



ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

LOGISTICS AND SUPPLY CHAIN MANAGEMENT  
DEPARTMENT

**Effect of queue on client satisfaction in the case of Ethiopian  
revenue and customs authority small tax payer's branch  
office**

**A thesis submitted to Addis Ababa University School of  
Commerce in partial fulfilment of the requirements for the  
Degree of Masters of Art in Logistics and Supply Chain  
Management**

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**SCHOOL OF COMMERCE**

***“EFFECT OF QUEUE ON CLIENT SATISFACTION IN CASE OF  
ETHIOPIAN REVENUES AND CUSTOMS AUTHORITY SMALL TAX  
PAYERS BRANCH OFFICE.”***

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## **Declaration**

I declare that the thesis entitled 'effect of queue on client satisfaction in case Ethiopian revenues and customs authority small tax payers branch office' submitted for the M.A. degree in logistics and supply chain management at the University of Addis Ababa School of commerce, hereby submitted by me, is my original work and has not previously been submitted for a degree at this or any other University, and that all references materials contained therein have been duly acknowledged.

Kidist Teshome

**Signature**\_\_\_\_\_

Date \_\_\_\_\_



## Confirmation

This is to certify that **Kidist Teshome** has carried out this research work on the topic entitled “Effect of queue on client satisfaction in case of Ethiopian revenues and customs authority small tax payers’ branch office” under my supervision. This work is original in nature and has not been presented for a degree or masters in any University and haven’t been published previously it can be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management.

Advisor Tekilegorgis Assefa

Signature \_\_\_\_\_

Date \_\_\_\_\_



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## **ACRONYMS**

FCFS	first come first served
ERCA	Ethiopian revenues and customs authority
RSS	random selection for service
PRI	priority service
SPF	shortest process first

## ABSTRACT

*This study is set out to examine the effect of queue on client satisfaction in case of Ethiopian revenues and customs authority small tax payers' branch office (ERCA). Quantitative means of data collection method is employed to collect the data through questionnaire. Purposefully selected sample branches of ERCA and sample of 395 client are taken to undertake the study. The data collected from the questionnaire were analysed using statistical tools such as frequency, table, graph and regression analysis using SPSS (20-Version). The result of this study indicates that, all the independent variables (Information Provided, Queue discipline, Environment of the queue, Perceived waiting time and Prioritization); have positive and significant relationship with client satisfaction except environment of the queue. Accordingly, 47% of the variation in client satisfaction is explained by independent variable. Furthermore, the finding of this study indicates that clients were most satisfied with Queue discipline; followed by Prioritization (for elder and pregnant) and the provided information. Finding also indicates clients were most unsatisfied with Environment of the Queue and Perceived waiting time. Based on the findings, the study forwarded some recommendations to the Ethiopian revenues and customs authority small tax payers' branch office.*

**Key word:** Client's satisfaction, waiting line, Queue discipline, Perceived waiting time, ERCA

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Queues are common for most of service related industry and its applicable in all day to day activity like hospital, restaurant, bank, transportation, traffic light, call centre, grocery store checkout and the barbershop ,most of the time its served by first come first served discipline. Today clients do not simply demand for quality but they are demand on time or speed of the service because now a day time makes money. long lines can lead to the clients perceptions of excessive un far or unexplained waiting time resulting in significant determinant effects on the clients overall satisfaction with the service transaction. Service related industries have to highly focus to the queue systems of organization by different mechanism reducing the clients un satisfaction, Based on this the study will answer the clients un satisfaction on the case of ERCA small tax payers branch office. The Ethiopian Revenues and Customs Authority (ERCA) is the body responsible for collecting revenue from customs duties and domestic taxes. In addition to raising revenue, the ERCA is responsible to protect the society from adverse effects of smuggling.

Queues are formed when clients (human or not) demanding service have to wait because their number exceeds the number of servers available; or the facility doesn't work efficiently or takes more than the time prescribed to service a client. Some clients wait when the total number of clients requiring service exceeds the number of service facilities, some service facilities stand idle when the total number of service facilities exceeds the number of clients requiring service. Defines queue as simply a waiting line, while put it in similar way as a waiting line by two important elements: the population source of client from which they can draw and the service system. The population of client could be finite or Infinite (Abdullah, Abdul and Amaresh 2015).

Queues are source of dissatisfaction to clients on one hand and economics cost to organizations on the other hand. The act of waiting has significant impact on client's dissatisfaction. Queue theory is the mathematics which is applicable to the company as it strives to match product –

generation with service delivery. Queue theory determines the quality of the distribution of the company(s) goods and services (farayibi and Adesoji 2016).

Waiting in a queue is irritating, frustrating and, hence, costly. Therefore, a client may decide to balk at the prospect of waiting or to abandon the queue after joining and waiting for a while. Moreover, clients may even be willing to pay extra in order to decrease or eliminate waiting times (Anna, Marco and Oktay 2016).

Speed of service has been shown to provide businesses a competitive advantage in the marketplace. Speed of delivery is being emphasised increasingly and can be partly attributed to increased competition and the value a client places on his or her time (Munirat, Nwaiwu and Aina 2015).

One of the important determinants of service quality is ease of access, which includes not only location of service facility and its opening hours but also minimum waiting time to receive service. Generally, delays have a strong negative effect on service quality (i.e., client perception of the service) and client satisfaction (Sridhar 2001).

Queuing Theory tries to answer questions like e.g. the mean waiting time in the queue, the mean system response time (waiting time in the queue plus service times), mean utilization of the service facility, distribution of the number of clients in the queue, distribution of the number of clients in the system and so forth (Andreas 1999).

Numerous scientific studies, journal articles, and text books have been published describing the relationship between client satisfaction, waiting time, and consumer behaviour. For example, one study examined client attitudes toward waiting times in the hotel and restaurant industry and found that over 70% of all respondents were clearly concerned about waiting times. In fact, those most concerned about waiting times were generally more willing to pay more to avoid waiting in line and believed that quality is worth waiting for. The results of this survey indicate that queues do affect the satisfaction level of clients and their willingness to spend. In addition, this study also suggests that there is a point where a lengthy wait begins to affect the client's perception of quality (Ronald and James 2001).

## **1.2 Statement of the problem**

The Ethiopian Revenues and Customs Authority (ERCA) is the back bone of the country in which the organization is responsible for collecting revenue from customs duties and domestic taxes. In addition to this the organization is responsible to protect the society from adverse effects of smuggling. As Ethiopia is a developing country looking forward to its growth ERCA plays a significant role in financing the country and it is through the effective collection of taxes and duties that different infrastructures are built.

ERCA divides its tax payers based on the revenue they get as it is difficult to manage all tax payers from its head quarter. The organization made its service accessible for all tax payers in which each tax payer can get the service from its sub city. Hence, ERCA has small tax payer offices located in each sub cities throughout Addis Ababa. Even if the organization was able to divide the tax payers and make its service accessible by having different branches there is still long waiting lines in each branch.

Waiting long lines to pay tax has been a great issue of complain for the clients (tax payers). The most frustrating thing for the clients is that even if they wait long to get the service they might not be able to get the service and their queue line will be transferred for the other day and they feel like they waste their precious time for no cause. The main reason for long waiting line is that the services rendered are time bounded and the clients are expected to fulfil their duty within the time bound. This makes all tax payers to come at the same time and make the queue long. This has been the main short coming of the organization and the reason for the client's dissatisfaction.

This may have adverse effect on the effective tax collection process, in which as clients become frustrated and dissatisfied with the service the organization provide they might be reluctant to pay their taxes and look for other ways not to pay taxes and be engaged on tax fraud. This has a holistic negative impact on the country.

In order for the organization to collect taxes from the tax payers effectively and timely the queuing system need to be effectively deployed so that the long line will be minimized.

Thus, as ERCA is a big, responsible and main revenue collecting organization for the country, a better queuing management system should be established that enables clients to settle their

taxes payment properly without complain and delay. Therefore doing this research is significant and worthwhile. And the other reason behind conducting this research is that there are few researches made on this context especially in ERCA small tax payers so far.

### **1.3 Research Questions**

The study aims to answer the following basic questions:

- What are the determinant factors that affect the level of client satisfaction with regarded to queue
- What are the factors for long waiting line
- At what level client rate the waiting line of ERCA small tax payer's branch office

### **1.4 Objectives of the Study**

#### **1.4.1 General objective**

Effect of queue on client satisfaction in ERCA small tax payers branch office.

#### **1.4.2 Specific Objectives of the study**

- To determine factors that affect the level of client satisfaction with regarded to queue
- To determine the factors for long waiting line
- To determine the level of client rate the waiting line of ERCA small tax payers branch office

### **1.5 Significance of the Study**

The finding of the study will have great value to stakeholders, for ERCA this study will show them what the actual service look like and this will help them identify the problem and take remedial action to get fast response, and also it useful to update their polices geared towards efficient and hassle free services in queues.

