ADDIS ABABA UNIVERSITY
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THE APPLICATION OF WAITING LINES SYSTEM IN IMPROVING CUSTOMER SATISFACTION: A CASE OF KIFIYA FINANCIAL TECH PLC – LEHULU

BY

ASEFA DEMELIE AREGA

ADVISER

MATIWOS ENSERMU (PhD)

A Thesis submitted to Addis Ababa University School of Commerce Department of Logistics & Supply Chain in Partial Fulfillment of the Requirements for the Degree of Masters of Arts in Logistics & Supply Chain Management

May 2017
Addis Ababa, Ethiopia

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DECLARATION

I declare that this thesis study for the M.A. degree in logistics and supply chain management at the University of Addis Ababa School of commerce, herby 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.

Name: Asefa Demelie

Signature----------

Date ----------

Adviser's Name: Matiwos Ensermu (PhD)

Signature----------

Date----------

CERTIFICATION
ADDIS ABABA UNIVERSITY
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This is to certify that the thesis prepared by Asefa Demelie, entitled 'The Application of Waiting Lines System in Improving Customer Satisfaction: A case of Kifiya Financial Tech Plc – Lehulu' and submitted in partial fulfillment of the requirements for the award of the Degree of Master of Arts (Logistics And Supply Chain Management) compiles with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved by the Board of Examiners:

Adviser: Matiwos Ensermu (PhD) Signature _____Date_____

Examiner: Shiferaw Mitiku (PhD) Signature _____Date_____

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Chair of Department of Graduate Program Coordinator

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Asefa Demelie

LIST OF ACRONYMS & ABBREVATIONS

EDD: - Earliest Due Date

FCFS: - First Come First Served

FIFO: - First In First Out

ICT: - Information Communication Technology

KPI: - Key Performance Indicator

MCIT: - Minster of Communication and Information Technology

PPP: - Public Private Partnership

QMS: - Queue Management System

QoS: - Quality of Service

SMS: - Short Message Service

SPSS: - Statistical Package for Social Sciences

SPT: - Shortest Processing Time

SQMS: - Smart Queue Management System

SSK: - Self-Service Kiosk

SSTs: - Self-Service Technologies

TV: - Television

UBS: - Unified Billing System

UPS: - Uninterruptible Power Supply

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ABSTRACT

This study had the aim of assessing the application of waiting lines system in improving customer satisfaction by taking sample Lehulu branches of Kifiya Financials Tech Plc. The study had determined the average arrival rates, the average queue time and average time of service per customer for Lehulu centers (4 sample branches taken namely Arat Kilo, Kazanchis, Addisu Gebeya & Lebu) and besides this, it assessed the impact of psychological aspects of waiting on overall customer satisfaction. The methodologies used for data collection were site observation, in which structured observation check lists were used, a pre-tested/ adopted questionnaire and scheduled interview questions. For the site observation an entire customers randomly visiting the centers within the sampled time-intervals have been accounted for data collection and accordingly 1451 customers queue were considered. A sample of 659 customers was taken for the data collected through the questionnaire to assess customers' levels of satisfaction towards the queue variables. The queue variables used under the study were perceived waiting time, information provided, the waiting environment and the queue discipline. The response rate of the questionnaire was 572 (86.8%). 30 questionnaires were distributed during pilot test period to conduct different validity tests. Scheduled Interview questions were presented to two area managers of Lehulu to assess the level of understanding the management has on the actual situation of customer waiting lines at the centers and the planed actions to improve it further. For the analysis of the site observation data, single queue-multiple server model of queue analysis was used, while frequency tables, graphs and correlation analysis were used for analyzing the data collected through questionnaire. Based on the findings of the study, the average arrival rate at Lehulu centers was 70 customers per hour. The average queue time and average service time were 13.56 minutes and 3.1 minutes respectively. However, if only three of the branches are considered (excluding Addisu Gebeya) the total average queue length will increase to 21 minutes from 17.01 minutes, which is above the standard time of 18 minutes set by the company. There is 0.43 probability that a customer must wait for service with the current average number of functional servers (5). With respect to customer satisfactions towards the queue variables, only 43% of the customers are happy with the perceived waiting time, only 28.9% of them are happy with the information provided, only 18.5% of them are happy with the waiting environment and 72.6% of them are happy with the implementation of first come first served queue discipline at the Lehulu centers. The study has put forth recommendations mainly related to the need of improvements from the customers queue variables perspective. This study has significant benefits to many people & organizations, especially to Lehulu and other similar service organizations like banks. It also adds to the literature on the psychology of waiting and customer satisfaction towards waiting lines.

Keywords: Lehulu, Waiting lines, Queue, Customer Satisfaction

CHAPTER ONE
1. INTRODUCTION

Waiting in lines seems to be part of our everyday life and are inevitable especially in service organizations. Apart from waiting in line at banks, cinema, hospitals, public service shops/ payment centers and the like when leaving in Ethiopia you may observe people waiting in line even when waiting for a taxi or at a bus stops (to create convenience for first arrive- first served discipline) and sometimes also at bakery shops. Some queues are intolerable for customers when it demands considerable amount of their valuable time. And so, organizations need to have a mechanism to conduct analysis on how to make the queue tolerable for customers & reduce their dissatisfaction resulting from it. Hence, this study aims at contributing to this need by conducting an analysis on the area and come up with findings that would benefit similar organizations by taking Kifiya Financials Tec Plc – Lehulu service centers as cases study area. Lehulu is a network of centers providing a Unified Billing System that allows citizens to pay all their Utility bills (Electricity, Water, and landline phone) in any one its centers.

1.1 Background of the Study

Customers waiting in line to receive services in any service system are inevitable and that is why queue management has been where the manager faces huge challenge. This is because customers who cannot be served immediately have to queue (wait) for service and the time could range from few minutes (acceptable) to long hours (annoying) and time being a resource ought to be managed effectively and efficiently (because time is money) the inefficiency in managing it could result in dissatisfaction of customers. Waiting for a service is generally undesirable for customers. Time-saving and convenience are commonly mentioned by consumers as among the most important motivations for purchasing a service. However, waiting to be served may neutralize potential benefits and negatively affect attitudes toward the quality of service (QoS), brand or the product (Ryan

and Valverde, 2003). As such management is faced with the problem of reducing waiting time.

Nowadays, customers do not simply demand for quality but they also demand for speed. According to Leoven (2015), customers do not tolerate waiting in line for long periods of time just to receive whatever kind of products or services unless those things are really important or more valuable than the time spent for waiting. And so, the objective of every business is to serve customer at very quick time. The more responsive it can be to customer, it will gain more customer satisfaction. In dynamic business environment, industries in the service sector try to build competitive advantage in the way the customers are served. The operation manager has to find ways to solve various problems arising out of customer's satisfaction. The waiting line problem is not only problem for customers; it is problem even for employees (Deepak, 2016). Waiting-time is a well-documented predictor of perceived service quality and customer satisfaction. Evidence supports relationships between actual waiting-time, perceived waiting-time, perceived service quality and customer satisfaction (Baker and Cameron, 1996; Davis and Maggard, 1990; Hui and Tse, 1996; Katz *et al*., 1991; Taylor, 1994). However, customer satisfaction and perceived service quality have been found to be most strongly influenced by actual waiting-times (Durrande-Moreau, 1999).

Problematic queuing systems (i.e., long lines) can lead to the customer's perceptions of excessive, unfair, or unexplained waiting time—resulting in significant detrimental effects on the customer's overall satisfaction with the service transaction. Speed of service has been shown to provide businesses a competitive advantage in the marketplace. In addition; the literature reveals several studies documenting customer dissatisfaction with long waiting times and indicates that this is a pervasive problem and a common source of anxiety and dissatisfaction among customers (Yusuf *et al.*, 2015).

Several operations management techniques have been used to examine the relationship between resources and waiting-times. A queuing model of a system is an abstract representation whose purpose is to isolate those factors that relate to the system's ability to meet service demands whose occurrences and durations are random (Sztrik, 2010).

Queuing theory utilizes mathematical models and performance measures to assess and hopefully improve the flow of customers through a queuing system. Queuing theory has many applications and has been used extensively by the service industries. Some of the analysis that can be derived using queuing theory include the expected waiting time in the queue, the average waiting time in the system, the expected queue length, the expected number of customers served at one time, the probability of balking customers, as well as the probability of the system to be in certain states, such as empty or full (Patel *et al*, 2012). Queuing theory over the years has been the only panacea for customer satisfaction in the banks but most banks fail to properly implement this application effectively and efficiently (Yusuf *et al.*, 2015).

The application of waiting line system to manage service efficiency and customers' satisfaction is at its infant stage or almost not much practiced by most Ethiopian organizations that usually have long customers' queue. And so, different studies need to be conducted on the area and on the existing situation to come up with improvements in the service delivery system and the related customers' satisfaction of mainly the service industries. And hence, this is the area where this study aims to assess and contribute.

1.2 Background of the Organization

Kifiya is a Digital Service Provider leveraging innovative technology to enable and provide electronic, branchless banking and mobile money services. Kifiya Financial Technology Plc. (Kifiya) was established in February 2010 by the founders who had long experience in Information Communication Technology (ICT) in Ethiopia. Kifiya Plc. is a company dedicated to making financial and non-financial services simple, affordable and within reach in Ethiopia and beyond. Its vision and mission statements as put on the company's website (Kifiya Financial Technologies, n.d.) are:

- **VISION: -** To make a contribution to improving the lives of people by making transactions simple, affordable, and within reach.

- **MISSION: -** To create an integrated, scalable service that enables access to financial and non-financial services by building sustainable technology and distribution infrastructure.

Kifiya Financial Technology Plc, in Public Private Partnership (PPP) with the Ethiopian Ministry of Communication and Information Technology launched eService Centers known as "Lehulu" in Addis Ababa in February 2013. Lehulu is a network of centers providing a Unified Billing System that allows citizens to pay all their Utility bills (Electricity, Water, and landline phone) in any one of 34 centers throughout Addis Ababa.

The Amharic word "Lehulu" implies a dual meaning, "for everyone" and "for all services." The centers are based on a "Build, Own, Operate, and Transfer" model to deliver bill payment services for three utilities – water, electricity and telephone – in any one of the new locations. For the first time in Ethiopia, citizens have been provided with the convenience of one-stop service to pay their utility bills anywhere, quickly and easily, during extended working hours, accompanied by an unparalleled level of customer service.

Currently, 34 Lehulu centers have been opened in Addis Ababa, receiving payments for Ethio-Telecom, Addis Ababa Water and Sewerage Authority and Ethiopian Electric Power Corporation, with seven others to become operational in the near future (Kifiya Financial Technologies, n.d.).

Lehulu aims to provide Customers with Benefits like: pay for all utilities in one place, travel costs reduced with travel to only one center, pay at any Lehulu Center, extended opening hours, queue management system for reduced wait time, service provided at no additional charge, trust and respect, helpful Information Desk, & friendly and helpful staff.

1.3 Statement of the Problem

Customers identify waiting in line as frustrating, stressful and expensive. What determines customer behavior is the comparison between the expected benefit of getting the service and the expected cost of waiting (Conte, Scarsini and Sürücü, 2016). Furthermore, both the actual and perceived wait times are the most important & critical ones to customer satisfaction.

Lehulu/ Kifiya being a company providing services related to bill payments for three utilities (water, electricity and telephone) to citizens in Addis Ababa and recently to two other regions, Mekelle & Bahirdar is also facing the challenges of effectively managing customers queue. Hafte Gebreselassie (2016) in his study on the assessment of the status of PPP in Ethiopia the case of Service Delivery in Unified Billing System indicated that some centers have very long queues while others are not. And he cited that the company needs to make a deep study on the number of customers to open proportional centers to serve the users, and giving some training to customers to have information about the possibility to pay at any of the 34 centers to reduce the existing challenge.

Long waiting lines of citizens looking to settle their utility bills at Lehulu service centers are a common phenomenon on payment days from 26th – 17th days of the months, and especially during the beginning and last few days of the payment due dates. In most observed centers, Lehulu doesn't use automatic queue management system but rather security guards are managing people to form waiting lines. In a recent study conduct by Rahel (2014), it was indicated that according to Service Level Agreement between MCIT & Kifiya Technology plc, one customer will only be required to wait 15 minutes in queue and 3 minutes on counter which is far from the actual scenario existing now as observed in some centers. In a study conducted by Hafte Gebreselassie (2016) the results indicated that 61.2% of the respondents to the study replied they wait beyond the agreement time indicated. On the other hand, as observed at some centers the waiting environment, which also contributes to customer satisfaction, is not attractive/ conducive to wait in line. In an article published on Addis Fortune by Elleni Araya (2013), it was indicated that almost all of those queued in the long line at Lehulu center located inside an ethio-telecom branch

office on Fitawrari Habtegiorgis Street, most with shawls or hats over their head to find some respite against the burning sun, could be heard grumbling about standing there for hours. Some customers most of the time give up and leave after queuing for up to six hours.

There are also shortages of functional service counters at some centers. This was also indicated in a study conducted by Hafte Gebreselassie (2016); in which respondents to his study cited the lack of enough accountants on some centers that properly serve customers. Some customers who settle their telephone bills at Lehulu also expressed their dissatisfactions to ethio telecom and requested for ethio to arrange a settlement of their bills at ethio shops instead (source: Information from Ethio telecom – Customer Services – Billing & Credit Control Section).

For all the above reasons, studying the existing situation, identifying possible improvement areas and then the application of a better queuing management/ waiting line system to improve its customer service by reducing customer-waiting time is of paramount importance to the company in order to deliver better customer satisfaction. And this is where the researcher aimed to contribute through this study.

1.4 Research Questions

Q1. How aligned is the average waiting time in queue & average service time with the standard time defined by the company?
Q2. How do customers rate the waiting line system of Lehulu?
Q3. How do customers perceive the waiting time at Lehulu service centers?
Q4. To what extent are customers satisfied with the perceived waiting time, information provided, the waiting environment, and the queue discipline at Lehulu centers?
Q5. What is the relationship between queue management system and customers satisfaction?

1.5 Research Objectives

The main aim of this study is to determine the average arrival rates, the average queue time and average time of service per customer for Lehulu centers and besides it assess the impact of psychological aspects of waiting on overall customer satisfaction. Therefore the general objective of this study is to analyze the level of performance of Lehulu in managing customers' waiting line.

The specific objectives of this study are to:

- ✓ Measure the arrival rate, the average waiting time in queue & average service time and its alignment with the standard time defined by the company
- ✓ Assess the current queue management practice of Lehulu centers and its rating by customers
- ✓ Assess the perceived waiting time by customers on the queue at Lehulu centers
- ✓ Assess the extent of customers satisfaction on the perceived waiting time, the information provided, the waiting environment & queue discipline at Lehulu centers
- ✓ Analyze the relationship between queue management system and customers satisfaction
- ✓ Evolve strategies to improve the waiting line system of Lehulu centers

1.6 Significance of the Study

This study has significant benefits to many people & organizations, especially to Lehulu and other similar service organizations like banks. First of all, it adds to the literature on queuing theory and customer satisfaction which will be accessed by lecturers and scholars.

Lehulu management will benefit a lot from this study as it will serve as a basis for Lehulu to assess whether workflows and procedures should be revisited, planning and operation need to be reviewed and if service time should be reduced, thereby leading to improved customer's satisfaction and improved overall efficiency in service delivery. Most importantly, it will benefit the customers of Lehulu (the public at large) in improved speed of service, convenience and saved valuable time if Lehulu implements the recommended actions.

Furthermore, the company could also improve its image both in the eyes of the general public & the government. This might result in getting the approval to extend their service to other regional cities & other similar service as well. Additionally, they could also get the attention & approach of other companies that look to outsource their service delivery to customers.

