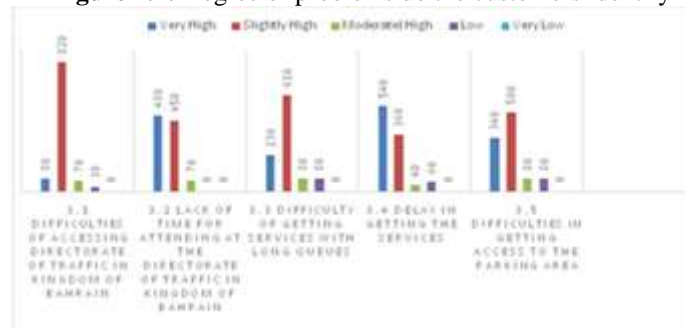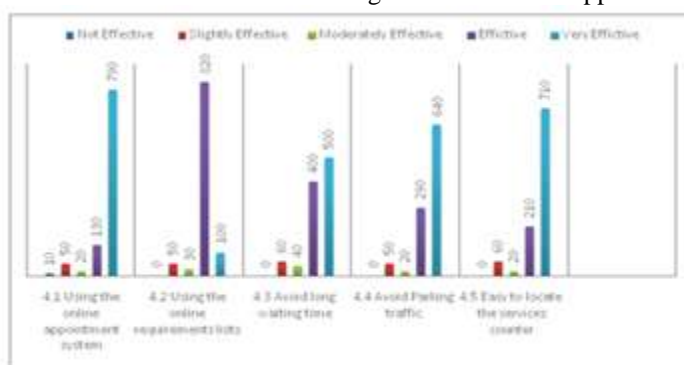**Figure 4.4:** Degree of problems do the customers identify

Table 4.7: Perceived effectiveness of using the online traffic appointment system (for Customers)

4. On the level of perceived effectiveness of using the online traffic appointment system (Website)			
	Mean	Description	Ranking
4.1 Using the online appointment system	4.64	Very Effective	1
4.2 Using the online requirements lists	3.97	Effective	5
4.3 Avoid long waiting time	4.34	Effective	4
4.4 Avoid Parking traffic	4.52	Very Effective	3
4.5 Easy to locate the services counter	4.57	Very Effective	2
Total Average	**4.41**	**Very Effective**	

Figure 4.5: Perceived effectiveness of using the online traffic appointment system


Part 4: The level of perceived effectiveness of using the online traffic appointment system (Website)

Table 4.8:Perceived effectiveness of using the online traffic appointment system (For Staff and Managers)

5. On the level of perceived effectiveness of using the online traffic appointment system (Website)	Mean	Description	Ranking
5.1 The Quality of facilitated services	4.23	Very Effective	3
5.2 Evaluate the staff performance	4.4	Very Effective	1
5.3 Improve the quality of services	4	Effective	5
5.4 Indicate the services quality	4.31	Very Effective	2
5.5 Recognize the demand of services	4.2	Very Effective	4
Total Average	**4.23**	Very Effective	

Figure 4.6: Perceived effectiveness of using the online traffic appointment system (for staff and managers)
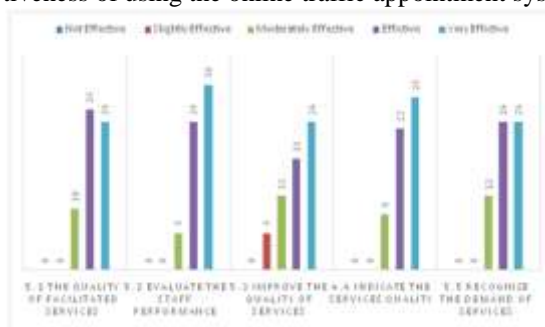
V.   CONCLUSION AND RECOMMENDATIONS

5.2 Conclusion

On the outset of this research study, the researcher presents the following conclusions:

Based to the results and discussion of the proposed using the online traffic appointment system (Website).The discussion about the results considered the aspects of customer satisfaction, psychological effects, estimated waiting time, performance of the staff, and effects on the economics of the Bahrain government in the light of their 2030 vision. The results were fruitful in meeting overall objectives of the research work. The results showed that the online traffic appointment system (Website) manages the customer expectations, economic conditions of the government, congestion in the parking area, psychological conditions of the customers, and pressure on the staff very well.

Using the online traffic appointment system (Website), it will help the GDTcustomers and the GDT department to prove and discuss the most important problems faced by the customers.

Considering all the aforementioned problems, the GDT have to decided and launch an innovative queue management solution in the form of the Traffic Services Appointment Website. This proposal provides a new direction in realm of customer satisfaction, staffing of customer care, and economic growth of the government. The proposal should start by setting the objectives and needs related to challenges and hurdles faced by the GDT customers, staff, and the GDT. After analyzing the challenges, the overall proposed idea was floated based on the automatic queue management system.

5.3 Recommendations

The study results have suggested about how the online traffic appointment system (Website) and can be implemented the services in GDT in the kingdom of Bahrain.

- The GDT customers need to access the online traffic appointment system (Website), services facilitated in GDT located in Kingdom of Bahrain, the technology booming creates most of the online services accessible from everywhere, specially that everyone owned a device connected to the internet.
- The online traffic appointment system (Website), services at the GDT will avoid the current.
- The cost of the operation at GDT will be reduced, or at least the capacity of facilitating services will be increased.
- The use of online traffic appointment system (Website), should takes the customer facilitation approach to an enhanced level.
- The online traffic appointment system (Website), services at the GDT Provides services and facilities not only to customers but also reduces staffing strength.

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