The government revenue that helps to fulfil the socioeconomic needs of the society will be amplified, so that the clients have to satisfy by improving the waiting line of the service, improved overall efficiency in service delivery reducing the client waiting time.

## **1.6 Scope of the Study**

The study will basically deal the effect of queue on client satisfaction. The study also incorporated the responses of clients of ERCA small tax payers grade A and grade B branches this is categorized based on the income generating of clients. The study did not include regional ERCA small tax payers it's only in Addis Ababa

## **1.7 Definition of terms**

**Queue:** is a file or line of persons (Ajayand Girish 2013).

**The arrival:** is the way in which a client arrives and enters the system for service (Munirat, Nwaiwuand Aina 2015).

**The queue discipline:** is the rule for determining the formation of the line or queue and the order in which jobs are processed (Ronald and James 2001).

**Client satisfaction** the difference between the clients perception of the experience and his or her expectation.

## **1.8 Organization of study**

The study was five chapters, Chapter one introduces, background of the study, the statement of the problem, research question, objectives, significance of the study, scope of the study ,definition of terms chapter two was the literatures review part The methodology part together with research design, data collecting tools, research procedures and data analysis technique was presented in Chapter three. Chapter four was present the results of analysis done and discussions on the findings. Chapter five was finally presents drawn conclusions and suggests recommendations.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### 2.1 Definition of Queue

Queues, another term for waiting lines (Mohammad, 2013). Queue is a general phenomenon in everyday life. Queues are formed when clients (human or not) demanding service have to wait because their number exceeds the number of servers available; or the facility doesn't work efficiently or takes more than the time prescribed to service a client. Some clients wait when the total number of clients requiring service exceeds the number of service facilities, some service facilities stand idle when the total number of service facilities exceeds the number of clients requiring service. Defines queue as simply a waiting line, while put it in similar way as a waiting line by two important elements: the population source of client from which they can draw and the service system. The population of client could be finite or infinite (Bakari, Chamalwa and Baba,2014).Client Wait Time (CWT) is the total elapsed time between issuance of a client order and satisfaction of that order. The more highly developed countries, where standards of living are high, time becomes more valuable as a commodity and consequently, clients are less willing to wait for service (Grace,2011).

Every human being wait in queues to buy a ticket of railway ticket, make a bank deposit in the bank counter, start a ride in an play ground park, etc. We have become familiar to huge amounts of waiting, but still get upset by unusually long waits. The amount of time that a nation's of common people wastes by waiting in queues is a major factor in both the value of life there and the competence of the nation's economy. For example, India has a large number of before people in the country. So most of the people face the problem of any kind of the services in their daily life. Even in the United States today, it has been estimated that Americans spend Approximately 37,000,000,000 hours per year waiting in queues. Even this staggering figure does not tell the whole story of the impact of causing excessive waiting. Great inefficiencies also occur because of other kinds of waiting than people standing in line (Ajay and Girish, 2013).

## **2.2 Theory of Queuing**

Studying how lines form and how to manage them is called Queuing theory, more generally, queuing theory is concerned with the mathematical modelling and analysis of systems that provide service to random demands which deals with one of the most unpleasant experiences of life. Delays and queuing problems are most common features at our daily-life situations. Queuing theory was born in the early 1900s with the work of A. K. Erlang of the Copenhagen Telephone Company, who derived several important formulas for tele traffic engineering that today bear his name. Erlang was the first who treated congestion problems caused by telephone calls where the company requested him to work on the holding times in a telephone switch. He identified that the number of telephone conversations and telephone holding time fit into Poisson distribution and exponentially distributed (Sammy and Thomas,2015).The essence of queuing theory is that it takes into account the randomness of the arrival process and the randomness of the service process (Cooper 1990).Queuing Theory tries to answer questions like e.g. the mean waiting time in the queue, the mean system response time (waiting time in the queue plus service times), mean utilization of the service facility, distribution of the number of clients in the queue, distribution of the number of clients in the system and so forth(Andreas,1999).

The application of queuing theory may be of particular benefit in hospitals with high-volume outpatient workloads and/or those that provide multiple points of service. By better understanding queuing theory, service managers can make decisions that increase the satisfaction of all relevant groups — patients, employees, and management (prasanta,2013).

### **2.2.1 Form of queuing**

Waiting lines are formed whenever the current demand for a service exceeds the current capacity to provide that service. Queuing systems or waiting lines exist throughout society and their adequacy has strong effect on quality of service and productivity (Sridhar, 2001).

A Basic queuing system is formed from three general elements

1. The arrival process of users in the system;
2. The order in which users obtain access to the service facility, once they join the queue.

3. The service process and departure from the system.

**Arrival** refers to the average number of clients who require service within a specific period of time (Ajay and Girish, 2013). Client's arrival can be from finite or infinite population. The finite population can be a limited number of clients ready to use the service at specific time a form a line. The finite classification is important due to its probability of occurrence (Hajoary 2016).

**Clients** can be people, work-in-process inventory, raw materials, incoming digital messages, or any other entities that can be modelled who are to wait for some process to take place it may be infinite or finite also is said size of queue.

**A Server** can be a human worker, a machine, or any other entity that can be Processor as executing some process for waiting clients (Ajay and Girish, 2013).

Queuing indicates that waiting in line or queue causes inconvenience to economic costs to individuals and organizations. Airline companies, banks, manufacturing firms etc., try to minimize the total waiting cost, and the cost of providing service to their clients (Munirat, Nwaiwu and Aina, 2015).

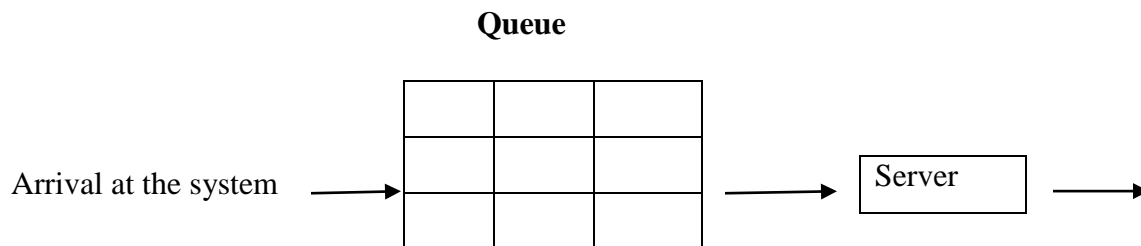


Figure 1 Basic Queue Process (Ajay and Girish, 2013)

### 2.2.2 Source Queuing Systems

Queuing systems can be classified according to the cardinality of their sources, namely finite-source and infinite-source models.

## **2.3 Queue Characteristics**

The structure of service and service discipline tell us the number of servers, the capacity of the system that is the maximum number of clients staying in the system including the ones being under service (Debreceen, 2012).

On the surface it may seem like queuing is just simply waiting in a line. To most clients, the waiting experience is all that matters. However, waiting in line is just a part of the overall queuing system. A queuing system (also known as a processing system) can be characterised by four main elements: the arrival, the queue discipline, the service mechanism, and the cost structure (Munirat, Nwaiwu and Aina, 2015).

### **2.3.1 The arrival Pattern of Clients**

The arrival is the way in which a client arrives and enters the system for services. It is the system input process. It is how units (client) joined the queues; which could be static or dynamic i.e. control depends on the arrival rate or service facility and client. Whenever clients arrive at a rate that exceeds the processing system rate, a queue will be formed. The arrival process of clients is usually specified by the inter-arrival time (the time between successive client arrivals to the service facility). It may be deterministic (known exactly) or it may be a random variable whose probability distribution is presumed known. The arrival process can be;

- Regular arrival;
- In a completely random manner
- Singly or in batches
- Non-stationary arrival
- General independent arrival (Bakari, Chamalwa and Baba, 2014).

Arrivals may come in singly or in batches; they may come in consistently spaced or in a completely random manner. A potential patient can also leave if, on arrival, he or she finds the line too long—this is called balking (prasanta, 2013).

### 2.3.2 The queue discipline

It is obvious to notice or reason that ticket at service station or store such as grocery checkout in supermarket, gasoline, manufacturing plants, and banks etc. line as a typical example of queuing system. Meaning when any arrival occurs, it is added to the end of the queue and service is not rendered on it until all the arrivals that are there before it are attended to in that order. This is in fact a common way by which queue is being handled. The process whereby arrivals in the queue are being processed is termed queuing discipline (Bakari, Chamalwa and Baba, 2014).

Possible discipline include:-

1 **FCFS** (First come first served) the client is served in the order of their arrival, which is most visibly fair because all clients think of themselves as equal.

2 **RSS** (random selection for service) in this algorithm, clients are selected for service at random, so each clients in the queue has the same probability of being selected for service irrespective of his/her arrival in the service systems.