1.7 Scope of the Study

The scope of the study is limited to analysis of the queuing system of Lehulu from the time of customers' arrival up to served time which is acquired through site obseravtions. The study also incorporated the responses of customers & Lehulu management with respect to waiting time system of Lehulu at selected branches (those with highest number of customers/ transactions) from the 34 Lehulu centers and their level of satisfaction towards the waiting line situation which was acquired through questionare data distributed. Other datas considered are those acquired through interviews made to the management of Lehulu. The study 34 branches and the total population considered for the study are those found within Addis Ababa city.

The company's working hours used for the data collection was random hours taken from the peak & normal hours of the 8 working hrs. & a random of any of the days taken from again the peak and normal days of the 30 days within a month. The time frame for the data collection was from April 5 to 20, 2017.

1.8 Delimitations of the Study

As the scope of the study is on the queuing system (waiting line system) of the company & the suggestions are from this perspective in improving customer satisfaction other scenario's that could impact & improve customer satisfaction were not considered. That is to mean that customer satisfaction is driven by the customer experience, and that, in turn, critically depends on how well the institution is meeting the customer's expectations, which have different dimensions.

From the 34 Lehulu centers only 4 centers (sample of those with the highest & lowest number of customers/ transactions each month) are selected which might limit the observation of other factors that exist at the other centers. Furthermore, as the data collection is for the situation in one particular month from the 12 months of the year & a random from them, it might not give the exact situation that could vary due to the situations in the other months.

1.9 Limitations of the Study

As automatic queueing systems were not available at the Lehulu centers, providing sequential numbers to customers upon arrival and recording of arrival time, queue time and service time were done manually. And so, apart from requiring additional budget for a couple of additional data collectors assigned for the recording of observational data and distributing of questionnaires to customers, there might be errors of 1 or 2 minutes in recording of the exact minutes for each customer.

1.10 Definition of Key Terms

- **Queue:** customers waiting to be served form a waiting line (a line or sequence of people awaiting their turn) (Slack, Chambers & Johnston, 2010)
- **Queue Discipline:** this is the set of rules that determine the order in which customers waiting in the queue are served (Slack, Chambers & Johnston, 2010).
- **Servers:** a server is the facility that processes the customers in the queue (Slack, Chambers & Johnston, 2010).
- **Arrival rate**: the rate (λ) at which customers arrive at a service facility during a specified period (Russlle & Taylor, 2011)
- **Calling population**: the source of customers to a waiting line (Russlle & Taylor, 2011).
- **Service time**: the time required to serve a customer; the time period divided by service time yields the service rate (μ) (Russlle & Taylor, 2011).

- **Utilization factor (ρ)**: the probability the server is busy and the customer must wait (Russlle & Taylor, 2011).
- **Customer satisfaction:** a term frequently used in marketing, is a measure of how products and services supplied by a company meet or surpass customer expectation.
- **Customer expectations:** are beliefs about service delivery that serve as standards or reference points against which performance is judged (Zeithaml, 1993)
- **Perceived waiting time:** The time elapses between arrival at the center and getting served, expected by customers.
- **Waiting Environment:** often represent the first interaction point of the service (bill settlement) journey and as such contribute to end-user overall experience

1.11 Organization of the Study

This study is organized in to 5 chapters. The first chapter is the Introductory part in which the background of the study, statement of the problem, research questions, research objectives, significance of the study, scope of the study, delimitations & limitations of the study and definitions of terms are included. The second chapter incorporated the review of related literatures. The chapter to follow describes the research methodologies used to conduct the study like the population and sampling, the research approach & design, the data sources, data collection and data analysis. In the fourth chapter the findings and results of the analysis are discussed and interpreted while in the final chapter the summary of findings, conclusions and recommendations from the researcher's perspective are presented.

CHAPTER TWO
2. RELATED LITERATURES REVIEW

In this part of study, the related literatures which were reviewed from different sources are presented. The literatures are organized and categorized under theoretical review, empirical review, & conceptual framework.

2.1 Theoretical Review

Customers waiting in line to receive services in any service system are inevitable (Obinwanne & Darlingtina, 2015), or queues are omnipresent (Shanmugasundaram and Banumathi, 2016) meaning that while sometime demand may be satisfied instantly, at other times customers may have to wait (Slack, Chambers and Johnston, 2010) whenever the capacity of a service provider fails to meet the instantaneous demand (Conte, Scarsini, and Sürücü, 2016). A waiting line is one or more "customers" waiting for service. The customers can be people or inanimate objects, such as machines requiring maintenance, sales orders waiting for shipping, or inventory items waiting to be used (Krajewski, Ritzman and Malhotra, 2010). Businesses of all types, industries, schools, hospitals, cafeterias, book stores, libraries, banks, post offices, petrol pumps, theatres – all have queueing problems (Shanmugasundaram and Banumathi, 2016) and so everyone experienced the inconvenience of waiting in line when approaching these businesses to get the respective services. Because time is a valuable resource, the reduction of waiting time is an important topic of analysis (Taylor, 2013).

Waiting lines form because people or things arrive at the servicing function, or server, faster than they can be served (Taylor, 2013) or at unpredictable intervals (Krajewski, Ritzman and Malhotra, 2010). However, this does not mean that the service operation is understaffed or does not have the overall capacity to handle the influx of customers. In fact, most businesses and organizations have sufficient serving capacity available to handle their customers in the long run. Waiting lines result because customers do not arrive at a

constant, evenly paced rate, nor are they all served in an equal amount of time (Taylor, 2013). Most often, the rate of producing the service also varies, depending on customer needs (Krajewski, Ritzman and Malhotra, 2010). Thus, a waiting line is continually increasing and decreasing in length (and is sometimes empty), and it approaches an average rate of customer arrivals and an average time to serve the customer in the long run (Taylor, 2013).

Waiting lines are non-value added occurrences. In lean systems, waiting is one of the seven wastes (Stevenson, 2009). According to Yusuf, Blessing & Kazeem (2015) queuing has become a symbol of inefficiency of publicly funded bank in the world. For customers, having to wait for service can range from being acceptable (usually short waits), to being annoying (longer waits), to being a matter of life and death (e.g., in emergencies). For businesses, the costs of waiting come from lower productivity and competitive disadvantage. For society, the costs are wasted resources (e.g., fuel consumption of cars stuck in traffic) and reduced quality of life. Hence, it is important for system designers and managers of existing service systems to fully appreciate the impact of waiting lines (Stevenson, 2009).

According to Taylor (2013), the improvement of service with respect to waiting time has also become more important in recent years because of the increased emphasis on quality, especially in service-related operations. Now days customers are increasingly equating quality service with rapid service. Aware of this, more and more companies are focusing on reducing waiting time as an important component of quality improvement. Stevenson (2009) added that one reason that queuing analysis is important is that customers regard waiting negatively. Customers may tend to associate this to poor service quality, especially if the wait is long.

According to Stevenson (2009) there are several managerial implications of waiting lines, the chief among those reasons being: - the cost to provide waiting space; a possible loss of business should customers leave the line before being served or refuse to wait at all; a possible loss of good will; a possible reduction in customer satisfaction and the resulting congestion that may disrupt other business operations and/or customers.

2.1.1 Queuing Systems & Terminology

The history of queueing theory goes back nearly 100 years. It was born with the work of A.K. Erlang who published in 1909 his paper, the theory of probabilities and telephone conversations. Erlang's motivation was to develop tools for the analysis and design of telephone systems an application that continues to the present day to motivate research in queueing theory (Shanmugasundaram and Banumathi, 2016).

According to Slack, Chamber & Johnston (2010), the dilemma in managing the capacity of a queuing system is how many servers to have available at any point in time in order to avoid unacceptably long queuing times or unacceptably low utilization of the servers. Because of the probabilistic arrival and processing times, only rarely will the arrival of customers match the ability of the operation to cope with them. Even when the average capacity (processing capability) of the operation matches the average demand (arrival rate) on the system, both queues and idle time will occur. In a queue system, the balance between dealing with all customers fairly and the performance of the system is very important (S.A and Huda, 2011). Sometimes the performance of the system is more important than dealing with the customers fairly.

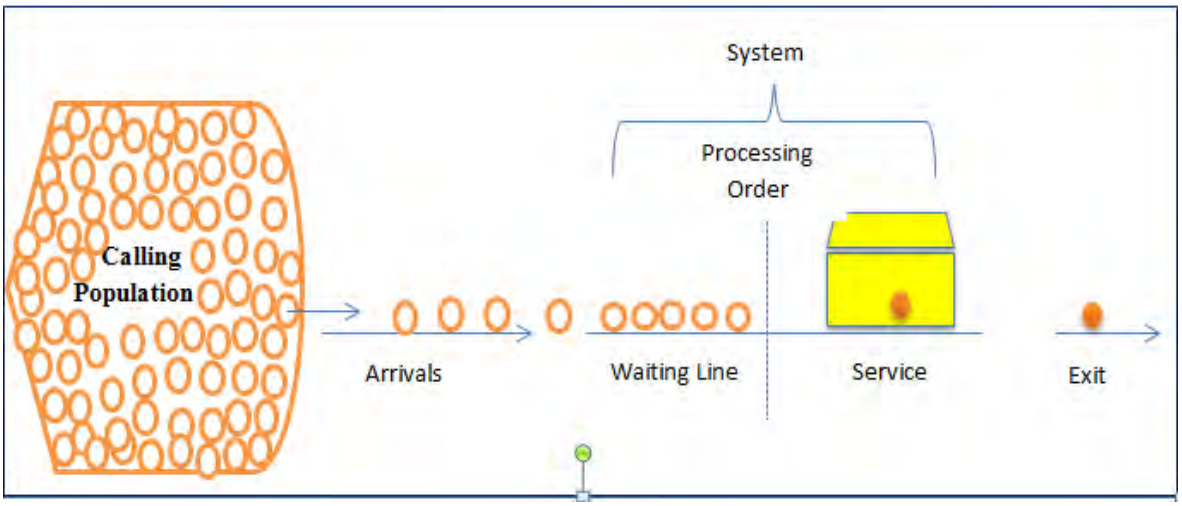
With the help of Queueing model we can find out the mean waiting time in the queue, mean service time, utilization of service facilities, distribution of the number of customers in the queue, distribution of the customers in the system (Malik & Belwal, 2016), the probability of balking customers, as well as the probability of the system to be in certain states, such as empty or full (Patel *et al.,* 2012)

Queue Characteristics

Different authors/ researchers have stated the queue characteristics using different components. Malik & Belwal, (2016) stated that the basic process of a Queueing System comprises of three (3) components: (i) the arrival pattern, (ii) the service pattern and (iii) queue discipline while Noserk Jr and Wilson (2001) stated that queuing system can be

characterized by four (4) components or four main elements: the arrival, the queue discipline, the service mechanism and the cost structure. Stevenson (2009), Krajewski, Ritzman, and Malhotra (2010), Slack, Chambers & Johnston (2010), and Russell and Taylor (2011) also stated four (4) components: (i) population source/ calling population, (ii) arrival and service patterns, (iii) number of servers (channels) and (iv) queue discipline (order of service/ priority rule). Taha (1976) On the other hand stated that queuing systems are characterized by five (5) components: The arrival pattern of customers; the service pattern, the number of servers, the capacity of the facility to hold customers, and the order in which the customers are served. In this study the four most commonly used components stated by the above mentioned authors will be adopted.

Figure 2.1: A Simple Queuing System



(Source: Developed by Stevenson, William J., (2009), Operations Management, 10th edition)

I. The Calling Population/ Population Source

Customer population is the source of input to the service system. In queue management 'customers' are not always human. 'Customers' could for example be trucks arriving at a weighbridge, orders arriving to be processed or machines waiting to be serviced, etc. (Slack, Chambers & Johnston, 2010). There are two possibilities of a population source: Infinite-source and finite-source populations. In an **Infinite-source situation,** the potential number of customers greatly exceeds system capacity. Infinite-source situations exist

whenever service is unrestricted (Stevenson, 2009). An infinite customer population is one in which the number of customers in the system does not affect the rate at which the population generates new customers (Krajewski, Ritzman, and Malhotra 2010). If the potential number of new customers for the service system is appreciably affected by the number of customers already in the system (Krajewski, Ritzman, and Malhotra 2010), or when the potential number of customers is limited (Stevenson, 2009) a **finite-source situation** exists. So, with a finite source of customers the probability of a customer arriving depends on the number of customers already being serviced.

II. Arrival and Service Patterns

The arrival rate/ pattern are the rate at which customers needing to be served arrive at the server or servers (Slack, Chambers & Johnston, 2010). It is how units (customer) joined the queues; which could be static or dynamic i.e. control depends on the arrival rate or service facility and customer. The arrival process of customers is usually specified by the inter-arrival time (the time between successive customer arrivals to the service facility). It may be deterministic (known exactly) or it may be a random variable whose probability distribution is presumed known (Bakari, Chamalwa and Baba, 2014). The arrival process can be regular arrival; that is it follows a Poisson distribution **(**a discrete probability distribution that often describes the arrival rate in queuing theory) with average arrival rate λ (Bakari, Chamalwa and Baba, 2014) meaning that customers arrive at a service facility according to some known schedule (Heizer & Render 2011). It may be in a completely random manner, i.e. when they are independent of one another and their occurrence cannot be predicted exactly (Heizer & Render 2011). It could also be singly or in batches, non-stationary arrival, general independent arrival (Bakari, Chamalwa and Baba, 2014).

Behavior of Arrivals

According to Heizer and Render (2011) most queuing models assume that an arriving customer is a patient customer. Patient customers are people or machines that wait in the queue until they are served and do not switch between lines. Unfortunately, life is complicated by the fact that people have been known to balk or to renege. Customers who

balks refuse to join the waiting line because it is too long to suit their needs or interests. **Reneging** customer are those who enter the queue but then become impatient and leave without completing their transaction. Another scenario that could also exist is rejecting (Slack, Chambers & Johnston, 2010). **Rejecting** – if the number of customers in a queue is already at the maximum number allowed, then the customer could be rejected by the system.

III. Number of Servers (Channels)

A server is the facility that processes the customers in the queue. In any queuing system there may be any number of servers configured in different ways (Slack, Chambers & Johnston, 2010). According to Krajewski, Ritzman and Malhotra (2010), the service system may be described by the number of lines and the arrangement of facilities. Waiting lines may be designed to be a single line or multiple lines. Service facilities consist of the personnel and equipment necessary to perform the service for the customer. Service facility arrangement is described by the number of channels and phases. The number of **channels** in a queuing process is the number of parallel servers available. The number of **phases**, on the other hand, denotes the number of sequential servers each customer must go through to complete service (Russell and Taylor, 2011). Some services require a single phase, while others require a sequence of phases.

In the **single-channel, single-phase** system customers form a single line and go through the service facility one at a time and get served by a single server facility. The **single-channel, multiple-phase** arrangement requires customers form a single line and proceed sequentially from one service facility to the next (performed in sequence by more than one facility). The **multiple-channel, single-phase**, arrangement on the other hand requires customers form more than one line, depending on the design, and provided the same/ different services at more than one facility. The **multiple-channel, multiple-phase** arrangement occurs when customers can be served by one of the first-phase facilities but then require service from a second-phase facility, and so on (Krajewski, Ritzman and Malhotra, 2010).

IV. Queue Discipline (Order of Service/ Priority Rule)

The **queue discipline** is the order in which waiting customers are served. The most common type of queue discipline is **first come, first served-**the first person or item waiting in line is served first (Krajewski, Ritzman and Malhotra, 2010; Russell and Taylor, 2011; Heizer & Render, 2011). Other disciplines also exist like **last in, first out** (the last part is selected first), **random** (select one at random from the full parts), or according to **predetermined schedule** (customers are scheduled for service according to a predetermined appointment/ prearranged schedule regardless of when they arrive at the facility) (Russell and Taylor, 2011). Furthermore, the priority disciplines might take also the customer with the **earliest promised due date** (EDD) or the customer with the **shortest expected processing time** (SPT) or a **preemptive discipline**, which allows a customer of high priority to interrupt the service of another customer (e.g. in emergency rooms, patients with the most life-threatening injuries receive treatment first, regardless of their order of arrival (Krajewski, Ritzman and Malhotra 2010).