3 **SPF** (shortest process first) the algorithm assumes that the service time are known in advance. When several clients are waiting in the queue the SPF algorithm picks the shortest service time first.

4 **PRI** (priority service) the clients are grouped in priority classes according to some external factors the client with the highest priority is served first (Ahmed and Huda, 2011).

When utilization is high, to minimize waiting times by giving priority to clients who require shorter service times? This rule is a form of the shortest processing time rule that is known to minimize waiting times. It is found infrequently in practice due to the perceived unfairness (unless that class of clients is given a dedicated server, as in supermarket check-out systems) and the difficulty of estimating service times accurately. Arriving patients are placed in different queues, each of which has a different service priority; the queue discipline may be pre-emptive or non-pre-emptive. In the latter, low priority patients receive service only when no high priority patients are waiting, but the low priority patient who is receiving service is not interrupted if a high priority patient arrives and all servers are busy. In the pre-emptive queue discipline,

however, the service to a low priority patient is interrupted in this event.(samuel and Jeffrey, 2007).

### **2.3.3 The service mechanism**

This consists of one or more service facilities, each of which contains one or more parallel service channels or stations called Servers. Service Time (or Holding Time) is the time elapsed from the commencement of service to its completion for a client at a service facility. Interval Time is the time between consecutive arrivals of clients to waiting line. State of system is number of clients in queuing system and queue length refers to number of clients waiting for service. In other words, state of the system minus number of clients being served will give queue length (Sridhar 2001).The service mechanism describes how the patient is served. It includes the number of servers and the duration of the service time—both of which may vary greatly and in a random fashion. The service time may be similar for each job or it could vary greatly (prasanta, 2013).

### **2.3.4 The cost structure**

The cost structure specifies the payment made by the client and the various operating costs of the system. Other elements that impact the queue structure and performance include the number of service stations and the number and speed of servers (Ronald and James, 2001).

## **2.4 queuing networks**

A queuing network is Networks of queues are systems which contain an arbitrary, but finite, number of queues. Clients, sometimes of different queue travel through the network and are served at the node. The user sources for some of the queuing systems in the network may be other queuing systems in the same network (Ajay and Girish, 2013).

One basic classification of queuing networks is the distinction between open and closed queuing networks. In an open network new clients may arrive from outside the system (coming from a conceptually infinite population) and later on leave the system. In a closed queuing network the number of clients is fixed and no client enters or leaves the system (Andreas, 1999).

## 2.5 The Psychology of Waiting

There are a couple basic psychological aspects of clients in waiting lines have to be understood by the service organisations.

- Unoccupied time of the client in the waiting line is always felt longer than the occupied time. If a client in service waiting line is engaged with some activity either by himself or by service personnel he will not feel waiting as longer. One of the funny but practical suggestions is to provide for a big mirror where people have to wait in standing for longer. This is nothing but the subjective element of the client as they are not occupied by any activity in the line.
- Pre-process waits of the client is always felt as longer by client than in process waits. Obviously the clients do not take cognisance of longer time involved in the service delivery process as long as he is actively participate the process.
- Any anxiety on the part of the client make him to feel waiting time as subjectively longer.
- It is very crucial from the angle of a client in the waiting line that he should be given to understand how long he has to wait to get his turn and receive the service. In other words, uncertain waits appear longer to clients than known and finite waits. If only libraries can declare that no member need to wait for more than (say) 10 minutes in tending counters for getting a book issued as a standard for service quality the anxiety of members standing in queue in counters is substantially reduced.
- Any open explanation about why one has to wait so long always relieves commotion in the mind of client. Hence, unexplained waits appear longer than the explained waits.
- Clients obviously expect either equitable treatment or a special favourable treatment from service personnel. Hence, any unfair waits appear longer to them than equitable waits. Any by-passing of a client in the waiting line causes dissatisfaction. It has been established through research that the perceived equality of clients in a service centre has an important positive effect on client satisfaction of the service.
- The more valuable the service, the longer the client is willing to wait. This can be seen within the services of the library as well' as among various services in the society. Clients in waiting lines for fundamental and esoteric requirements and those for scarce resources

(like money, art, health, food, etc.) are more tolerable to delays in waiting lines than those in library circulation counter.

- Clients having solo waits feel it longer than those waiting in groups. It is always better to allow clients in groups for waiting (Sridhar, 2001).

## **2.6 Environment of the queue**

Pleasant waiting area; reception areas and waiting rooms should be clean, well maintained and aesthetically pleasing. If someone is waiting on a service they should at least have a comfortable place to wait. Crowded and noisy waiting rooms can agitate clients and not prepare them well for a good service experience. Waiting rooms should be able to accommodate more people than would be waiting at any one time. People don't like to have to look for a seat and clients often "spread" out - so having plenty of seating is important. Provide distractions; typical waiting room distractions are magazines and sometimes television but it is important that the magazines are current and that the television is on an appropriate channel for the clientele (Grace 2011). The service environment may indirectly influence affect through attribution of the delay. Attribution theory suggests that clients make judgments about cause-and effect relationships that influence their subsequent emotions, attitudes, and behaviours thus attribution for a delay has affective consequences for waiting consumers (Julie and Michaelle). It is also possible to provide a waiting environment where clients can be working productively on their own task in order to occupy the client's time in a queue (sumaiyah 2004).

## **2.7 Perceived Waiting Time**

Queuing perception means that consumers perceive that they are waiting in some order for service whether or not they are physically standing in a line. The literature suggests that two aspects of queuing perception may mediate the service environment-effect relationship: queuing progress and social justice. The design element of spatial layout affects these consumer perceptions. As waiting lines have been associated with reduced service evaluations, negative perceptions of service quality, and reduced satisfaction, having to wait makes a client's first experience of a service is a negative one. Consequently, waiting-time reduction has been a major objective of service providers (alinda and david 2012). The traditional approach firms have taken

to minimize dissatisfaction with waiting is to manage actual waiting time through operations management. Although it may not always be feasible to control the actual wait duration, it may be possible to influence clients' subjective perceptions of waiting time. Subjective time is defined by how individuals perceive and feel about the length of time duration

## **2.8 Queue and Client Satisfaction**

Client satisfaction has been defined as the difference between the client's perceptions of the experience and his or her expectations, which is many times based on past experience. Although it is possible to manage and decrease actual waiting time and to some extent to manage client expectations about client satisfaction, managing the client's perception of the queuing experience can be the vital element in satisfaction with the service interaction. The measurement of client satisfaction as it relates to waiting time is highly qualitative and subjective, and the relationship is generally inverse in nature (i.e, in general, as waiting time decreases, satisfaction increases) (Ronald and James, 2001).

Client satisfaction should be number one priority in services. Though measuring is difficult, client satisfaction can be defined in simple terms as perception minus expectation. Both expectation and perception of client play crucial role in client satisfaction. The expectations are often derived from personal experience. Perceived usefulness of service mainly measures the system's impact on individual's effectiveness, but it is not the only measure. It is often said in case of service organisations that the perceived quality of service is realised at the moment of truth i.e., when the service delivery personnel and client come in contact for delivery and receipt of service and thus emphasising the importance of client participation in service delivery process. In other words, client-service provider interaction plays vital role in determining the level of client satisfaction (Sridhar, 2001).

Actual time was expected to predict whether a client was or was not satisfied with the waiting time. Nevertheless, the other two measures of satisfaction (i.e., service and information) were expected to play a major role in the prediction of client satisfaction with waiting time (Danilo, 2012).

In general, client satisfaction is multi factorial and is considered a part of overall consumer behaviour model. Consumer behaviour evolves over time and is influenced by many factors. Several key factors that greatly influence satisfaction include consumer's expectations, attitudes, and intention about the service provided (Ronald and James 2001). Client satisfaction is improved by predicting and reducing waiting times and adjusting staffing (samuel and Jeffrey, 2007).

Dissatisfied clients have tendency to switch to another business or less likely to do the repeat business with the firm in the future. But some of the clients although they have been satisfied, they still switch to other services. This might be true especially for banking services. It is important for a company to retain their clients in order to be success in the business industry. If people perceived that they wait shorter than they expected, it is a case of positive disconfirmation and will lead to satisfaction. If people perceived the wait longer than they expected, it is a case of negative disconfirmation whereby it will lead to dissatisfaction. (sumayah 2004).

## **2.9 Waiting line management**

The main goal of queuing management is to maximise the level of patient satisfaction with the service provided. Therefore, the primary issue in queuing management and patient satisfaction is not the actual amount of time a patient waits for service, but the patient's perception about that wait and the associated level of satisfaction. A highly satisfied patient will be very likely to provide repeat business and spread the positive experience by word of mouth (advertising), resulting in increased revenues and profitability. Conversely, dissatisfied patient will most likely not provide repeat business and will be more than willing to share his or her bad experience with whoever will listen. This will have an obvious negative impact on profits and revenues (prasanta, 2013).

The greatest dilemma for managers seeks to improve the investment of their operation; as clients do not tolerate waiting intensely. Whenever client feels that he/she has waited too long at a station for a service, they would either opt out prematurely or may not come back to the station next time when needed a service. This would of course reduce client demand and in the long run revenue and profit. Moreover, longer waiting time might increase cost because it equals to more

space or facilities, which mean additional cost on the management. (Abdullah, Abdul and Amaresh, 2015)

The objective of queuing analysis and its application in organizations is to “minimize costs” to the organization- both tangible and intangible and increase employee performance towards service delivery. (Munirat, Nwaiwu and Aina,2015)

Hospital, like other service oriented industries, functions in an increasingly competitive environment. Speed of service has been shown to provide businesses a competitive advantage in the market place. In addition; the literature reveals several studies documenting patient dissatisfaction with long waiting times and indicates that this is a pervasive problem in hospital practice and a common source of anxiety and dissatisfaction among patients and, in many cases, hospital staffs (prasanta,2013).

## **2.10 Empirical Review**

Queuing systems are useful throughout society. The capability of these systems can have an important result on the quality of human life and productivity of the process. Queuing theory studies queuing systems by formulating mathematical models of their operation and then using these models to derive measures of performance. This analysis provides fundamental information for successfully designing queuing systems that achieve an appropriate balance between the cost of providing a service and the cost associated with waiting for that service. (Ajay and Girish, 2013)

The findings of the study have revealed that the system is highly, if not over utilized. This implies that arrival comes at a faster rate than the system can accommodate. The following recommendations if accepted and implemented by the bank management may help in tackling these problem. The need for the management of the bank to deploy another ATM (i.e. an M/M/S with  $S=2$  or more) within the bank’s premises as this will minimize the waiting time of clients and hence reducing the inconveniences and frustrations associated with waiting. The bank should review its maintenance policy so as provide timely and periodic maintenance on these machines. This will drastically reduce machine or server complexities while at the same time increasing service efficiency (Bakari, Chamalwa and Baba, 2014).

A study conducted by (Leoven, 2015) Quick Service Restaurant owners and managers should continuously strive hard to improve its service to clients in terms of managing waiting lines. Continuous review on the process of serving clients should be done to ensure fast and convenient service provision. QSR owners and managers must improve its service facility related to waiting line. Restaurants should consider the use of electronic queuing number system to increase efficiency in serving clients. Restaurants should monitor the strict implementation of the queue management practices to ensure client satisfaction. It should be ensured that the restaurants should implement the practices to the greatest extent to elicit the greatest satisfaction of the clients. The QSR managers must review the waiting line structure they utilize to ensure that it fits with the characteristics of the client's arrival. Electronic queuing number system should be considered in serving the client to achieve greater efficiency and client satisfaction.

The study conducted by (Asefa,2017) Leulu needs to consider arranging additional servers and increasing the number of skilled staffs to serve clients with speed and improve the service time in branches like Arat Kilo while opening addition centers for clients being served at branches with the number of clients similar to (and inclusive of) Lebu center. As demonstrated using queuing analysis model, the addition of 2 more servers could dramatically reduce a client's waiting time by a greater proportion. Here, the management needs to consider this with the cost of two extra service representatives in making a decision. However, this doesn't seem to be an issue as the management also indicated that they are planning to increase the number of the centres and also increasing the number of counters at the centers. And so, the issue will be in how quickly the plan will be put to action.

The study conducted by (Grace 2011) commercial banks in Kenya should invest in the provision of appropriate information to the clients. The banks should provide direction in terms of dedicated terminals in self-service or receptionist to allow clients to take their place in the queue for a service and communication to adjust waiting time according to the importance of the service to be provided. The study further recommends that commercial banks in Kenya should increase client satisfaction by adopting strategies such as, agency banking, use of signage and signalling systems, use of interactive communication and advertisement on the television screens and allowing visitors' freedom of movement while keeping them informed about the expected waiting time or giving them a guaranteed reception time. Moreover, the study further

recommends that lines management in the banks can be enhanced by implementation of measures that will enhance client flow management and increase in the number of bank branches. The banks should also increase the number of terminals where deposits are made and emphasize on agency banking implementation.

Study by (Abdullah et al, 2015) use of double server the average waiting time has decreased from 1.8947 min to 0.1231 min which is very small figure. Thus a client coming to ATM does not have to wait at all at ATM machine. Also the expected queue length has decreased from 0.5565 to 0.034.in designing queuing systems we need to aim for balance between service to clients (short queues implying many servers) and economic considerations (not too many servers). Though, the provision of an additional service mechanism may be capital intensive, it would pay the bank more since the primary aim of every business organization besides profit making is client satisfaction. On account of above discussion double server queuing model could be applied in our case without affecting the client demand, revenue and profit of the bank. This case study will act as a reference for implementing double server models in ATM machine.

Study by (farayibi 2000) Having realized that quality service delivery is a prerequisite for achieving a high level of client satisfaction in the Nigeria banking industry, the following recommendation are made for the management of Gt Bank and Eco bank.

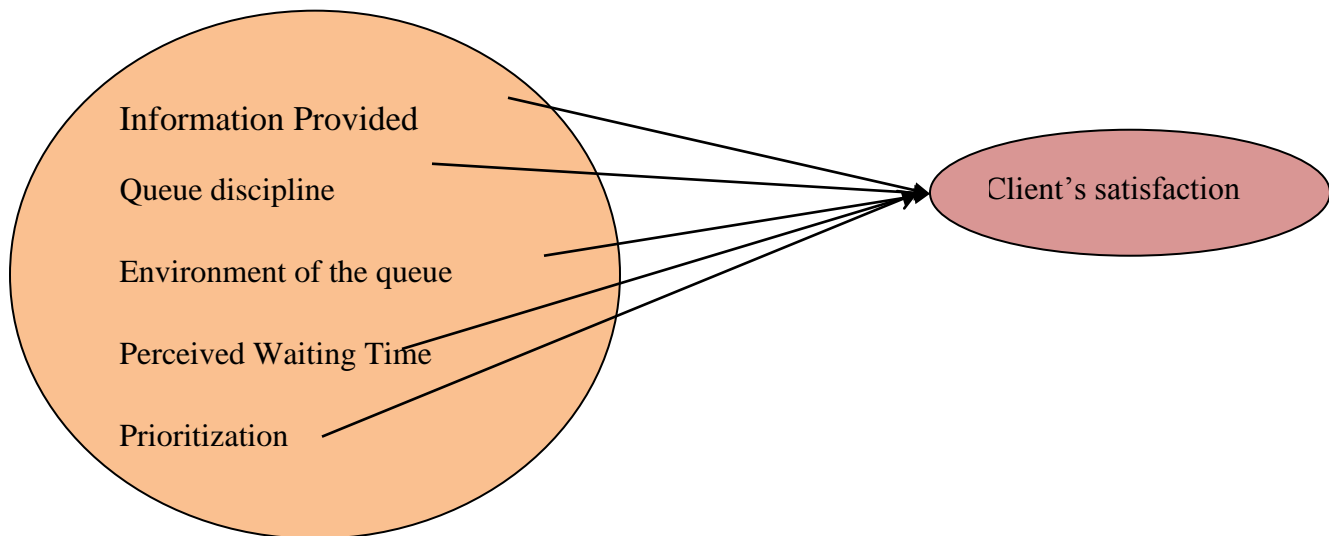
- The management of both banks should adopt an optimal service model that reduces total expected costs and increases client satisfaction. To this end, GTB bank is better with 13 service points while Eco bank is better with 10 service points.
- The queue characteristics of the banks should be viewed from the stand point of clients as to whether the waiting time is reasonable and acceptable by making queue discipline fair and varying the number of service channels according to queue Circumstances.
- The management should educate their operation managers and other staff on the Application of queuing models to operational problems.
- The management of both banks should entrust their employees, empower them and

Enrich their skill and job involvement through continuous training so as to improve their Ability for better client service delivery.

- The management of both banks should motivate their employees in order to improve their productivity. Additional service channels such as ATM machines, POS etc. can also be deployed within the bank’s premises in order to minimize the waiting time and waiting cost of Clients and hence reducing the inconveniences and frustrations associated with Waiting.

Study by (Sammy and Thomas, 2015) So as to enhance the efficiency of the system during busy times the university administration should; Increase the number of account clerks attending to the students which would reduce the waiting time in the queues Divide the queue into several queues whereby there is a specific one handling the many students making inquiries which seem to make those students paying school fees wait for longer periods of time. Improve the payment system so that when students make payments in the different banks is reflected in the school system faster and the fee structures are updated quickly by the clerks and send to student accounts(student portal) so that students don’t come to the queues to confirm their fee balances (make inquiries) thus reducing size of the queue.