2.1.2 The Psychology of Waiting

According to Anderson (2007) waiting line management has the greatest dilemma for managers seeking to improve the on investment of their operation; as customers don't tolerate waiting intensely. Whenever customer 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 (Bakari, Chamalwa and Baba, 2014). Slack, Chambers and Johnston (2010) stated that if the 'customers' waiting in a queue are real human customers; an important aspect of how they judge the service they receive from a queuing system is how they perceive the time spent queuing. It is well known that if you are told that you'll be waiting in a queue for twenty minutes and you are actually serviced in ten minutes, your perception of the queuing experience will be more positive than if you were told that you would be waiting ten minutes but the queue actually took twenty minutes. Because of this, the management of queuing systems usually involves attempting to manage customers' perceptions and expectations in some way.

According to Russlle & Taylor (2011), in some instances, it is not possible to reduce waiting times, or other important issues besides cost may be involved. When these situations occur, the problem of providing quality service often depends more on psychological solutions. In other words, the organization will try to make waiting more Pleasant. Russlle & Taylor (2011) mentioned sited some techniques used by different companies to make waiting more pleasant, like use of costumed characters to entertain customers waiting in line and distract them from the long waits, selling food, drinks, and souvenirs to people in line, providing accurate wait times, which are more tolerable than vague ones, and providing frequent updates, for customers who are particularly annoyed by long waits, selling special passes for a fee that allows customers to go to the front of the line, providing magazines and newspapers for customers in waiting rooms to read while waiting, and also availing televisions occasionally in waiting areas, etc.

Maister (1985) has come up with a number of principles that influence how customers perceive waiting times. They are: - time spent idle is perceived as longer than time spent occupied; the wait before a service starts is perceived as more tedious than a wait within the service process; anxiety and/or uncertainty heighten the perception that time spent waiting is long; a wait of unknown duration is perceived as more tedious than a wait whose duration is known; an unexplained wait is perceived as more tedious than a wait that is explained, the higher the value of the service for the customer, the longer the wait that will be tolerated; and waiting on one's own is more tedious than waiting in a group (unless you really don't like the others in the group).

Researchers have argued that service waits can be controlled by two techniques: operations management or perceptions management (Katz *et al*., 1991).

2.1.3 Waiting lines & Customer Satisfaction

The objective of every business is to serve customer at very quick time. The service sector industry has to fill the gap in the waiting time of the customers. The more responsive it can be to customer, it will gain more customer satisfaction. In dynamic business environment, industries in the service sector try to build competitive advantage in the way the customers

are served. The operation manager has to find ways to solve various problems arising out of customer's satisfaction. The waiting line problem is not only problem for customers; it is problem even for employees (Hajoary, 2016).

According to Slack, Chamber & Johnston (2010), if the operation has too few servers (that is, capacity is set at too low a level), queues will build up to a level where customers become dissatisfied with the time they are having to wait, although the utilization level of the servers will be high. If too many servers are in place (that is, capacity is set at too high a level), the time which customers can expect to wait will not be long but the utilization of the servers will be low. This is why the capacity planning and control problem for this type of operation is often presented as a trade-off between customer waiting time and system utilization. What is certainly important in making capacity decisions is being able to predict both of these factors for a given queuing system.

Waiting in a queue is irritating, frustrating and, hence, costly. Therefore, a customer may decide to balk at the prospect of waiting or to abandon the queue after joining and waiting for a while. Moreover, customers may even be willing to pay extra in order to decrease or eliminate waiting times. What determines customer behavior is the comparison between the expected benefit of getting the service and the expected cost of waiting (Conte, Scarsini and Sürücü, 2016).

A number of more recent theoretical models include feedback in order to understand the relationship between customer satisfaction and their decision to return to the service facility. Despite this, there has been relatively little emphasis on understanding the effects of expectations and experiences (while using the service facility) on customers' decision making and the impact of individual choice on the formation of queues (Sankaranarayanan *et al.,* 2012).

Davis *et al* (2003) assert that providing ever-faster service, with the ultimate goal of having zero customer waiting time, has recently received managerial attention for several reasons. First, in the more highly developed countries, where standards of living are high, time becomes more valuable as a commodity and consequently, customers are less willing to

wait for service. Second, this is a growing realization by organizations that the way they treat their customers today significantly impact on whether or not they will remain loyal customers tomorrow. Finally, advances in technology such as computers, internet etc., have provided firms with the ability to provide faster services. For these reasons bank administrators, physicians and managers are continuously finding means to deliver faster services, believing that the waiting will affect after service evaluation negatively (Yusuf, Blessing and Kazeem, 2015).

Strong evidence shows that waiting time and length of a queue are positive predictors of quality perception, satisfaction and purchase intentions when quality is uncertain (Koo & Fishbach, 2010; Giebelhausen, Robinson, & Cronin, 2011; Kremer & Debo, 2013).

2.2 Empirical Review

Queuing management has been applied very successfully in many service-oriented industries. The applications were to optimize staffing levels, to identify an optimal configuration of capacity and staffing levels, to significantly improve employee morale and reduce operating costs and to virtually eliminate long lines and greatly improve customer satisfaction (Nosek and Wilson, 2001). From the empirical studies reviewed it was observed that different queuing applications or queuing management techniques were used/ suggested to manage waiting lines.

A study conducted by Conte, Scarsini and Sürücü (2016) on the impact of time limitation on judgment and decision making by applying a queueing experiment tried to answer the question of whether customers accurately calculate the costs and benefits of joining a queue and make their decision accordingly. The study contributes to the characterization of customers' queueing behavior by experimentally examining the situation in which subjects need to choose between two queues under different treatment conditions of time allowance. Their analysis suggests that, with no time limitation, a considerable proportion of the population behaves consistently with the principles of rationality, which require comparing the profits of joining each queue. Time limitation increasingly harms decision performance and decreases that proportion. Another interesting result they obtained was that, when

introducing time limitations, decision performance worsens significantly even if the time allowance is more than what is used under the no time limitation treatment. And so they stated that this observation supports the idea that it is the existence of a limitation but not the insufficiency of the time allowance that harms the performance.

In a study conducted by Kokkinou and Cranage (2013) on using self-service technology to reduce customer waiting times, it was stated that a more recent and cost-effective approach to reduce waiting times has been to introduce self-service technologies (SSTs) into the service delivery process. This study aimed at testing if the introduction of SST in a service delivery process could reduce actual waiting-times and improve service levels since there was no empirical evidence that introducing an SST alternative to the existing service delivery process can indeed help firms reduce waiting-times (Oh and Jeong, 2009). It indicated that SSTs have been defined as technological interfaces that allow customers to produce services without a service employee's involvement (Meuter *et al*., 2000). For example, hotel guests can bypass the front desk and use a self-service kiosk (SSK) to check-in and receive their key cards without the direct contribution of a service employee (Dabholkar, 1996; Weijters *et al.*, 2007). The results of the study showed that longer self-service kiosk processing times and higher failure rates led to longer waiting-times, especially when customer demand was high. Accordingly, the study suggested for service providers considering self-service technology implementation to pay careful attention to the design and performance of the self-service technology.

S.A and Huda (2011) in their study on application of automatic queuing model for banking system presented a new technique for queuing system called automatic queuing system. The proposed technique showed improvements in average waiting time. They also indicated that in future work it will be more effect to add more factors in testing to take the right decision for choosing one of the available scheduling algorithms, such as throughput, utilization, and response time.

Jhala and Bhathawala (2016) in their study on Smart Queue Management System for Banking Sector introduced a new way of queue management system called as Queue Management System with SMS notification which will issue a queue ticket to a customer

and later announce the ticket number when service is available, eliminating the need to stand in line while waiting. In this way, queue management systems help to provide comfort as well as fairness to customers, by allowing them to maintain their position in the queue while they are seated comfortably or engaged in constructive activity. It reduces queue length and actual waiting times, thus improving customer satisfaction. It enhances the productivity and motivation of the staff providing excellent customer service. After sending a text "Q" to the number tagged to the branch they want to visit customers will receive their queue number as well as the number of customers that are being served ahead of them. If there is a longer wait time, customers will also receive a reminder SMS when their turn is nearing. Once their turn is up, customers can proceed directly to their assigned counter. If they miss their turn, they will receive an SMS with the option to rejoin the queue. For those customers who are not having mobile phones and for those who are not comfortable to use SMS facility, branch staffs are at hand to assist them to provide them with appointment time through telephonic facility. There is no difference in queue priority if customers opt for either the SMS or telephonic facility to get appointment.

Customers' satisfaction has gained increasing attention over the past 20 years (Sitzia and Wood, 1997). Customers' evaluation of service quality is affected not only by the actual waiting time but also by the perceived waiting time. As stated above the act of waiting has significant impact on customers' satisfaction. The amount of time customers must spend waiting can significantly influence their satisfaction (Davis and Vollman, 1990). Furthermore, research has demonstrated that customer satisfaction is affected not just by waiting time but also by customer expectations or attribution of the causes for the waiting (Taylor, 1994). Consequently, one of the issues in queue management is not only the actual amount of time the customer has to wait, but also the customer's perceptions of that wait (Davis and Heineke, 1994). According to some studies there are two approaches to increasing customer satisfaction with regard to waiting time: through decreasing actual waiting time, as well as through enhancing customer's waiting experience (Katz, Larson, and Larson, 1991; Davis and Heineke, 1994).

Obinwanne & Darlingtina (2015) in their study on application of queuing models to customers management in the banking system by taking a bank that adopted the M/M/C

queuing model investigated the expected waiting time of customers and the actual waiting time in banks, to analyze the gap between the actual and expected waiting time. The study emphasized on the advantage of using a single system with multiple servers, and as per the findings suggested a solution of adding more servers to help reduce time spent on queue and improve customer's satisfaction.

As per the results of a study conducted by Malik & Belwal (2016) on application of queuing theory to patient satisfaction (at combined hospital), nearly half of the studied sample patients think that time they spent in the queue is very long and so it is annoying, while it was observed that 72.81% of the patients were patiently waiting for seeing doctor, the probable reason being giving priority for being healthy for which they can even wait for their turn. With respect to behavior of arrivals few patients left the queue before their turn to be seen by the doctor. On the satisfaction level only 35% of the patients were satisfied with the service they received. On the other hand the improvements suggested by the patients were that doctors should come on time, a very high percentage suggested that first come first serve scenario should be strictly followed, while some suggested that a proper sitting arrangements should be done. The mean arrival rate of patients everyday was greater than the mean service rate of patients on that same day, which means that the waiting line would be formed which would increase indefinitely; the service facility would always be busy.

A study by Paul, Adullahi, & Halilu (2015) on the application of queueing model/waiting lines in improving service delivering in higher institutions (Nigeria) identified that the students registration queue of the institution was perceived to be long/ very long by more than 60% of the students; while the attitudes of the registration officers are viewed by 40% of the students as not cordial. The major findings of the study were: lack of full online registration, not assign enough staff to various service points with the required facilities when compared with the inflows of students, the period given for registration being too short, and the disorderly behavior of some students and members of staff are the factors contributing for long queues.

As stated by Perry Kuklin in his article entitled “Five Strategies to Improve Customer Flow”, one way to manage the customers joining the queue is to reduce the anxiety they might experience while waiting. Single-line queuing promotes fairness and reduces the need for people to jockey for the “best” line or the “right” line. This move can also limit the arriving customers to exhibit behavior such as balking and reneging.

Mwangi and Ombuni (2015) in their empirical analysis of queuing model and queuing behavior in relation to customer satisfaction identified that moving to a multi-server system benefits the customers in terms of time they wait to be served. Students (JKUAT university students) were found to be not happy with the waiting time and so would rather pay school fees over the course of the semester so as to avoid long queues at the start or final weeks of the semester. With respect to the service rate, students in all the years of study perceive it to be poor and think it can be improved by increasing the staff and working harder. In relation to arrivals behavior, senior students were found to solve queuing problem by jumping the queue. Here, females were identified to be less tolerant and solve the problem by abandoning the queue completely only to come back another day while males tend to come back on the same day. The queuing system in use (which takes 33.4 minutes to be served, and viewed to have shortage of accounting clerks & servers) was also found to be not efficient since it creates a queuing problem to such an extent that some students choose to jump the queue to solve the problem, while others solve it by abandoning the queue and coming back the same.

In a study conducted by Austria (2015) on the queue management practices of quick service restaurants illustrated the extent of implementation of restaurant’s waiting line practices in terms of customer arrival, waiting line and service facility. It also assessed the level of satisfaction of the customers in the restaurant’s queue management practices in areas mentioned. One of findings of the study indicate that the use of electronic queuing number system, which utilizes queuing number system to determine the number or order of the customers to be served, results to a faster transaction at the counter (it was also indicated to be the perception of the customers). It was also indicated that Restaurants with different waiting line structures tend to have a different extent of implementation of queue management practices in terms of waiting line and service facility. The number of channels

open and phases available for customers as elements of waiting line structure affects the extent of implementation of practices in such areas. Customers were also identified to be happy with the implementation of the first come, first serve priority rule of the restaurants and the way they handle elderly, pregnant and differently abled customers. Customers are generally not so satisfied with the existing service facility of the restaurants, which includes the number of channels open, the service time and other facilities provided to ease the discomfort or boredom of the customers while waiting in line. There is an inadequate facility to be used by the customers while waiting in line or to occupy the time of the customers while waiting. The customers regard the use of the queuing number system, electronic display board and streamlined process as important components of service facility that provide satisfaction to customers. The waiting line structure also affects the level of satisfaction of the customer specifically in terms of waiting line and service facility. Customers want a structure that will facilitate fast and a convenient order taking and picking. Specifically, based on findings it could be concluded that the customers prefer two–channel, single phase and three channel single phase system.

According to the study by Nosek and Wilson (2001) on queuing theory and customer satisfaction (applications to a hospital pharmacy) the key factors that greatly influence satisfactions include consumer's expectations, attitudes, and intention about the service provided. Expectations are the consumer's anticipated beliefs about a product or service prior to the interaction. Attitudes consist of the consumer's evaluations, emotional feelings, and action tendencies toward a product or service that has developed over time. Intentions are the decisions the consumer makes about future actions toward the firm producing the product or service. Together, these factors influence the future behavior or the actual future action taken by the customer. They emphasized that the main goal of queuing management should be to maximize the level of customer satisfaction with the service provided. The primary issue in queuing management and customer satisfaction is not the actual amount of time a customer waits for service, but the customer's perception about that wait and the associated level of satisfaction. The study also indicated that utilizing automated queuing technology can help to easily track variables such as customer arrival and departure time; patterns of arrival, prescription fill time, waiting time, and individual staff member productivity. Automated queuing technology can also provide pharmacy customers with

information that can directly improve their queuing experience, such as with a ticket with a unique number and the estimated wait time. This makes for a less confusing, more relaxed, and much more positive waiting environment for the patient. It also stated that by better understanding queuing theory and the various measures associated with customer waiting time (using several tools such as computer simulation, modeling, and automated queuing technology that can assist in the process), service managers can make decisions that have a beneficial impact on the satisfaction of all relevant participants: customers, employees and management.

In a study conducted by Rahel Sertsu (2014), on contribution of Unified Billing System (on Selected Lehulu Centers) in facilitating public service delivery it was identified that 27% of the customers indicate that time to get service at Lehulu centers is above the standard time put (>15 minutes). With respect to overall satisfaction level concerning the convenience to customers of paying bills of the 3 utilities at one place of their choice instead of visiting three utility centers 60% (80 out of 130 sample customers) of the customers fill satisfied with the services of UBS (Unified Billing System).