## 2.11 Conceptual Framework



**Independent variables    Dependent variable**

(Adapted from Grace 2011 and eyasu 2016)

## **CHAPTER THREE:**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Description of the Study Area**

The study will be conducted on Ethiopian revenues and customs authority. The Ethiopian Revenues and Customs Authority (ERCA) is the body responsible for collecting revenue from customs duties and domestic taxes. In addition to raising revenue, the ERCA is responsible to protect the society from adverse effects of smuggling. It seizes and takes legal action on the people and vehicles involved in the act of smuggling while it facilitates the legitimate movement of goods and people across the border. For this study purposefully selected sample branches of ERCA were considered in order to analyse the waiting line where queue is mostly inevitable as large number of the sample population is being served and where probable issues of Client satisfaction mainly raised. The clients can only pay taxes in their sub cities where they registered.

#### **3.2 Research Design**

The research design used in this thesis was both descriptive research design & explanatory research design. In order to achieve the desired general and specific objective of this study both qualitative and quantitative Method was applied to analyse the gathered information. Qualitative research is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. Quantitative research is a means for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured. Typically on instruments, so that numbered data can be analysed using statistical procedures(John 2007).

Qualitative method was applied evaluating the effect of waiting line on client satisfaction. Quantitative method was applied in order to describe the gathered data from structured questioner.

#### **3.3 population of the study**

The population of the study was ERCA small tax payer's nifas silk, bole and yeka branch. The target population is level A tax payers and level B tax payers. Purposefully sampling method was

used to select the branches located in Addis Ababa. It is difficult to include branch located outside Addis Ababa, as it is costly to undertake the study within a given time and economically infeasible for the researcher to conduct study outside the capital.

### 3.4 sample size

The study was based the sample frame work of ERCA small tax payers three branch. The total population of the research study in three areas were 32,112 of which bole 11024, yeka 8070 and nifas silk 13018.

No	Sub city	Level A	Level B	Total
1	Bole	5813	5211	11024
2	Yeka	3415	4655	8070
3	Nifas silk	4950	8068	13018
Total				32112

Table 3.1 Sample Size

Source Addis Ababa branch support directorate,2018

There are several sample size determination techniques, however ,for this study, it is determined using taro Yamane(1967).this formula is concerned with applying a normal approximation with a confidence level of 95% and a limit of tolerance level(error level) of 5%.

$$n = \frac{N}{1 + N (e)^2}$$

Where, n is the sample size

N = the population size,

E = the level of precision or sampling error = (0.05)

$$n = 32112/1+32112(0.05)^2$$

$$n=395$$

Thus, sample size of 395clients is selected from the population of 32,112

### **3.5 Data type and source**

The study relayed on primary and secondary sources of data. Primary data will be collected using questionnaires. And the questionnaires are distributed to clients of ERCA small tax payer's branch office nifas silk yeka and bole branch in Addis Ababa. Secondary data are collected from journal, books and web site of the organization.

### **3.6 Data Collection procedures**

The study was using both primary data and secondary data. Primary data was gathered from the target population using structured questionnaires as an instrument, The questionnaire was adopted from (grace 2011) and (Eyasu 2016). And also developed after an extensive review of different literatures that are made on the same topic. The secondary data sources include journals and books.

Data collection was during peak days and hours to represent the real scenario of the problem. Questionnaires were distributed to clients on random bases from those who arrived at the centres during the time allocated for data collection from the centres.

### **3.7 Data Analysis**

Once the needed information will gathered the next step analysing it. And the collected data was analysed by employing computer software known as the statistical package for social scientists (SPSS). In order to answer the research questions both descriptive and regression statics will used. Descriptive statistical methods such as frequency, percentage, graph, tables were used in order to describe the gathered data whereas regression is used to find out the relationship between dependent and independent variable. To make the study more acceptable and recognized both reliability and validity has been confirmed. In order to see the consistency or reliability of the data gathered Cronbach's alpha coefficient will used to see how consistently respondents have responded to the questionnaire. Cronbach's coefficient alpha is used to assess reliability.

### **3.8 Ethical Consideration**

In conducting the research and collecting data ethics takes the major share. Data collection is done in an ethical manner where the purpose of the research is described in detail for respondents and their identity is covered and is coded not to be identified anyone who sees the result of the research. In addition to that the data collected will be coded and if seen they cannot be identified who the respondent is.

## CHAPTER FOUR

### DATA ANALYSIS

#### 4.1 Introduction

This chapter describes the analysis and interpretation of the collected data. The data was collected using likert scale questionnaire of the variable. Out of the 395 questionnaires distributed to all target population 363 questionnaires were returned and analysed. The response rate of this study is 91.9%.in which the data can be analysed and significant data is acquired to give reliable findings for the study. The data was analysed using SPSS version 20.

	Frequency	Percentage
Non Respondent	32	8.1
Actual Respondent	363	91.9
Total target population	395	100%

Table 4.1 Respondents Frequency

#### 4.2 Demographic Information of Respondents

To know the general background of client's Ethiopian revenues and customs authority small tax payers, the respondents were asked their Gender, Age and occupation. The results obtained from the structured Questionnaires are represented on the table below.

## 4.2.1 Gender of respondent

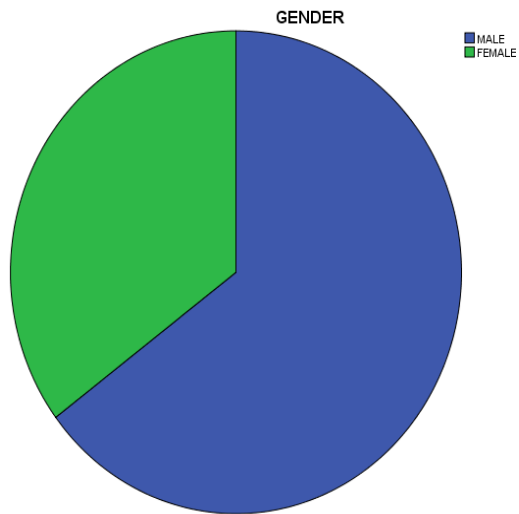


Figure 4.1 Respondents' Gender Source :( survey, 2018)

Based on the pie charts From the total 363 respondent the number of male are 65% and the number of female are 35%,this is indicate as the number of male clients are greater than female clients.

## 4.2.2 Age of Respondents

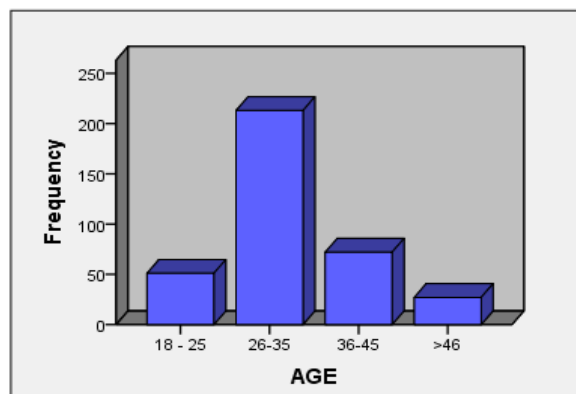


Figure 4.2 Respondents' Age Source :( survey, 2018)

According to the finding 14% of the respondents are between 18-25 age, 59% of the respondents are between 26-35 age, 20% of the respondents are between 36-45 age and 7% are greater than 46 age.

### 4.2.3 Occupation

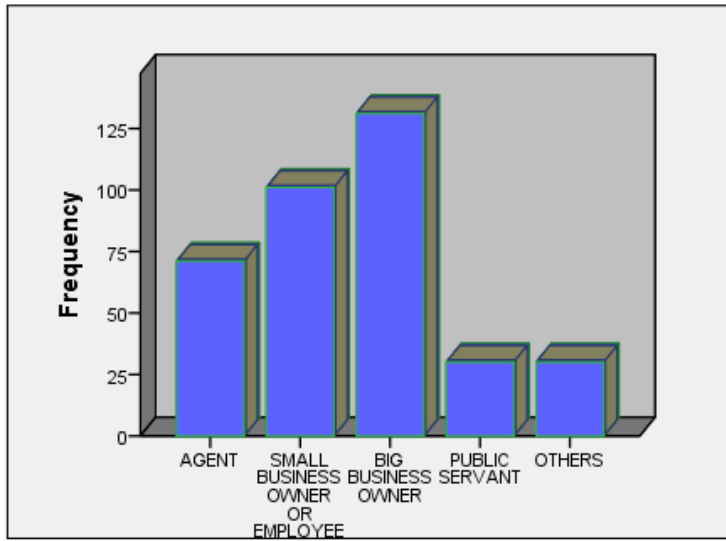


Figure 4.3 Respondents' Occupation Source :( survey, 2018)

Based on the above table 20% of respondent occupation are agent, 28% of respondent occupation are small business owner or employee, 36% of respondent occupation are big business owner, 8% of respondent are public servant, 8% of respondent are other.

### Reliability and validity

Cronbach's Alpha	N of Items
.780	5

Table 4.3 Reliability Source :( survey, 2018)

The Cronbach alpha coefficient is an indicator of internal consistency of the scale. A value of Cronbach alpha above 0.70 can be used as a reasonable test of reliability the Cronbach's alpha for the independent variables (Information Provided, Queue discipline, Environment of the queue, prioritization and Perceived Waiting Time). Was found to be 0.780 Therefore the five dimensions of client satisfaction were found to be high in their internal consistency of respondents answers to all the items in a measure or degree to which an instrument measures the same way each time it is used under the same condition with the same subject .

### Validity

The questionnaires developed and used for this research are based on previous researches and based on the researchers experience in the delivery of the ERCA waiting line and client satisfaction. The questionnaires were fully adapted from (Grace 2011) and (Eyasu 2016). While the researcher included few questions from experience in the ERCA office and complaints from clients. In addition to this the type of respondents included in this research are from different profession and directly processing for themselves or on behalf of an entity. The response rate and no missed questions on the study make the response reliable to draw result on the study.

## 4.3 Clients rating of waiting line (Descriptive analysis on waiting line)

### 4.3.1 What kind of tax you pay

		Percent	Valid Percent	Cumulative Percent
Valid	VAT	257	70.8	70.8
	TOT	70	19.3	90.1
	OTHER	36	9.9	100.0
	Total	363	100.0	100.0

Table 4.4 Type of Tax Source :( survey, 2018)

The data collected from the respondents of ERCA clients are VAT registered clients (71%),TOT tax payers are (19%) the rest (10%) are other tax payers. Most of ERCA small tax payers clients are VAT register.

### 4.3.2 When do you normally pay your tax

	Frequency	Percent	Valid Percent	Cumulative Percent
FIRST WEEK OF TAX PAYMENT PERIOD(1-10)	61	16.8	16.8	16.8
OVER THE COURSE OF TAX PAYMENT PERIOD(11-20)	140	38.6	38.6	55.4
FINAL WEEK OF TAX PAYMENT PERIOD (21-30)	162	44.6	44.6	100.0
Total	363	100.0	100.0	

Table 4.5 Normal Tax Payer Source :( survey, 2018)

The above table indicates that 16.8% of the respondents pay their tax at the first week of tax payment period, 38.6% of the respondents pay their tax at the over the course of tax payment and 44.6% of the respondents pay their tax at the final week of tax payment period, which indicates most of ERCA clients pay their tax at the final week of tax period. This has adverse effect on both sides for customers and the organization itself. Which will force customers to wait long to pay their taxes.

### 4.3.3How do you rate the waiting line at ERCA

	Frequency	Percent	Valid Percent	Cumulative Percent
VERY SHORT AND ATTRACTIVE	15	4.1	4.1	4.1
SHORT AND REASONABLE	60	16.5	16.5	20.7
AVERAGE	138	38.0	38.0	58.7
LONG	78	21.5	21.5	80.2
VERY LONG AND FRUSTRATING	72	19.8	19.8	100.0
Total	363	100.0	100.0	

Table 4.6 Waiting Time at ERCA Source :( survey, 2018)

The waiting line of ERCA 4% are very short and attractive,17% are short and reasonable,38% are average,22% are long and 20% are very long and frustrating. So as the data indicates Most of the respondents are at average.

#### 4.3.4 How do you rate the serving time taken by counter

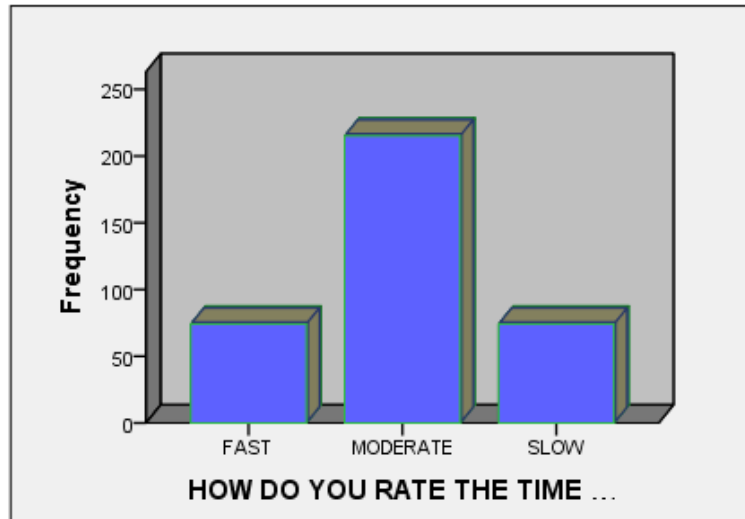


Figure 4.4 Waiting Time Source :( survey, 2018)

The respondents' rate the time taken by clerks for serving one client is 20% of the respondents said serving time is fast, 59% of the respondents are moderate and 20% are slow. So majority of the respondents are moderate.

#### 4.3.5 Have you ever turned away due to long waiting time

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	302	83.2	83.2	83.2
NO	34	9.4	9.4	92.6
NOTREMEMBER	27	7.4	7.4	100.0
Total	363	100.0	100.0	

Table 4.7 Turned away due to Client queue Source :( survey, 2018)

Due to long waiting time 83% respondents turn away since the line was too long, 9% of the respondents stayed on the line until they were served, 7% respondents don't remember. So the data shows when there is long line customers tend to turn away.

### 4.3.6 How many times customers turn

	Frequency	Percent	Valid Percent	Cumulative Percent
ONE TIME ONLY	88	24.2	24.2	24.2
VERY FEW	138	38.0	38.0	62.3
ATLEAST ONCE EVERY MONTH	42	11.6	11.6	73.8
MOST OF THE TIME	56	15.4	15.4	89.3
Is not Applicable	39	10.7	10.7	100.0
Total	363	100.0	100.0	

Table 4.8 Customer Frequency Source :( survey, 2018)

The respondents who turn away due to long waiting line, 24% are one time, 38% are very few, 12% at least once every month, 15% most of the time and 11% not returned. So due to long line waiting Most of the respondents turn away very few days as there is penalty if they don't pay on due date.

### 4.3.7 If yes to number 5 how have you solved the issue?

	Frequency	Percent	Valid Percent	Cumulative Percent
JUMPED THE QUEUE	17	4.7	4.7	4.7
TURN AND COME BACK ON THE SAME DAY	66	18.2	18.2	22.9
TURN AWAY AND COME ANOTHER DAY	192	52.9	52.9	75.8
PAY BY PENALTY	49	13.5	13.5	89.3
Is not applicable	39	10.7	10.7	100.0
Total	363	100.0	100.0	

Table 4.9 solving of the queue Source :( survey, 2018)

Jumped the queue 5%, turn and come back on the same day 18%,turn away and come another day 53%, pay by penalty 14% ,11% not applicable. so of all the respondents ,majority of them will not be served on the first day of their payment period due to long line rather they prefer to turn and come back another day.

#### 4.3.8 Is first come first served implemented?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid YES ALWAYS	200	55.1	55.1	55.1
Valid YES SOMETIMES	111	30.6	30.6	85.7
Valid NOT AT ALL	52	14.3	14.3	100.0
Total	363	100.0	100.0	

Table 4.9 First Come first Served Source :( survey, 2018)

The application of FCFS is mostly applicable. 55% of the respondents say always applicable and 31% respondents say sometimes and 14% said not at all. Thus, this implies that queuing discipline is applied.

#### 4.3.9What do you think they should do to improve serving time

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid WORK HARDER	49	13.5	13.5	13.5
Valid INCREASE STAFF	128	35.3	35.3	48.8
Valid BOTH	156	43.0	43.0	91.7
Valid NOT SURE	30	8.3	8.3	100.0
Total	363	100.0	100.0	

Table 4.9 Improve Serving time Source :( survey, 2018)

Based On the respondents ,work harder are 14%,35% increase staff ,43% are work harder and increase staff and 8% are not sure .so that most of respondents suggest that ERCA should increase number of employees and motivate them to work harder to improve the service.

#### 4.3.10 How do you rate the ethics of ERCA staffs

HOW DO YOU RATE THE ETHICS OF STAFF					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	VERY POLITE AND FRIENDLY	116	32.0	32.0	32.0
	CANNOT SAY MUCH	167	46.0	46.0	78.0
	NOT POLITE AND FRIENDLY	80	22.0	22.0	100.0
	Total	363	100.0	100.0	

Table 4.10 Staff Ethics Source survey (2018)

Based on the above data the ethics of ERCA staffs are 32% very polite and friendly, 46% are cannot say much and 22% are not polite and friendly. This implies that most of the respondents are more concerned about the queue length than their ethics.