2.3 Conceptual Framework

Taylor (1994) shows that delay significantly influences the feelings of anger. Slack, Chambers and Johnston (2010) stated that if the 'customers' waiting in a queue are real human customers; an important aspect of how they judge the service they receive from a queuing system is how they perceive the time spent queuing. It is also worth noting the number of principles Maister (1985) has come up with that influence how customers perceive waiting times and accordingly their satisfaction on it, which were mentioned above under the psychology of waiting. According to the study by Nosek and Wilson (2001) on queuing theory and customer satisfaction, the primary issue in queuing management and customer satisfaction is not the actual amount of time a customer waits for service, but the customer's perception about that wait and the associated level of satisfaction. Consequently, we do consider perceived waiting time as a determinant of customer satisfaction.

Other variables that determine customer satisfaction with waiting line management are the information provided in case of delay (Hui and Tse, 1996; Antonides *et al*., 2002), the characteristics of the waiting environment (Pruyn and Smidts, 1998) and Queue discipline. Studies have suggested that any information on the waiting duration can reduce the uncertainty of the wait and lower the overall level of stress experienced by consumers (Maister, 1985). Previous research highlights the impact of queuing information and waiting duration information on the cognitive and affective aspect of the wait when the wait is long (Hui and Tse, 1996). Providing information on accurate wait times, which are more tolerable than vague ones, and providing frequent updates (Russlle & Taylor, 2011) are important in making the waiting more pleasant.

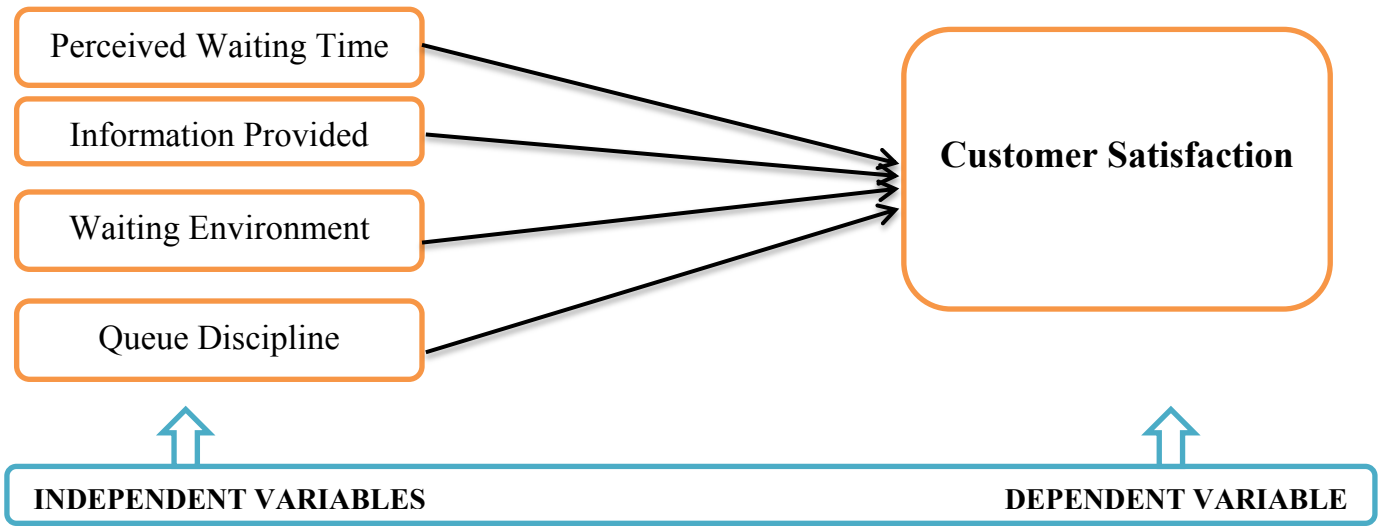
Russlle & Taylor (2011) indicated that when it is not possible to reduce waiting times the problem of providing quality service often depends more on psychological solutions. In other words, the organization will try to make waiting more Pleasant. The attractiveness of the waiting environment is related to its physical design in terms of comfort, space and decor. Service environment influences the affective aspects of waiting time (Baker and Cameron, 1996). A pleasant environment promotes positive feelings within consumers. Pruyn and Smidts (1998) show that perceived attractiveness positively influences the affective response to the wait, a known component of satisfaction. According to Austria (2015), customers regard the use of the queuing number system, electronic display board and streamlined process as important components of service facility that provide satisfaction to them.

The queue discipline is another variable for waiting lines management that influences customer satisfaction. Jhala and Bhathawala (2016) in their study in which they introduced a new queue management system with SMS notification which eliminated the need to stand in line while waiting and help to provide comfort as well as fairness to customers, by allowing them to maintain their position in the queue while they are seated comfortably or engaged in constructive activity resulted in reduced queue length and actual waiting times, thus improving customer satisfaction. The waiting line structure also affects the level of satisfaction of the customer specifically in terms of waiting line and service facility.

Customers want a structure that will facilitate fast and a convenient order taking and picking (Austria, 2015).

Therefore conceptual framework summarizes that; Perceived waiting time, information provided, waiting environment and queue discipline influences customer's satisfaction.

Figure 2.2: Conceptual Framework



(Adopted from Kamau, G. (2012), used in a study on 'Waiting Lines Management and Customer Satisfaction in Commercial Banks in Kenya').

2.4 Summary of Literatures Reviewed & the Identified Literature Gap

Nowadays, customers do not simply demand for quality but they also demand for speed. Waiting in a queue is irritating, frustrating and, hence, costly. What determines customer behavior is the comparison between the expected benefit of getting the service and the expected cost of waiting (Conte, Scarsini and Sürücü, 2016).

Different authors/ researchers have stated the queue characteristics using different components. Malik & Belwal, (2016) stated that the basic process of a Queueing System comprises of three (3) components: (i) the arrival pattern, (ii) the service pattern and (iii)

queue discipline while Noserk Jr and Wilson (2001) stated that queuing system can be characterized by four (4) components or four main elements: the arrival, the queue discipline, the service mechanism and the cost structure. Stevenson (2009), Krajewski, Ritzman, and Malhotra (2010), Slack, Chambers & Johnston (2010), and Russell and Taylor (2011) also stated four (4) components: (i) population source/ calling population, (ii) arrival and service patterns, (iii) number of servers (channels) and (iv) queue discipline (order of service/ priority rule). Taha (1976) On the other hand stated that queuing systems are characterized by five (5) components: The arrival pattern of customers; the service pattern, the number of servers, the capacity of the facility to hold customers, and the order in which the customers are served. In this study the four most commonly used components (calling population, arrival and service patterns, number of servers/ channels and queue discipline) stated by the above mentioned authors were adopted.

Recent books being published and studies being conducted are giving concern to what is refered to as the psychology of waiting. Strong evidence shows that waiting time and length of a queue are positive predictors of quality perception, satisfaction and purchase intentions when quality is uncertain (Koo & Fishbach, 2010; Giebelhausen, Robinson, & Cronin, 2011; Kremer & Debo, 2013). Slack, Chambers and Johnston (2010) stated that if the 'customers' waiting in a queue are real human customers; an important aspect of how they judge the service they receive from a queuing system is how they perceive the time spent queuing.

Traditionally, a queue is studied in the perspective of operations research, using mathematical models to determine the efficiency of the queue under particular settings. However, it has been shown that it solves only part of the problem, the efficiency of the process, while the application of these results to real-world service operational settings is restricted because it does not take human factors into consideration. This indicates that studies conducted on the area of queuing management/ customers' waiting line used to lack showing concern on the related customer satisfaction and the physiological aspects of/ customers' perceptions of waiting. From the empirical studies reviewed it was observed that different mechanisms and methods (like automatic quaueing systems, self services facilities, SMS notification for queue tickets, improvement to the waiting environment,

information provided, etc.) which will make the customers waiting more tolerable or which will make them feel less irritated to the waiting line were suggested. These are mostly related to the psychology of waiting and customers perception towards the waiting which are being given consideration now adays. In the Ethiopian case, however, there are very limited empirical studies regarding the application of waiting line systems and their impact on service efficiency and customer satisfaction. Besides, the researcher has observed the fact that the application of waiting line system to manage service efficiency and customers' satisfaction is at its infant stage or almost not practiced by most Ethiopian organizations that usually have long customers' queue. In a more specific case, apart from the above study on UBS (Rahel, 2014) and another study on Public Private Partnership (PPP) projects in which UBS was taken as one of sample cases (Mesfin Belachew, 2012; Teshome Tafesse, 2014; Daniel Mesfin, 2016 and Hafte Gebreselassie, 2016), there are no studies conducted on the customers waiting line system of Lehulu centers and the customers satisfaction related to it. And hence, this study aims at filling this gap and contributes to future researches on the area.

CHAPTER THREE
3. METHODOLOGY OF THE STUDY

3.1 Description of the Study Area

The study was conducted on Lehulu service centers of Kifiya Financial Technology Plc, which are engaged on collection of bill payment for the three utilities (Water, Electricity & Telephone). They have also recently added to their service list, traffic punishment settlements. For this study purposefully selected sample branches of Lehulu were considered in order to analyze the waiting line system where queue is mostly inevitable as large number of the sample population is being served and where probable issues of customer satisfaction mainly raised. Each center is serving customers of an infinite population from those total customers of Lehulu as the centers are online and any customer can settle payments at his/her convenient center.

3.2 Research Approach and Design

It is a scientific research with positivistic type and an applied research category. An Inductive approach was used to reach to the inferences from the total population. The research type employed is more of descriptive but also analytical to some extent. The research approach is more of a qualitative while quantitative data was also used.

To enable the researcher develop a profound understanding for evaluating the existing waiting line method at Lehulu and its effects on customer satisfaction, a Qualitative - Observational research approach was used.

The data were collected in three mechanisms: (1) Structured Interview which was used for interviewing the managers (2) Structured standard questionnaire to collect responses of customers on the existing service delivery & their related satisfaction level and (3) Detail

observations at the site made for the analysis of waiting time & service time and evaluation of waiting environment.

3.3 Population and Sample

The population is all customers who settle water, power & telephone bills in Addis Ababa under the 34 branches of Lehulu (i.e. 1,100,000 bill paying customers). From these 34 branches the study took a sample number of 4 branches. And observed all customers who arrived during the observation period and all available Lehulu servers operating at the selected centers were considered. The 4 sample branches were purposefully selected (representative samples suggested by Lehulu Branch Manager (3 of them) and 1 additional center based on the request of the student researcher – to add from those serving large population). Since the number of customers who arrive at a given point of time and dates are not known exactly (infinite), the researcher considered a purposefully selected dates & time (both from normal & peak times/ dates) and observed randomly arriving customers. For the questionnaire distributed a sample of 659 customers in total were selected on simple random sampling method at each branch/ center, since each customer in the population has an equal and independent chance of being selected (but still the sample number from each branch depended on the number of customers which arrived during the observation/ data collection period).

For the sample size of the customers, random samples of 659 respondents were selected from the entire calling population using W.G. Cochran (1977) sample selection formula (used for infinite population or where the population is greater than 50,000). For sample size determination 96% of Confidence level which is two tailed and Confidence Interval of 4 (margin or error) was used.

The Necessary Sample Size = (Z-score) ^{2} * Std. Dev*(1-StdDev) / (margin of error) ^{2}

$$n_0 = \frac{Z^2 pq}{e^2}$$

- ✓ where n_0= The sample size needed
- ✓ Z= standard error of the mean/ Z -score for 96% confidence level (2.054)
- ✓ p= probability of success (0.5)
- ✓ q= probability of failure (0.5) or (1-p)
- ✓ e= level of significance/ Margin of error (0.04)

Hence,

$$\mathbf{N = 2.054^2 \times (0.5)\ (0.5) / (0.04^2)}$$

$$\mathbf{= 4.218916 \times 0.25 / (0.0016)}$$

$$\mathbf{= 1.054729 / 0.0016}$$

Sample size need (N) = 659

3.4 Data Sources and Types

The data sources were more of primary which were acquired through detail observation, interviews & questionnaires distributed. Few secondary data from online sources were also taken.

Data Collection Techniques

Data were collected through detail observations of waiting time & service time at the centers, an in-depth face-to-face interviews and distributed questionnaires. Data collection was done during both peak & normal days and hours to represent the real scenario of the problem. It also involved secondary sources to review & grasp very few data's supporting the study.

Data collectors were deployed at the centers (at the gates who gave customers sequential numbers with respect to their arrival, and at the counters who collected the sequential order of numbers from the customers on their arrival at the counter and recorded the start of the service time and then observed and recorded the end of the service time). A few others were also assigned to assist & collect responses of customers based on a structured interview questionnaire. On the other hand, the researcher was also engaged in looking over the data collection at the observation sites and also assisting customers in addition to

interviewing the management staffs of Lehulu to get a data on the waiting line system of the company and future plans.

The structured questionnaires covered issues pertinent to customers' perception of waiting time, waiting environment, & service delivery process while the interview framework covered issues pertinent to the waiting line management/ process defined by the company & future plans. The structured questionnaire was guided to follow the sequence of questions with carefully thought linkage of topics, and that were thought to minimize non-responses.

During the interview process, care was taken to be fairly open about when and how questions were asked and asking new questions to understand the existing processes & performance of Lehulu centers in responding citizens' expectation with regard to service Delivery.

Questionnaires were distributed to customers on random bases from those who arrived at the centers during the time allocated for data collection from the centers and it was done side by side with the detail observations & recording of arrival times, queue time & service time. The data collectors were first degree graduates and still trained on the terminologies used in the questionnaire to be able to assist customers who may have difficulty of understanding some terms (even if the questionnaire was translated and prepared in Amharic language for the actual data collection and despite the effort made in making the questions easy to understand and respond to).

3.5 Ethical Consideration

Confidentiality of the information gathered from the co. for the purpose of the study will be secured. The information collected were only used for the purpose of the study & to recommend solutions to the company on improvements areas. No counter challenging the company was done (not used against it). The analysis & recommendations made were only approached from professional perspective and to the highest extent possible ensured that no personal bias affect the outcome of the study.

3.6 Data Analysis

Statistical techniques such as frequency distribution tables, percentages & graphs were used to analyze the data. The analysis involved the use of average figures from the collected data through questionnaire & detail observation. Structured questionnaire parameters to measure customers' perception level on the perceived waiting time, waiting environment & satisfaction level were used, and also interview parameters to get information from the area managers & branch manager of Lehulu on the queuing management system, average waiting time in queue, their knowledge on arrival rates, etc. were used. These were analyzed qualitatively. On the other hand, data from the detail observation like number of arrivals, arrival rates, average service time, and the like were calculated quantitatively. Queuing theory model (**M/M/C** model assumptions & formula**)** was used to calculate arrival rates & service rates. The interpretations of the results were analyzed against the research questions indicated. Likert Scale of continuum of 5 with the following assigned value was used to quantify the extent of customers' satisfaction level [(1) Very dissatisfied (2) Dissatisfied (3) Neutral (4) Satisfied (5) very satisfied]. Completed data was recorded and processed using the software, Statistical Package for the Social Sciences (SPSS) v23. To test if there is a linear relationship between the independent variables & the dependent variable, Correlation analysis using Pearson correlation coefficient was used. Validity and reliability tests for the questionnaire instruments were conducted as well.

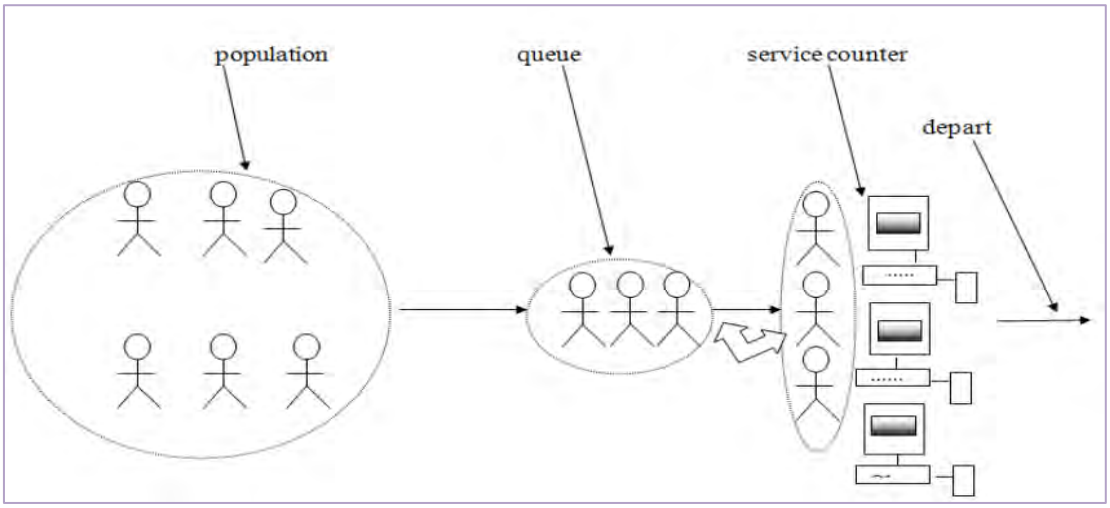
Project Assumptions & Queuing Model for Data Analysis

The queuing system that is used under this study (based on the existing method at Lehulu centers) was the single line- multiple channel queuing model (*Single-Queue Multiple Servers Model (M/M/c))*.

M/M/c System: Multiple-Channel Queuing Model: in which two or more servers or channels are available to handle arriving customers.

As observed in most Lehulu centers, the current practice is using single-queue, multiple servers and hence, the project assumptions were from this model perspective. The formulas for determining the operating characteristics for the multiple-server model were based on the same assumptions as the single-server model—Poisson arrival rate, exponential service times, infinite calling population and queue length, and FIFO queue discipline. Also, recall that in the single-server model, $\mu > \lambda$; however, in the multiple-server model, $s\mu > \lambda$, where s is the number of servers.

Figure 3.1: Single-queue Multiple Servers Model (M/M/c)



(**Source:** Mwangi and Ombuni (2015). An Empirical Analysis of Queuing Model and Queuing Behavior in Relation to Customer Satisfaction)

M/M/c Model Assumptions & Formula

- ✓ The first M refers to the fact that the inter-arrival time is Markov and the second is the fact that service distribution is exponential and hence markovian.
- ✓ In an M|M|*c* queue, there are s parallel servers, each serving customers, (*c*>1).
- ✓ The arrival process and service process follow Poisson distribution.
- ✓ Service is first-come, first-served (FCFS),
- ✓ There is an infinite population from which customers originate with unlimited queue length

- ✓ All arriving customers after entering the service system join a single queue.
- ✓ If all *c* servers are already busy in serving customers, the first customer in the queue will be served by any of the *s* servers as soon as any server will be free from serving previous customer. The service rate in the case will be (μc)
- ✓ Hence the utilization factor for the M|M|*c* service system will be $\rho = \lambda/c\mu$
- ✓ Service rate is independent of line length; service providers do not go faster because the line is longer

The operating characteristics formulas are as follows:

To compute the measurement of effectiveness of the queuing system, first we need to compute the ratio traffic intensity $\rho = \frac{\lambda}{\mu}$ and the probability that the system is idle P_0.

Input:

- Arrival rate (number of customers/unit time) = λ
- Service rate (number of customers/unit time) = μ
- Number of servers = *s*

Output:

- U= Utilization factor = percentage of the time that all servers are busy, $U = \frac{\rho}{s} = \frac{\lambda}{s\mu} < 1$
- P_0 = probability that there are no customers in the system, $P_0 = \left(\sum_{i=0}^{s-1} \frac{\rho^i}{i!} + \frac{\rho^s}{s!} \left(\frac{s\mu}{s\mu - \lambda} \right) \right)^{-1}$
- P_n = probability that there are n customers in the system, $P_n = \begin{cases} \frac{\rho^n}{n!} P_0 & for\ n \le s \\ \frac{\rho^n}{s! s^{n-s}} P_0 & for\ n > s \end{cases}$
- W_q = average time a customer spends in waiting line waiting for service, $W_q = \frac{L_q}{\lambda}$

- W = average time a customer spends in the system (in waiting line and being served),

$$W = W_q + \frac{1}{\mu} = \frac{L}{\lambda}$$

- L_q = average number of customer in waiting line for service,

$$L_q = \frac{P_0 \rho^{s+1}}{(s-1)!(s-\rho)^2} = \frac{P_0 \lambda\mu\rho^{s+1}}{(s-1)!(s\mu-\lambda)^2}$$

- L = average number of customer in the system (in waiting line and being served),

$$L = \lambda W = L_q + \rho$$

CHAPTER FOUR
4. RESULTS, DISCUSSIONS AND INTERPRETATIONS

This study had utilized three methodologies for the data collection and to meet the set objectives. Site observation was used as a first methodology and 4 centers/ branches of Lehulu were selected to collect the data. These branches were selected based on the suggestions made by Lehulu management after briefing about the objectives of the study. As automatic queueing system was not present at all the centers, data collectors were assigned to manually provide printed sequential numbers to each arriving customer with the arrival time recorded on them. Customers were served on first come first served basis at the centers, although it is managed manually by security guards. And so, when a customer was ready (when it was his/her turn) to be assigned to a free service counter the sequential queue number on which the arrival time recorded was collected from the customer, and then recording of the customer number, recording of the server number to which he/she was assigned, recording of service start time and service end time were made jointly by the researcher and the data collectors. Accordingly, the data was collected for a total of 1451 customers (the entire customers randomly visiting the centers within the sampled time-intervals have been accounted for data gathering) during the period between April 5 and April 20, 2017.

The other methodology that was used was distribution of questionnaires to customers on site during the observation periods, mainly to assess the level of customers' satisfaction towards the waiting lines at Lehulu centers. The sample population required for the questionnaire data was 659. However, to ensure a good response rate questionnaires were distributed on spot during the observation period at the branches to randomly arriving customers and to the extent possible, efforts were made by the student researcher and recruited data collectors (First degree graduates) to ensure all the distributed questionnaires were fully filled and assistant provided to customers seeking clarity on any of the questions or on how to fill them (this is of course in addition to preparing standard questionnaire

interpreted in Amharic Language). As a result, 572 fully filled questionnaires were collected.

As a third methodology for the data collection, interview questions were also presented to the management of the organization to assess the level of understanding the management have on the actual situation of customer waiting lines at the centers and to get information on any planed actions in order to improve it further. Accordingly, although the interview was intended to be conducted with 3 area managers it was possible to do it two area managers. But still, few additional inputs were also collected from Lehulu Branch manager.

For the purpose of the data analysis, data computations using single queue -multiple server queuing model and SPSS package v23 were used to present the results in percentages, frequency tables, graphs and correlation analysis.

4.1 Data Computation Analysis & Interpretation of the Observational Data

Queuing Model for Data Analysis (*Single-Queue Multiple Servers Model (M/M/c)*)

As observed in most Lehulu centers, the current practice is using single-queue, multiple servers for queue management and hence, the data analysis was made from this model perspective. The assumptions & formula are:

- ✓ The first M refers to the fact that the inter-arrival time is Markov and the second is the fact that service distribution is exponential and hence markovian.
- ✓ In an M|M|*c* queue, there are s parallel servers, each serving customers, (c>1).
- ✓ The arrival process and service process follow Poisson distribution.
- ✓ Service is first-come, first-served (FCFS),
- ✓ There is an infinite population from which customers originate with unlimited queue length
- ✓ All arriving customers after entering the service system join a single queue.

✓ Hence the utilization factor for the M|M|*c* service system will be $\rho = \lambda / c\mu$

The parameters of the multiple-server model are as follows:

λ = the arrival rate (average number of arrivals per time period)

μ = the service rate (average number served per time period) per server (channel)

c = the number of servers

$c\mu$ = the mean effective service rate for the system, which must exceed the arrival rate

1. The probability that there are no customers in the system (all servers are idle) is

$$P_0 = \frac{1}{\left[\sum_{n=0}^{n=c-1} \frac{1}{n!}\left(\frac{\lambda}{\mu}\right)^n\right] + \frac{1}{c!}\left(\frac{\lambda}{\mu}\right)^c\left(\frac{c\mu}{c\mu - \lambda}\right)}$$

2. The probability of n customers in the queuing system is

$$P_n = \frac{1}{c!c^{n-c}}\left(\frac{\lambda}{\mu}\right)^n P_0, \text{ for } n > c; \; P_n = \frac{1}{n}\left(\frac{\lambda}{\mu}\right)^n P_0, \text{ for } n \le c$$

3. The average number of customers in the queuing system is

$$L = \frac{\lambda\mu(\lambda/\mu)^c}{(c-1)!(c\mu - \lambda)^2} P_0 + \frac{\lambda}{\mu}$$

4. The average time a customer spends in the queuing system (waiting and being served) is

$$W = \frac{L}{\lambda}$$

5. The average number of customers in the queue is

$$L_q = L - \frac{\lambda}{\mu}$$

6. The average time a customer spends in the queue, waiting to be served, is

$$W_q = W - \frac{1}{\mu} = \frac{L_q}{\lambda}$$

7. The probability that a customer arriving in the system must wait for service (i.e., the probability that all the servers are busy) is

$$P_w = \frac{1}{c!}\left(\frac{\lambda}{\mu}\right)^c \frac{c\mu}{c\mu - \lambda} P_0$$

4.1.1 Data Computations & Interpretations

The first objective of this study was to measure the arrival rate at Lehulu centers, the average waiting time in queue & the average service time and analyze its alignment with the standard time defined by the company. Accordingly, the data was collected for a total of 1451 customers (i.e. Arat Kilo (246), Kazanchis (375), Addisu Gebeya (326), & Lebu (504)). Based on the data collected from the observation made at the centers the average arrival rates per hour for each center and for Lehulu as a whole are computed as presented in Table 4.1 below.

As per the observation made and the data collected the arrival rate per hour could range from 24 to 143 per hour while the overall average is 70 customers per hour (see table 4.1). On the other hand, the time a customer spends at Lehulu centers could range from as minimum as 1 minute to as high as 56 minutes. This is of course based on the data collected during the observation period and it will be good to note that the maximum queue length could be higher than 56 minutes considering the fact that the study was not made simultaneously on the similar date & time at all branches and based on the feedbacks some customers expressed on the questionnaire collected. According to Service Level Agreement between MCIT & Kifiya Technology plc, one customer will only be required to wait 15 minutes in queue and 3 minutes on counter at Lehulu centers. And hence, it means that although this standard is met for most of the time it is not consistent for all the customers and in all the time. However, it should be questioned even why the standard time for queue length at Lehulu should be set this high (18 minutes) or why was it not revised so far, while it could be ensured for much less of this time.

Table 4.1: Analysis of Arrival Patterns at Lehulu Centers

Analysis of Arrival Patterns at Lehulu Centers						
Day	**Branch Name**	**Time of Observation**	**Number of customers observed**	**Average arrival of customers per hour**	**Number of Functional Servers**	**Period of Observation**
Day 1	Arat Kilo	Morning: 9:50 – 11:46	69	36	6	Off Peak day
Day 1	Arat Kilo	Afternoon: 13:38 – 15:28	45	25		
Day 2	Kazanchis	Morning: 9:23 – 10:43	94	71	8	Off Peak day
Day 2	Kazanchis	Morning: 11:55 – 12:25	12	24		
Day 2	Kazanchis	Afternoon: 13:42 – 14:33	33	39		
Day 3	Addisu Gebeya	Morning: 8:30 – 10:37	69	33	8	Off Peak day
Day 4	Arat Kilo	Morning: 9:15 – 11:31	132	59	6	Peak Day
Day 5	Kazanchis	Morning: 8:19 – 9:31	136	117	8	Peak Day
Day 5	Kazanchis	Afternoon: 14:43 – 15:59	100	80		
Day 6	Addisu Gebeya	Morning: 8:23 – 9:06	91	127	8	Peak Day
Day 6	Addisu Gebeya	Morning: 10:31 – 11:07	79	132		
Day 6	Addisu Gebeya	Afternoon: 14:00 – 15:45	87	49		
Day 7	Lebu	Morning: 8:26 – 10:40	320	143	9	Peak Day
Day	Lebu	Morning: 11:00 –	131	87		

7		12:30				
Day 7	Lebu	Afternoon: 15:09 – 15:50	53	64		
Total Number of Hours Observed = 20 Hrs. & 49 minutes						
Total Number of Observed Customers			**1451**			
Average arrival rate for Lehulu (per hour) *(Hence, the arrival rate per minute (72/60) = **1.2** customers per minute)*				**1451/20.817hrs = 69.71 ≈ 70 Customers**		
Average Number of Functional Servers/ per hour *(N.B:- The number of functional servers per each hour over the 20hrs & 49 minutes were summed up to get 107 servers)*					**107 Servers/ 20.817hrs =5 Servers**	

By analyzing the average waiting time in queue, the average service time and the average queue length to serve a customer for all the sample branches, the overall averages for Lehulu centers is as presented below (the detail records for all 1451 observations is shown in the Appendices 3).

Table 4.2: Analysis of average queue time, service time & queue length for Lehulu branches

Branch Name	**Average Queue Time (Minutes)**	**Average Service Time (Minutes)**	**Total Average Queue Length (Minutes)**
Arat Kilo	21:07	03:13	24:20
Kazanchis	17:47	03:22	21:09
Addisu Gebeya	02:03	02:55	04:58
Lebu	15:15	03:10	18:25

Average for all	**13:56**	**03:10**	**17:06**
Service Rate^{-1} (1/ μ) = (Average Service Minutes Per Person) or		3.1 minutes/ person	
Service Rate (μ)= customers per minute per counter		0.32 (or 1/3.1)	
Service Rate (μ) = Customers per hour at each counter		19 (or 0.32 * 60)	
5 counters on average can serve (5*19) = 95 customer per hour			

From the above result (Table 4.2) it can be seen that both the average queue time and the average service time are within the standard time set by the company (i.e. 15 minutes & 3 minutes respectively) when the average is considered over all for Lehulu. However, it can also be seen that if we are to consider the average of only the 3 branches (excluding Addisu Gebeya) the average time the customer spends at Lehulu centers could become 21 minutes which is few higher than the standard time defined. Again it could be higher if some of the busiest braches like Gurd shola, Mexico, Merkato, Autobis Tera, & Ayer Tena (based on the info from Lehulu Management) were considered in addition to 1 more day additional data from Lebu center.