#### 4.3.13 CHANCE OF GETTING SERVED WITH OUT SPENDING TIME ON QUEUE

	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	MOST OF THE TIME	35	9.6	9.6	9.6
	SOMETIMES	160	44.1	44.1	53.7
	NEVER	168	46.3	46.3	100.0
	Total	363	100.0	100.0	

Table 4.11 queue spending time Source :( survey, 2018)

From the above data 10% are most of the time have chance of getting served without spending time on waiting line, 44% are sometimes served with or without waiting line and46% are not served without waiting line. As the table 4.3.2 indicates most clients Pay their tax at the final period of the tax payment so customers will be forced to spend much time in the queue.

#### 4.3.14 How satisfied are you with the perceived waiting time

	Frequency	Percent	Valid Percent	Cumulative Percent
VERY DISATISFIED	81	22.3	22.3	22.3
DISSATISFIED	102	28.1	28.1	50.4
NEUTRAL	63	17.4	17.4	67.8
SATISFIED	75	20.7	20.7	88.4
VERY SATISFIED	42	11.6	11.6	100.0
Total	363	100.0	100.0	

Table 4.12 Perceived waiting time Source :( survey, 2018)

Based on the respondents, clients satisfaction level of perceived waiting time is described on frequencies table, 22% of the respondents are very dissatisfied, 28% of the respondents are dissatisfied, 17% are neutral, 21% of the respondents are satisfied and 12% of the respondents are very satisfied.

This data shows us majority of the respondents are not satisfied on the perceived waiting time. So ERCA has to give more emphasis on indicated issue.

#### 4.3.15How satisfied are you with the waiting environment

	Frequency	Percent	Valid Percent	Cumulative Percent
VERY DISATISFIED	106	29.2	29.2	29.2
DISSATISFIED	113	31.1	31.1	60.3
NEUTRAL	51	14.0	14.0	74.4
SATISFIED	53	14.6	14.6	89.0
VERY SATISFIED	40	11.0	11.0	100.0
Total	363	100.0	100.0	

Table 4.13 Waiting Environment Source :( survey, 2018)

The data collected from the respondents based on the waiting environment they respond. 29% of the respondents are very dissatisfied, 31% of the respondents are also dissatisfied, 14% of the respondents are neutral, 14% of the respondents are satisfied and 11% of the respondents are very satisfied. This implies that majority of ERCA clients are not satisfied with the distraction

like television, newspaper, Wi-Fi and other as we know ERCA is a big responsible organization they have to give attention on the environment of the organization.

#### 4.16 how satisfied are you with the queue discipline

	Frequency	Percent	Valid Percent	Cumulative Percent
VERY DISATISFIED	54	14.9	14.9	14.9
DISSATISFIED	59	16.3	16.3	31.1
NEUTRAL	81	22.3	22.3	53.4
SATISFIED	117	32.2	32.2	85.7
VERY SATISFIED	52	14.3	14.3	100.0
Total	363	100.0	100.0	

Table 4.14 Queue Discipline Source :( survey, 2018)

The researcher collected from the respondents on queue discipline 15% of the clients are very dissatisfied, 16% of the clients are dissatisfied, 22% of the clients are neutral, 32% of the clients are satisfied and 14% of the respondents are very satisfied, so most of the respondents are satisfied on the queue discipline of ERCA.

#### 4.3.17 How satisfied are you with the prioritization given for elders pregnant

	Frequency	Percent	Valid Percent	Cumulative Percent
VERY DISATISFIED	29	8.0	8.0	8.0
DISSATISFIED	32	8.8	8.8	16.8
NEUTRAL	74	20.4	20.4	37.2
SATISFIED	114	31.4	31.4	68.6
VERY SATISFIED	114	31.4	31.4	100.0
Total	363	100.0	100.0	

Table 4.15 Prioritization Source :( survey, 2018)

Based on the data the satisfaction level of prioritization given for elders, pregnant and other are 8% of the respondents are very dissatisfied, 9% of the respondents are dissatisfied, 20% of the respondents are neutral, 31% of the respondents are satisfied and 31% of the respondents are

very satisfied, majority of ERCA clients are satisfied on the prioritization given for elders, pregnant and others.

### 4.3.18 How satisfied are you with the information provided

	Frequency	Percent	Valid Percent	Cumulative Percent
VERY DISATISFIED	76	20.9	20.9	20.9
DISSATISFIED	68	18.7	18.7	39.7
NEUTRAL	55	15.2	15.2	54.8
SATISFIED	100	27.5	27.5	82.4
VERY SATISFIED	64	17.6	17.6	100.0
Total	363	100.0	100.0	

Table 4.16 Information Provided Source :( survey, 2018)

The clients of ERCA are ranking there satisfaction level on information provided 21% of the clients are very dissatisfied,19% of the respondents are dissatisfied,15% of the respondents are neutral,28% of the respondents are satisfied and 18% of the respondents are very satisfied so majority of the respondents on information provided are satisfied .

### Normality, Linearity and Homoscedastic

The following two diagrams prove that the linear regression of this study met the assumption under linear regression that is linearity, normality and same variance. The first assumption is that normality of the standardized residuals which examines whether they are normally distributed or not.

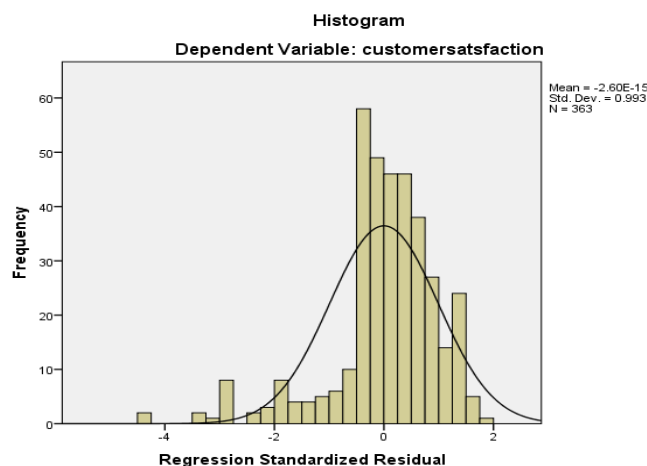


Figure 4.5 Normality Test Source :( survey, 2018)

As the diagram tell us linearity and same variance (homoscedasticity) are met since the scatters go along with the line.

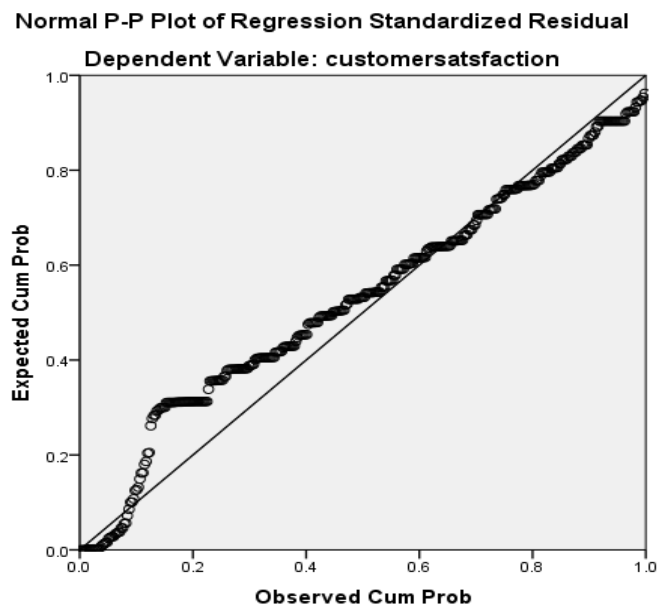


Figure 4.6 Normal P-P Plot Source :( survey, 2018)

### **Absence of Multi Collinearity**

This assumption emphasizes that independent variables shouldn't be highly correlated or perfectly correlated. Multiti collinearity is when they are highly correlated whereas singularity is when the independent variables are perfectly correlated. In order to check whether there is high relationship between independent variables Variance inflation factor was used to detect multi collinearity. And based on the rule of myers, a maximum VIF of ten or more is considered an indication of the presence of interdependence multi collinearity was found to be absent within the independent variables of this study in which as it is indicated in table, the value of VIF 1.482 1.437,1.437, 1.420 1.630 which is less than 10 and this indicates that there is no multi collinearity.