4.1.2 Application of the Single-Queue Multiple Server Queue Formulas

Based on the above findings on the average arrival rate, queue time, queue length, and service time, the analysis of the queuing system could be made as follows using single-queue multiple servers model (M/M/5)

λ = 70 customers per hour (1.17 customers/ minute)

μ = 19 customers per hour (0.32 customers/ minute)

c = 5 servers (functional servers on average)

$c\mu$ = 95 (1.6) the mean effective service rate for the system,

✓ The probability that there are no customers in the system (all servers are idle) is

$$P_0 = \frac{1}{\left[\sum_{n=0}^{n=c-1} \frac{1}{n!}\left(\frac{\lambda}{\mu}\right)^n\right] + \frac{1}{c!}\left(\frac{\lambda}{\mu}\right)^c\left(\frac{c\mu}{c\mu-\lambda}\right)}$$

$P_0 = 1/ [1/0! (70/19)^0 + 1/1! (70/19)^1 + 1/2! (70/19)^2 + 1/3! (70/19)^3 + 1/4! (70/19)^4] + 1/5! (70/19)^5 (5(19)/ 5(19) – 70]$

= 0.02 probability that no customers are in the service center

✓ The average number of customers in the queuing system is

$$L = \frac{\lambda\mu(\lambda/\mu)^c}{(c-1)!(c\mu-\lambda)^2}P_0 + \frac{\lambda}{\mu}$$

$L = [[70(19) (70/19)^5] / [4! (95-70)^2]] (0.02) + (70/19)$

= 4.89 customers on average, in the service center

✓ The average time a customer spends in the queuing system (waiting and being served) is $W = \frac{L}{\lambda}$

$W = 4.89/70$

= 0.07 hr. (4.2 min.) average time in service center per customer

✓ The average number of customers in the queue is

$$L_q = L - \frac{\lambda}{\mu}$$

$L_q = 4.89 – (70/19) = 1.21$ customer on average should be waiting to be served

✓ The average time a customer spends in the queue, waiting to be served, is

$$W_q = W - \frac{1}{\mu} = \frac{L_q}{\lambda}$$

$W_q = 1.21/ 70$

= 0.02 hr. (1.2 min) average time waiting in line per customer

- ✓ The probability that a customer arriving in the system must wait for service (i.e., the probability that all the servers are busy) is

$$P_w = \frac{1}{c!}\left(\frac{\lambda}{\mu}\right)^c \frac{c\mu}{c\mu - \lambda} P_0$$

$P_w = 1/5! \ (70/19)^5 \ [95/ \ (95\text{-}70)] \ (0.02)$

= 0.43 probability that a customer must wait for service (i.e., that there are 5 or more customers in the system)

Table 4.3: Summary of Results obtained from mathematical analysis (5 servers)

P_0	0.02 probability that no customers are in the service center
L	4.89 customers on average, in the service center
W	4.2 minutes average time in service center per customer
L_q	1.21 customer on average should be waiting to be served
W_q	0.02 hr. (1.2 minutes) average time waiting in line per customer
P_w	0.43 probability that a customer must wait for service (i.e., that there are 5 or more customers in the system)

As can be observed from the above results, the average service time in service center per customer which became 4.2 minutes is closer to the overall average computed through observational data (3.1 minutes).

Based on the outcomes of this study under the data collected through questionnaire, it is observed that customers are frustrated by the relatively long waiting time and the 0.43 probability of waiting. To try to improve matters, if Lehulu management could decide to consider the addition of 2 extra service representatives/ counter (i.e. ensure that at least 7 service counters are fully functional to serve the 3 utilities payments (Water, Power & Telephone) and still engage other 2 or 1 server for traffic punishment payments) the results could show the below indicated improvements.

Table 4.4: Summary of Results obtained from mathematical analysis (7 servers)

$\mathbf{P_0}$	0.025 probability that no customers are in the service center
L	3.79 customers on average, in the service center
W	3.2 minutes average time in service center per customer
$\mathbf{L_q}$	0.11 customer on average should be waiting to be served
$\mathbf{W_q}$	0.002 hr. (0.1 minutes) average time waiting in line per customer
$\mathbf{P_w}$	0.097 probability that a customer must wait for service (i.e., that there are 7 or more customers in the system)

The queuing operating characteristics provide input into the decision-making process, and the decision criteria are the waiting costs and service costs. The Lehulu management would have to consider the cost of two extra service representative/ counters, as compared to the dramatic decrease in customer waiting time (from 1.2 minutes to 0.1 minute) and the probability that a customer must wait for service (from 0.43 to 0.097), in making a decision (Table 4.4).

4.2 Analysis & Presentation of Questionnaire Data

4.2.1 Reliability, Validity & Linearity Statistics

The study was conducted on 4 branches of Lehulu (Arat Kilo, Kazanchis, Adisu Gebeya & Lebu) under which questionnaires were distributed to randomly selected customers based on simple random sampling method. The questionnaires were combined & adopted from Kamau, G. (2012) & Mwangi, S. & Ombuni, T. (2015) studies on waiting line system, except very few added by the researcher. But still, different validity test were conducted using SPSS to ensure the questions deliver the intended results by taking the outputs of the questionnaire distributed to the first 30 sample customers. Accordingly, for the reliability test instrument the value of Cronbach's Alpha was found to be 0.715, which indicates high reliability. The number of items used for this test are 6 because, all the queue variables

used in the conceptual framework, which affect customer satisfaction, are included within these 6 items and they are rated on likert scale ranges.

Reliability Statistics

Cronbach's Alpha	N of Items
.715	6

The test of validity using Pearson product moment correlations for most of the items (6 items considered) showed correlation is significant at the 0.01 level (2- tailed).

In determining whether the relationship between independent variables and the dependent variable is linear or not, the value of sig. Deviation from linearity was found to be > 0.05, which means they are linearly dependent.

4.2.2 Sample & Response Rate

The questionnaires were distributed at the branches on spot during the observation period to randomly arriving customers. To the extent possible, efforts were made by the student researcher and recruited data collectors (First degree graduates) to ensure all the distributed questionnaires were fully filled and assistance provided to customers seeking clarity on any of the questions or on how to fill them (this is of course in addition to preparing a standard questionnaire interpreted in Amharic Language). As a result, the response rate of fully filled and completed questionnaires collected was 86.8% (572 out of 659). This is very much enough to conduct the statistical reporting (This was adequate enough for the study since according to Mugenda (2003), 50% of the response rate is adequate enough to carry out a study). Number of customers served at each Branch and also the available number of customers during the data collection period was the basis for number of samples collected from each branch (Table 4.5) (N.B. for Lebu branch the data collected is only for one day while for all the others a 2 days data collection was used).

Table 4.5: Number of Respondents for Questionnaire Distributed

Name Of Branch	Number of Respondents	Percentage share of responses
Arat Kilo	176	30.77%
Kazanchis	204	35.66%
Adisu Gebeya	104	18.18%
Lebu	88	15.39%
Total	**572**	**100%**

4.2.3 Demographics & General Information of the Respondents

Gender of Respondents

The gender distribution of the respondents indicates that 39.2 % (224) of them were females while 60.8% (348) were male respondents (Table 4.6).

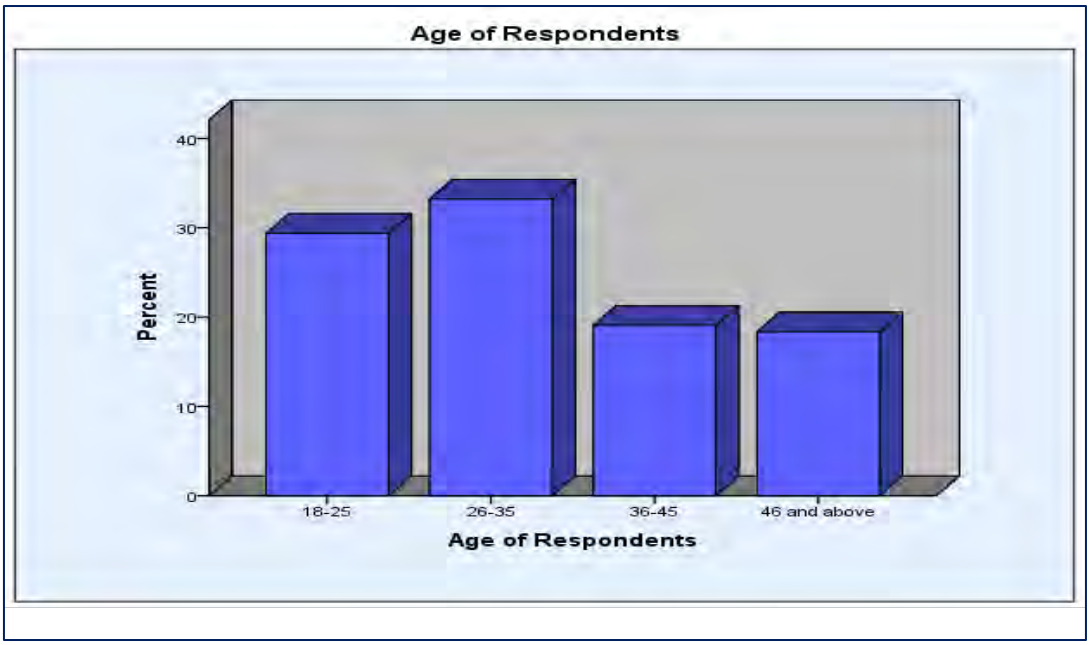
Table 4.6: Gender of Respondents

Gender Type	Frequency	Percent
Female	224	39.2
Male	348	60.8
Total	**572**	**100.0**

The Age distribution of the respondents

The age distribution of the respondents depicts that all the age groups are fairly represented (Figure 4.1). The highest percentage of the respondents for this study were from the age group 26-35 (33.2%) followed by 18-25 (29.4%), 36-45 (19.1%) and 46 and above (18.4%).

Figure 4.1: Age of Respondents



Job Category of Respondents

With respect to the occupation of the respondents Small Business owners/ employees make up 22.6% (129) of the share while students, Public Servants & Big Business owners/ employees make up 20.6% (118), 19.8% (113) and 9.3% (53) respectively (Table 4.7). Customers with other types of occupation make up the remaining 27.8% (159).

Table 4.7: Job Category of Respondents

Occupation	Frequency	Percent
Student	118	20.6
Public Servant	113	19.8
Small Business owner/ employee	129	22.6
Big Business owner/ employee	53	9.3
Other	159	27.8

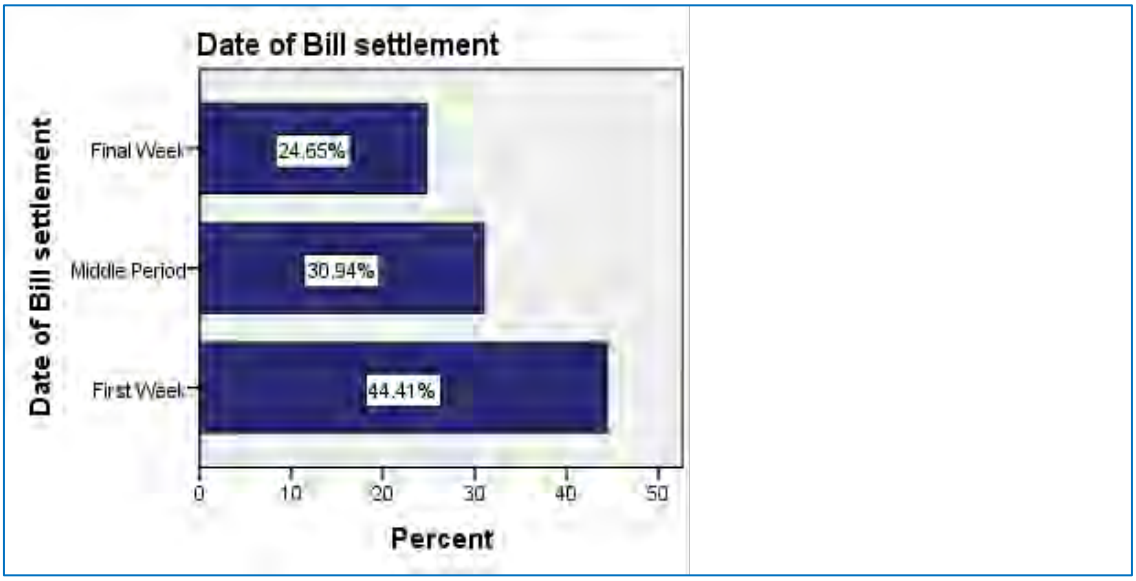
	Total	**572**	**100.0**

With respect to the type of utility bill for which the respondents visited Lehulu to settle their due amount, 25.2% (144) of them were settling all the three utilities Bills (Water, Power & Telephone), while 23.4% (134) of them were settling two of the utility bills types, 23.4% (134) for the power bill, 14.9% (85) for the water bill, 6.8% (39) for the Telephone bills and 6.3% (36) for the other service payments (like Traffic punishment pay).

80.2% (459) of the customers come to Lehulu centers alone when settling their bills, while 14.2% (81) come in pairs, 4.2% (24) of them come in different accompanies and 1.4% (8) comes in groups. This means that if the waiting is very long then a very high percentage of the customers could feel the anxiety of waiting as they probably won't have an accompany to make them forget about the waiting.

In relation to the date of bill settlement, 44.4% (254) of the customers indicated that they pay in the first weeks of the payment periods, while 30.9% (177) pay during the middle periods and 24.7% (141) make the payment in the final weeks of payment periods (Figure 4.2).

Figure 4.2: Date of Bill Settlement



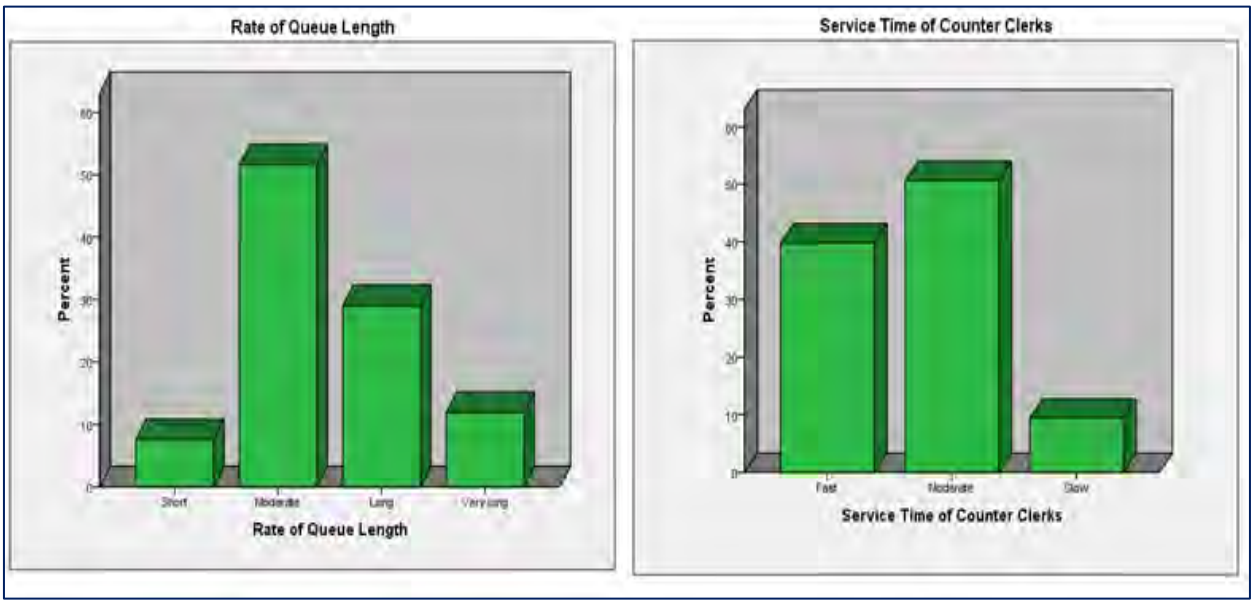
From this result it can be observed that majority of the customers prefer making payments during the start of the payment periods followed by those who prefer making payments during the middle of the periods, and then by those who prefer to pay during the final weeks of the period. This was also the scenario that was observed during the data collection period. To balance the queue at the centers between the different payment periods and reduce long customer queues, it seems that awareness creation to customers on the possibility of quicker service & less queue during other payment periods is required.

4.2.4 Customers' Ratings of Waiting Lines at Lehulu

One of the objectives of this study is to assess the current queue management practice of Lehulu centers and its rating by customers. To attain this objective the below analyzed questions were presented to customers.

In relation to rating the waiting lines one of the questions that were presented to the customers was on how they perceive and rate the queue length at Lehulu. Accordingly, it was identified that 51.6% (295) of them perceive the queue length as Moderate, 29% (166) of them perceive it as long, 11.9% (68) perceive it as very long and 7.5% (43) perceive it as short.

Figure 4.3: Rate of Queue Length and Service Time of Counter Clerks



The above results mean that 40.9% (234) of the customers feel that the queue length is consuming their time and feel irritated with it while 59.1% (338) of the customers are ok with the queue length and somehow happy with the speed of service at the centers (Figure 4.3). However, as 40.9% is a significant number Lehulu will need to look for methods of reducing the queue length and making the customers stay on queue with less irritation. On the other hand, customers were also asked on how they rate the speed (service time) of counter clerks/ customer service representatives. The results show that 50.7% (290) of the customers feel that the service time is moderate, while 39.9% (228) of them feel that it is fast and only 9.4% (54) of them feel the speed is slow (Figure 4.3). And so, we can deduce that the service time is acceptable by nearly 90.6% (518) of the customers.

Customers were also asked if they had turned away due to encountering long queues at Lehulu centers and 68.5% (392) of them replied "Yes", while 27.1% (155) of them replied "No'' and 4.4% (25) of them indicated they don't remember if they have done so. When asked on how many occasions they have turned away, 47.6% (190) of them indicated to have turned away on very few occasions, while 27.8% (111) of them one time only, 13% (52) of them at least once every month and 11.5% (46) of them on most of the times. Here what is to note is that within the 27.97% (160) of the customers who replied as haven't turned away due to long queue, there are customers who preferred to wait whatever long it

took to settle their payments at the day & time they approached at the centers instead of coming on another date/ time. With respect to solving long queues, 60.4% (241) of the customers replied that they solved the long queue by going back and coming back on another date to settle their payment, while 33.3% (133) of them solved it by going back and coming back on the same date when the queue reduced and 6.3% (25) of them solved it by jumping the queue. The remaining 173 respondents are those who have preferred to stay on the line always. Hence, it can be deduced that for most of the customers waiting for the long queues to settle their payment was not acceptable and time consuming and so chosen to return back and come at another time. How much irritation they will feel when returning back due to not being able to settle their pay at the time of arrival is obvious and when thinking of the wasted time that was expended to arrive at the centers.

In relation to the queue discipline at Lehulu centers, customers were also presented with a question on whether the First Come First Served (FCFS) priority rule was fairly & strictly implemented at the centers. Accordingly, 71.7% (410) of them replied "Yes, always"; while 22.6% (129) of them replied "Sometimes Yes", and 5.8% (33) of them replied "No". From this it can be deduced that FCFS queue discipline is implemented at Lehulu centers except on few occasions. This can be due to the fact that the waiting line is controlled by security guards but not using automatic queuing system that generates queue tickets to customers.

When asked how the customers suggest for Lehulu to improve their service time, 34.3% (196) of them replied that Lehulu should increase the number of its staffs, while 32.7% (187) of them replied by working harder, 26.4% (151) of them replied by both increasing the number of its staffs and by working harder and the remaining 6.6% (38) of them replied that they were not sure (see Table 4.8). This result indicates that more than 93% of the customers feel that Lehulu should still improve its service further for better satisfaction by either or both working harder and dedicating more staffs. Furthermore, in the last part of the question where customers were asked to fill their additional inputs, suggestions, questions or concerns, 50 of them emphasized the need for additional staffs that are well trained and have better speed and skill.

Table 4.8: Customers suggestion on how should Lehulu improve their serving time

Customers' Suggestion	Frequency	Percent
Work Harder	187	32.7
Increase No. Of staffs	196	34.3
Both	151	26.4
Not Sure	38	6.6
Total	**572**	**100.0**

Another question that was presented to the customers was related to how they rate the attitudes of Lehulu staffs. Accordingly, 57.7% (330) of them replied that Lehulu center staffs are very polite and friendly, and 39% (223) of them replied they can't say much about the staffs' attitude while the remaining 3.3% (19) of them indicated that they are not polite & friendly (Table 4.9). This result indicates that although majority of the customers feel that Lehulu staffs are polite and friendly when serving customers, many customers still have difficulty of rating the staffs as having polite & friendly approach to customers. To support this some of the issues mentioned by customers (around 28 of them) under the last question related to additional inputs and concerns they have were indicating that the staffs don't show smiling face and don't seem to have motivation for the job, they leave their chairs when power interruption occurs, and also questioned the attitude & manner and lack of respect by some staffs. On the other hand, around 18 of these customers indicated there disappointment with repeated incidents of not getting returns of smaller amounts of change money from the amount they had paid.

Table 4.9: Customers' rating of the attitudes of Lehulu staffs

Customers' Rating	Frequency	Percent
Very Polite & friendly	330	57.7
Can't say Much	223	39.0
Not Polite & Friendly	19	3.3
Total	**572**	**100.0**

Customers were also asked if they recommend for Lehulu to continue providing the services and accordingly, 80.8% (462) of them agreed for Lehulu to continue providing the service, while 12.4% (71) indicated they are neutral on the idea and 6.8% (39) of them replied as Lehulu shouldn't continue providing the service (Table 4.10). This indicates that a very high majority of the customers prefer for Lehulu to continue with the provisioning of the services.

Table 4.10: Recommendation of customers on whether Lehulu should continue providing the service

Customers' Response	**Frequency**	**Percent**
Yes	462	80.8
No	39	6.8
Neutral	71	12.4
Total	**572**	**100.0**

4.2.5 Customers' Extent of Satisfaction levels

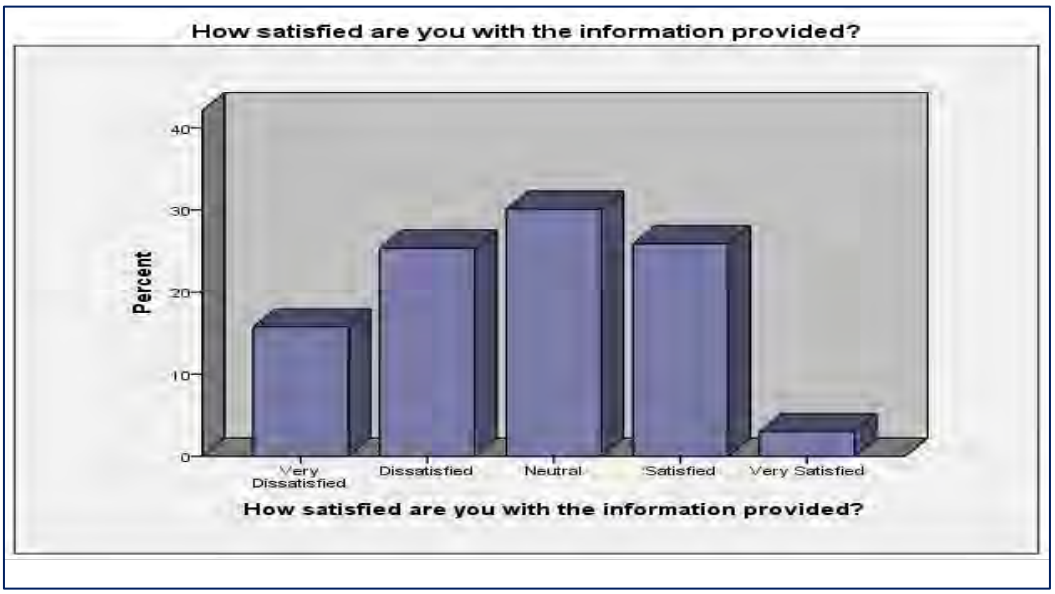
Other objectives of the study were related to assessing the extent of customers' satisfaction on the perceived waiting time, the information provided, the waiting environment & the queue discipline at Lehulu centers.

Figure 4.4: Customers level of satisfaction with perceived waiting time

In relation to analyzing the extent of customers' satisfaction towards the perceived waiting time, it would be good to recall how they rated their perception of the waiting time at Lehulu. It was indicated in the previous part that 51.6% of the customers rate the queue length as Moderate, 29% of them rate it as long, 11.9% as very long and 7.5% as short. When asked to rate the extent of their satisfaction with this perceived waiting time, 3% (17) of them indicated that they were very satisfied, 40% (229) of them as satisfied and 18.5% (106) of them as neutral, while 26.4% (151) of them indicated that they were dissatisfied and 12.1% (69) of them as very dissatisfied (Figure 4.4).

From this result it can be observed that while around 43% of the customers are happy with the perceived waiting time at Lehulu centers, 38.5% of them are not happy with it. Furthermore, it can be observed that the number of customers who expressed their dissatisfaction (38.5%) and the number of customers who rate the perceived waiting time at Lehulu as long & very long (40.9%) are nearly equal.

Figure 4.5: Customers level of satisfaction with the information provided



In relation to the provisioning of information (i.e. explanations the center staffs give on queue/ service time, or when the systems are down and there is delay) at the centers, 3% (17) of the customers were very satisfied, 25.9% (148) of them satisfied, and 30.1% (172) of them expressed their satisfaction level as neutral; while 25.3% (145) of them were dissatisfied and 15.7% (90) of them very dissatisfied (Figure 4.5). This means that the percentage of customers who are happy with the information provided at Lehulu centers are around 28.9%, while around 41% of them are not happy with the information provided depicting the missing of information provisioning at the centers in relation to queue/ service time of each customer, or when the systems are down and there will be delays.

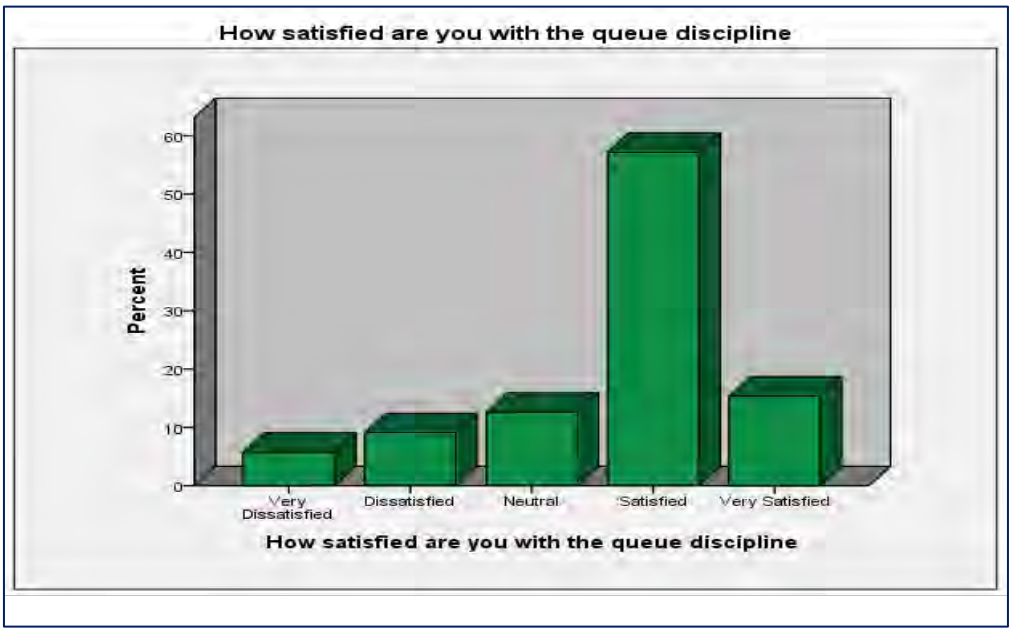
In relation to customers level of satisfaction with the waiting environment (i.e. availability of distractions like digital signage, television, magazines, newspaper, Wi-Fi, etc. provided by the centers while customers wait to be served), 2.6% (15) of the customers were very satisfied, 15.9% (91) of them satisfied, 16.1% (92) of them neutral, 34.6% (198) of them dissatisfied and 30.8% (176) of them indicated to be very dissatisfied (Figure 4.6). This means that majority of the customers (65.4% or 374) are not happy with the waiting environment. This is due to the unavailability of distractions indicated above and the less conduciveness of the waiting area in the centers.

Figure 4.6: Customers level of satisfaction with the waiting environment

Under the last question related to additional inputs and concerns they have, customers have also suggested for the arrangement of sheltered waiting areas as protection from rain & sun, additional seats/ chairs, green environment, clean waiting areas, cafeterias, and the other distractions mentioned above at the center. At some of the centers observed (like Kazanchis & Addisu Gebeya) TVs seem to be placed in the waiting areas but not working at all.

Customers were also asked to rate their level of satisfaction in relation to the queue discipline at Lehulu centers (i.e. implementation of First come First Served rule). Accordingly, 15.4% (88) of them indicated that they are very satisfied, while 57.2% (327) of them satisfied, 12.6% (72) of them neutral, 9.1% (52) of them dissatisfied, and 5.8% (33) of them very dissatisfied (Figure 4.7).

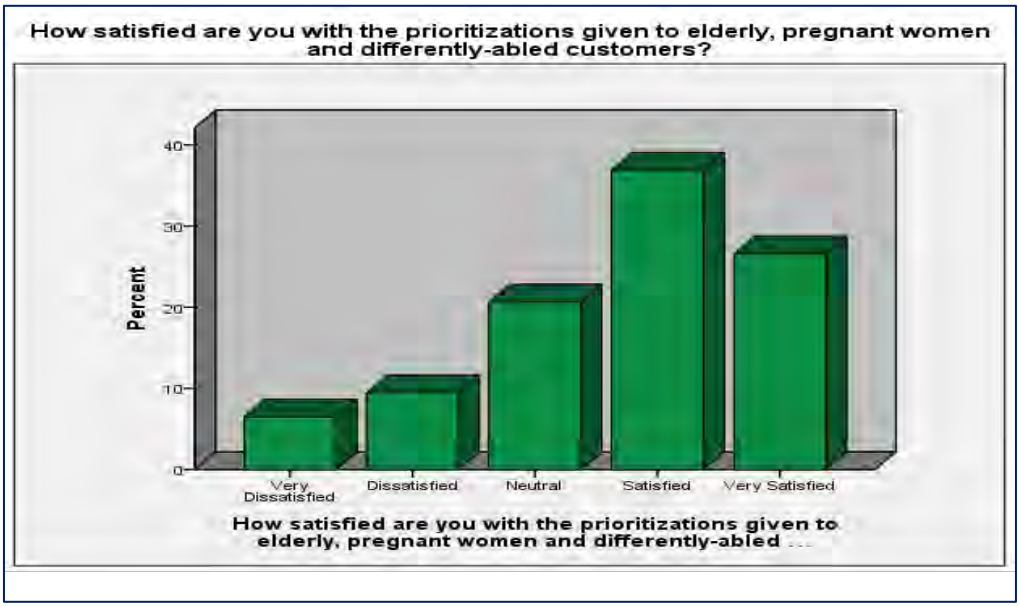
Figure 4.7: Customers level of satisfaction with the queue discipline



When analyzed overall, it can be concluded that the rule is applied on majority of the occasions and that 72.6% of the customers are happy with its implementation. It can also observed that this figure is consistent with the result of the question in the earlier part where 71.7% of the customers replied that the FCFS rule is implemented always; while 22.6% (129) of them replied it is implemented sometimes, and 5.8% of them replied it is not implemented at all. As mentioned above, the reason for the existence of customers who are not happy with the implementation of the rule could be due to the fact that queue discipline is controlled manually by security guards and so sometimes the controlling could be loose and result in not being respected by some customers.