### 4.3.1 Regression Analysis

Regression analysis assess whether there is a relationship between the dependent variable and the independent variable or not.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \alpha$$

Where Y is the dependent variable (client satisfaction),  $\beta_0$  is the regression coefficient,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ ,  $\beta_4$ ,  $\beta_5$  are the slopes of the regression equation, the independent variables are;

X1 is perceived waiting time,

X2 is waiting environment,

X3 is queue discipline,

X4 is prioritization given for elder pregnant and other

X5 is information provided

Whereas  $\alpha$  = error term

**Table 4.3.19 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.696 <sup>a</sup>	.485	.477	.629

Source :( survey, 2018)

- a. Predictors: (constant), how satisfied are you with the information provided, how satisfied are you with the waiting environment, how satisfied are you with the prioritization given for elders pregnant, how satisfied are you with the queue discipline, how satisfied are you with the perceived waiting time.

By using SPSS version 20 the following results were determined from regression analysis. The above table indicated that the correlation is 0.696 which shows existence of linear relationship between the dependent and the independent variables. The coefficient of determination or adjusted R square value is 0.477 which indicates that 47 % of queue is explained by independent variable

ANOVA<sup>a</sup>

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	132.838	5	26.568	67.107	.000 <sup>b</sup>
Residual	141.337	357	.396		
Total	274.175	362			

a. dependent variable: client satisfaction

b. predictors: (constant),

Source :( survey, 2018)

How satisfied are you with the information provided, how satisfied are you with the waiting environment, how satisfied are you with the prioritization given for elders pregnant, how satisfied are you with the queue discipline, how satisfied are you with the perceived waiting time.

The above table shows that the regression analysis was significant at p value 0.000 which is less than 0.05.so we can interpret another regression module.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.683	.119		5.751	.000		
HOW SATISFIED ARE YOU WITH THE PERCEIVED WAITING TIME	.081	.030	.124	2.688	.008	.675	1.482
HOW SATISFIED ARE YOU WITH THE WAITING ENVIROMENT	.021	.030	.032	.703	.482	.696	1.437
HOW SATISFIED ARE YOU WITH THE QUEUE DISCIPLINE	.200	.031	.294	6.455	.000	.696	1.437
HOW SATISFIED ARE YOU WITH THE PRIORITIZATION GIVEN FOR ELDERS PREGNANT	.201	.032	.283	6.243	.000	.704	1.420
HOW SATISFIED ARE YOU WITH THE INFORMATION PROVIDED	.121	.030	.197	4.070	.000	.614	1.630

a. Dependent Variable: client satisfaction

Table 4.17 Regression Analysis Source :( survey, 2018)

On the coefficient table we find the beta value which measures of how strongly each independent variable (Information Provided, Queue discipline, Environment of the queue, Perceived Waiting Time and prioritization given for elder, pregnant and other) influences the dependent variable (client satisfaction).

In which a unit increase in perceived waiting time (wait in lines from the time you walked in to when you place your order) will result 0.081 will increase client satisfaction in positive manner.

In which unit increase in waiting environment (television, magazine, newspaper and WiFi) will result 0.021 will increase client satisfaction?

In which unit increase in queue discipline (first come first served rule) will result 0.2 increase client satisfactions.

In which unit increase in prioritization given for elders and pregnant will result 0.201 will increase client satisfaction. At 95% confidence interval except waiting environment for factors were found to be the significant predictors of the dependent variable.

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATION

#### 5.1 Summary of Major Findings

The main objective of the study is to find out the effect of queue on client satisfaction in the case of ERCA small tax payers branch offices. The data obtained from the respondents was analysed using various statistical tools. As it is known tax payers make their payment according to the time of period allotted by ERCA. According to the data collected, most of ERCA clients settle their tax at the final week of tax payment period. This brought negative impact on the queue system by creating long waiting line.

Frequency table indicates that, due to long waiting line, majority of respondents have been turned away for few times without getting service. To solve this, most clients chooses to come back the next day until they get the service. The respondent's suggestion indicates increasing the number of staff and motivating the employees to work hard, could solve the problem of long service delivery time. As per the respondents, they are mainly concerned with service delivery time than the staffs' attitude.

Most of respondents regarding to perceived waiting time are dissatisfied as they are obligated to wait long to approach the counter. And also the waiting environment is not attractive and conducive.

Majority of respondents are happy with the queuing discipline as they are served according to their arrival. In addition to that customers give prioritization for people who are elderly, pregnant and disabled customers. And the information rendered by the service providers is sufficient and satisfactory.

The finding of the data analysis made on regression shows that Information Provided, Queue discipline, Environment of the queue, Perceived Waiting Time and prioritization given for elder, pregnant and other; influences with B-value .Accordingly were found to be positively associated with the dependent variable(client satisfaction)With 95% confidence interval with p value less than 0.05that Information Provided, Queue discipline, Environment of the queue, Perceived

Waiting Time and prioritization given for elder, pregnant and other wise found to be the significant predictors of client satisfaction in Ethiopian revenues and customs authority small tax payers branch office. While environment of the queue with P value greater than 0.05 was not the significant predictor of client satisfaction in ERCA small tax payers.

## **5.2 Recommendations**

Based up on the findings discussed so far the following recommendations were suggested

- The organization should work more on perceived waiting time by increase number of staff and providing incentives for staffs
- The organization should work more on waiting environment making conducive like designated waiting area TV, comfortable chairs magazines this helps customers to get comfort with the environment
- The organization should work more on queue discipline installing automatic queuing machine
- The organization should work more on prioritization given for elders pregnant assigning one special counter for who needs special attention
- The organization should work more on information provided by assigning one officer who provides information.

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**Appendices: Appendix I**

**IONNIRE**

**ADDIS ABABA UNIVERSITY  
SCHOOL OF COMMERCE  
DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

**Researcher: kidist teshome**

**Dear Respondents**

The main purpose of this questionnaire is to gather information with regard to effect of queue on client satisfaction in Ethiopian revenues and customs authority (ERCA) for the partial fulfillment of the requirements for Masters of logistics and supply chain management at Addis Ababa University. The information you provide is highly confidential and is only going to be used only for the purpose of this study. Therefore, your genuine response to the questions is vital for the quality and successful completion of the study. The accuracy of the information you provide highly determine the reliability of the study.

Contact Address: Tele - +251 910799289

## Questions for Clients

### SECTION A: Demographic & General Information

#### 1. Gender

(a) Male (b) Female

#### 2. Age

(a) 18 - 25 (b) 26 – 35 (c) 36 - 45 (d) 46 and above

#### 3. Occupation

(a) agent (b) Small business owner/ employee (c) Big business owner/ employee (d) Public Servant (e) Other

### SECTION B: 1. Clients' ratings of waiting lines

#### 1. What kind of tax do you pay?

(a) vat (b) tot (c) other

#### 2. When do you normally pay your tax?

(a) First week of tax payment period (1-10 days) (b) Over the course of tax payment period (11-20 days)

(c) Final week of the tax payment period (21-30)

#### 3. How do you rate the waiting lines at ERCA?

(a) very short and attractive (b) Short and reasonable (c) average (d) long

(e) Very long and frustrating

#### 4. How do you rate the serving time taken by the counter clerks for serving one client?

(a) Fast (b) Moderate (c) Slow

#### 5. Have you ever turned away due to long waiting time/ long time being taken to be served?

(a) Yes (b) No (c) Can't remember

#### 6. If yes to No. 5, how many times have you done such?

(a) One time only (b) Very few (c) At least once every month (d) Most of the times

7 If yes to No. 5, how have you solved the issue?

- (a) Jumped the queue (b) Went and came back on same day
- (c) Went away and came another day (d) pay by penalty

8. Is the first come first serve priority rule fair and strictly implemented?

- (a) Yes, always (b) Sometimes Yes (c) Not at all

9. What do you think they should do to improve serving time?

- (a) Work harder (b) Increase staff (c) Both of the above (d) Not sure

10. How do you rate the attitudes of ERCA staffs?

- (a) Very polite & Friendly (b) Can't say much (c) Not polite & friendly

11. Chance of getting served without spending time in waiting line

- (a) most of the time (b) sometimes (c) never

**SECTION B: 2. Clients' Extent of satisfaction level**

In this section state to what extent are the following waiting lines management strategies satisfies you. Use the scale of 1= Very dissatisfied 2= Dissatisfied 3= Neutral 4= Satisfied 5= very satisfied

No.	Clients' level of satisfaction.	(1)Very Dissatisfied	(2) Dissatisfied	(3) Neutral	(4) Satisfied	(5) Very Satisfied
1	How satisfied are you with perceived waiting time? I.e. how long you had to wait in lines from the time you walked in, to when you place your order.					
2	How satisfied are you with the waiting environment (i.e. how satisfied are you with distractions like digital signage, television, magazines, newspaper, Wi-Fi, etc. provided by the centres while waiting to be served)?					
3	How satisfied are you with the queue discipline (i.e. implementation of First come First Served rule)?					
4	How satisfied are you with the prioritizations given to elderly, pregnant women and differently abled clients in serving?					
5	How satisfied are you with the information provided? (i.e. explanations they give on time of service, or when the systems are down and there is delay)					