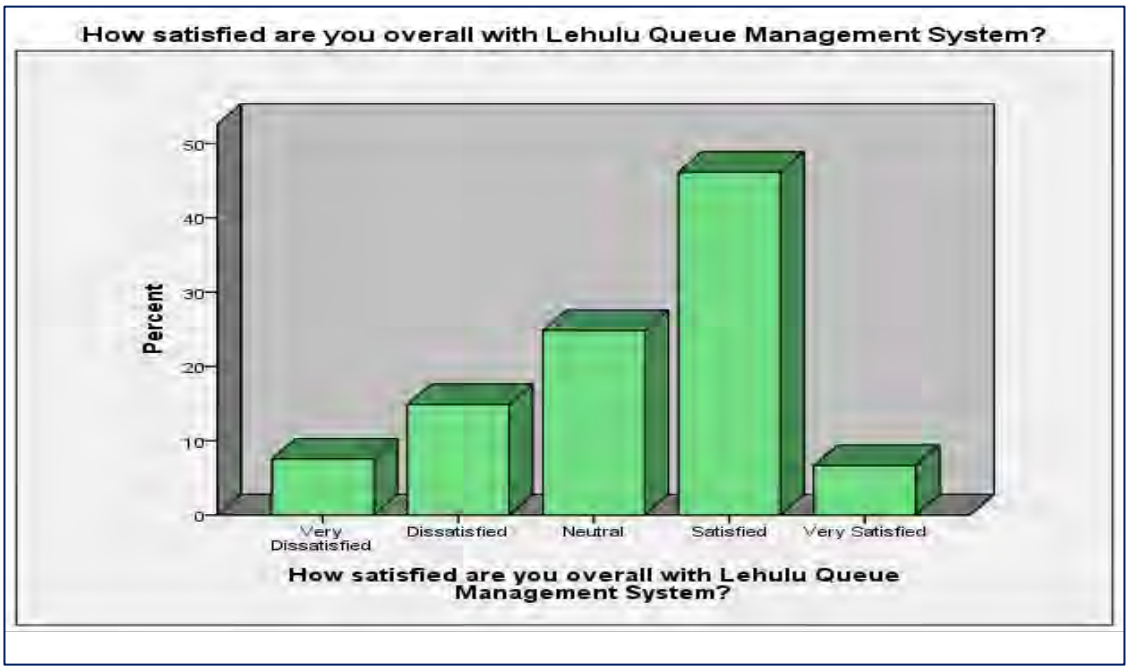
Another queue discipline that brings satisfaction to customers is the prioritizations given to elderly, pregnant women and differently- abled customers. Customers were asked to indicate their satisfaction level towards the implementation of this rule and the results indicate that 26.6% (152) of the customers are very satisfied, 36.9% (211) satisfied, 20.6% (118) on Neutral level, 9.4% dissatisfied and 6.5% very dissatisfied (Figure 4.8). This indicates that majority of the customers (63.5%) are happy with the implementation of this priority rule on top of first come first served queue discipline. In the additional comments/ concerns raised by customers some of them expressed that the implementation of this rule needs to be followed up on and ensured for its consistency.

Figure 4.8: Customers level of satisfaction with the prioritization rules



In the end customers were also asked to indicate their overall satisfaction level related to the queue management system at Lehulu centers. Accordingly, 6.6% (38) of the customers indicated that they are very satisfied, 46.2% (264) of them satisfied and 24.8% (142) of them on neutral level, while 14.9% (85) of them dissatisfied and 7.5% (43) of them very dissatisfied (Figure 4.9).

Figure 4.9: Customers level of overall satisfaction with the queue management system



Hence, we can deduce that despite the existence of higher level of dissatisfaction with some variables, overall majority of the customers (more than 52%) feel satisfied with the queue management at Lehulu. It is also obvious that this number could even be higher given that improvements are made on the variables affecting this overall satisfaction level.

4.2.6 The Relationship between Queue Management System and Customers Satisfaction

The other objective of this study was to test and assess the relationship between the independent variables and the dependent variable using correlation analysis. As presented under the introductory & literature reviews above, independent variables like the perceived waiting time, information provided, the waiting environment and queue discipline do determine/ influence the customers' satisfaction with the waiting line management. Hence, to identify how closely are each of these waiting line management variables are related to customer satisfaction, correlation analysis was used and analysis was conducted on the data collected by excluding the outliers (the results are as presented below – Table 4.11). It would be good to note that correlation doesn't imply cause and effect.

Table 4.11: Correlations Analysis

		How satisfied are you with perceived waiting time?	How satisfied are you with the information provided?	How satisfied are you with the waiting environment?	How satisfied are you with the queue discipline	How satisfied are you with the prioritizations given to elderly, pregnant women and differently-abled customers?	How satisfied are you overall with Lehulu Queue Management System?
How satisfied are you with perceived waiting time?	Pearson Correlation	1	.414**	.333**	.307**	.111**	.577**
	Sig. (2-tailed)		.000	.000	.000	.008	.000
	N	564	564	564	564	564	564
How satisfied are you with the information provided?	Pearson Correlation	.414**	1	.359**	.249**	.162**	.413**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	564	564	564	564	564	564
How satisfied are you with the waiting environment?	Pearson Correlation	.333**	.359**	1	.169**	.094*	.366**
	Sig. (2-tailed)	.000	.000		.000	.026	.000
	N	564	564	564	564	564	564
How satisfied are you with the queue discipline	Pearson Correlation	.307**	.249**	.169**	1	.320**	.460**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	564	564	564	564	564	564
How satisfied are you with the	Pearson Correlation	.111**	.162**	.094*	.320**	1	.320**
	Sig. (2-tailed)	.008	.000	.026	.000		.000

prioritizations given to elderly, pregnant women and differently-abled customers?	N	564	564	564	564	564	564
How satisfied are you overall with Lehulu Queue Management System?	Pearson Correlation	.577**	.413**	.366**	.460**	.320**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	564	564	564	564	564	564
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

For the correlation between the independent variable, perceived waiting time, and the dependent variable, overall customer satisfaction, SPSS generated the Pearson correlation coefficient of 0.577. This indicates that correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficient between information provided and overall customer satisfaction generated by SPSS is 0.413, which again indicates that correlation is significant at the 0.01 level (2-Tailed)

The Pearson correlation coefficient between the waiting environment and overall customer satisfaction generated by SPSS is 0.366, which also indicates that correlation is significant at the 0.01 level (2-Tailed)

The Pearson correlation coefficient between the queue discipline and overall customer satisfaction generated by SPSS is 0.460, which also indicates that correlation is significant at the 0.01 level (2-Tailed)

From the above Pearson correlation coefficient results it can be seen that all the variables have moderately strong relationship with the overall customer satisfaction and that they have positive correlation. When comparison is made between each, it seems that perceived waiting time has stronger relationship with overall satisfaction and has larger effect on overall satisfaction, followed by queue discipline, information provided and waiting environment, which all have medium effect (i.e. all 3 having r between 0.3 and 0.5). We can also say that when the availability of these independent variables is increased at the centers, they will also positively impact/increase the satisfaction level of the customers. As also observed above all of the variables have statistical significance at 0.01 levels (2-tailed). On the other hand, except queue disciplines, for the all variables the standard deviations are small and are closer to the mean (see Table 4.12).

Table 4.12: Descriptive Statistics

	Mean	**Std. Deviation**	**N**
How satisfied are you with perceived waiting time?	2.9610	1.10797	564
How satisfied are you with the information provided?	2.7535	1.07840	564
How satisfied are you with the waiting environment?	2.2465	1.11564	564
How satisfied are you with the queue discipline	3.6897	.99973	564
How satisfied are you with the prioritizations given to elderly, pregnant women and differently-abled customers?	3.6933	1.12925	564
How satisfied are you overall with Lehulu Queue Management System?	3.3085	1.02397	564

4.3 Analysis & Presentation of Interview Results

Interview questions were also presented to the area managers of Lehulu Centers, to assess the level of understanding the management has on the actual situation of customer waiting lines at the centers, on the existing processes & performance of the centers in responding

citizens' expectation with regard to service delivery, and also the follow ups made by the management to improve it further. The responses given are analyzed below.

In response to the question "which of the Lehulu centers are the busiest in terms of customers queue?" the management indicated that Mexico, Merkato, Gurd Shola, Autobis Tera, Ayer Tena & Lebu are the busiest centers. On the other hand it was also indicated by the branch manager that Lebu center is serving large number of customers and is known that it is not enough for the number of customers in the area. It was also indicated that initially the plan was to open two centers for the area but due to not finding two available locations for two centers, only one center was opened. Hence, this confirms that if more of the busiest centers were analyzed in this study the results generated for queue length could have even been higher.

In respect to the standard time defined for queue length at Lehulu centers, it was also confirmed by the management that 15 minutes is the KPI to get service from Lehulu centers. And in response to a question on how much is Kifiya working to meet this standard time across the centers, it was indicated that efforts are being made in checking up each queue & service time at the centers, increasing the efficiency of customer service officers (counter clerks), controlling service time and waiting time using a system called QMS (Queue Management System). Hence, it can be said that although the follow up is made on the queue & service times at the centers, in terms of taking the remedy actions to improve for those with the longest queue time is not much.

Another question that was presented to the management was on whether the average arrival rate of customers at the above mentioned busiest centers is known by the management. Accordingly it was indicated that on average a customer could arrive between every 15 minutes to 25 minutes at the busiest centers. However, as per the results of this study it was observed that at least 1 customer arrives every 1 minute at the sample branches studied.

In relation to how the management characterizes the current waiting line management of Lehulu centers, it was indicated that the management feels that the current status is good and to minimize the waiting time at the centers efforts are being made to enable the

customer service officers perform one transaction within 25 seconds and opening the centers before 8:00 am to minimize long queue. However, as per the results of this study it was observed that most of the time service time per transaction is higher than this indicated time. On the other hand, it would be good to note also that some customers come with more than 1 transaction to settle which could contribute to the length of service time at some counters.

Another question that was presented to the management was whether there were any studies/ analysis that were conducted on the waiting line at different Lehulu centers and if done so what major findings were identified and corrective actions taken based on it. The responses indicated that no such studies were conducted so far. And so, this study could be taken as the first one in this respect. It is obvious that it is due to the lack of such studies that not much consideration was given by Lehulu to the psychological aspect of waiting in queue and its impact on customers' satisfaction and so accordingly not many efforts were made to improve it (except the application of Queue Management System to monitor the service time at the centers).

In relation to any future plans designed by the company to improve the waiting line management at the centers and increasing customer satisfaction, the management indicated that they are planning to increase the number of the centers and also increasing the number of counters at the centers. They have also indicated that they do plan to conduct continuous studies to improve it further. Again as indicated in the above paragraph, the psychological aspect of waiting in line and factors that affect the perception of customers is not given consideration in the future plans of the organization.

In response to what factors does the management say affects customers perception of waiting lines and their satisfaction towards it, the management indicated that power fluctuations and system interruptions are the major ones that affect the customers' perception. Here also it can be understood that factors like information provided, the queue discipline & the waiting environment that has an impact on customers' perception of waiting lines are not given much consideration.

With respect to the recommendations that the management say should be done to improve the waiting line system at the centers and increase customer satisfaction, what the management indicted were: creating awareness to customers about the extended working hours of Lehulu centers (Monday – Friday, from 8:00am – 7:00pm and on Saturday from 8:00am – 4:00pm) and minimizing the queue length at the centers during the beginning and ending payment periods.

CHAPTER FIVE
5. SUMMARY, CONCLUSION & RECOMMENDATIONS

5.1 Summary of Findings

The main objective of this study is to determine the average arrival rates, the average queue time and average time of service per customer for Lehulu centers and besides this to assess the impact of the psychology of waiting on customer satisfaction. Although, the study had come across several findings which were not included within the scope of the study, for the purpose of meeting the set objectives, the main findings of the study are presented below from the perspective of the queue variables indicated in the study.

Lehulu centers have between 6 and 10 service counters at their service centers and 5 fully functional counters on average based on the analysis of the sample data collected through observation. The service counters are not fully functional for the utility payments sometimes in the morning, during lunch hours, when traffic punishment payments are high and 1 or 2 servers are dedicated for it, when a service counter is out of service and when some staffs are either late or absent from their work place.

The time a customer spends at Lehulu centers could range from as minimum as 1 minute to as high as 56 minutes. The overall average queue time identified was 13.56 minutes, while the average service time was 3.1 minutes. Both the average queue time and the average service time are within the standard time set by the company (i.e. 15 minutes & 3 minutes respectively). However, when the average of only the 3 branches (excluding Addisu Gebeya) is taken, the average time the customer spends at Lehulu centers could become 21 minutes (instead of 17) which is few higher than the standard time defined. As per the results of the computation made using queue model there is 0.43 probabilities that a customer must wait for service with the current average number of functional servers.

However, if two extra service representative/ counters are (7 fully functional servers) to be assigned at each branch, it will result in dramatic decrease in customer waiting time and bring down this probability to 0.097.

The average arrival rate expected by the management is between every 15 minutes to 25 minutes while as per this study it was found that on average at least one customer arrives every 1 minute. This difference could be due to lack of studies conducted on the customers waiting line so far. Furthermore it was also confirmed by the management that no similar studies were conducted previously due to which not much consideration was given by Lehulu to the psychological aspect of waiting in queue and its impact on customers' satisfaction and so accordingly not many efforts were made to improve it (except the application of QMS to monitor the service time at the centers).

With respect to the rating of the queue length, 40.9% of the customers feel that the queue length (perceived as either long or very long) is consuming their time and feel irritated with it, while 59.1% of the customers are ok with the queue length and somehow happy with the speed of service at the centers. This is also reflected in 68.5% of the customers turning away (balks) due to encountering long queues at Lehulu centers. Furthermore, 80.2% of the customers come to Lehulu centers alone when settling their bills, meaning that if the waiting is very long then a very high percent of the customers could feel the anxiety of waiting as they probably won't have an accompany to make them forget about the waiting. On the other hand, the service time is acceptable by nearly 90.6% of the customers.

While around 43% of the customers are happy with the perceived waiting time at Lehulu centers, 38.5% of them are not happy with it. It was also observed that the number of customers who expressed their dissatisfaction (38.5%) and the number of customers who rate the perceived waiting time at Lehulu as long & very long (40.9%) are nearly equal.

FCFS queue discipline is implemented at Lehulu centers except on few occasions. This can be due to the fact that the waiting line is controlled by security guards but not using automatic queuing system that generates queue tickets to customers. With respect to

satisfaction level with the FCFS rule, majority (72.6%) of the customers are happy with its implementation. Another queue discipline that brings satisfaction to customers is the prioritizations given to elderly, pregnant women and differently- abled customers. Majority of the customers (63.5%) are happy with the implementation of this priority rule on top of first come first served queue discipline.

More than 93% of the customers feel that Lehulu should still improve its service further for better satisfaction by either of or both working harder and dedicating more staffs (which are well trained and have better speed and skill).

The percentage of customers who are happy with the information provided at Lehulu centers were around 28.9%, while around 41% of them were not happy with the information provided depicting the missing of information provisioning at the centers in relation to queue/ service time of each customer, or when the systems are down and there will be delays.

Majority of the customers (65.4%) are not happy with the waiting environment. This is due to the unavailability of distractions (like: - digital signage, television, magazines, newspaper, Wi-Fi, etc. provided by the centers while customers wait to be served) and the less conduciveness of the waiting area in the centers (shortage of sheltered waiting areas to protect from heavy rain and sun, shortage of waiting chairs, and lack of cleanness at some of the waiting areas).

Despite the existence of higher level of dissatisfaction with some variables overall majority of the customers (more than 52%) feel satisfied with the queue management at Lehulu. It is also obvious that this number could even be higher given that improvements are made on the variables affecting this overall satisfaction level.

In this study it was also shown using correlation analysis that independent variables like the perceived waiting time, information provided, the waiting environment and queue discipline do determine/ influence the customers' satisfaction with the waiting line management positively. From the results obtained for Pearson correlation coefficient it was

observed that all the variables have moderately strong relationship with the overall customer satisfaction and that they have positive correlation. When comparison is made between each, it seems that perceived waiting time has stronger relationship with overall satisfaction and has larger effect on overall satisfaction, followed by queue discipline, information provided and waiting environment, which all have medium effect. All of these variables resulted in statistical significance at 0.01 levels (2-tailed).

5.2 Conclusion

Waiting lines form because customers do not arrive at a constant, evenly paced rate, nor are they all served in an equal amount of time (Taylor, 2013). Most often, the rate of producing the service also varies, depending on customer needs (Krajewski, Ritzman and Malhotra, 2010). Thus, a waiting line is continually increasing and decreasing in length (and is sometimes empty), and it approaches an average rate of customer arrivals and an average time to serve the customer in the long run (Taylor, 2013).

What was observed at Lehulu centers also confirms to the above theme. Customers arrive at the centers on unpredictable and random manner resulting in the waiting line to be continually increasing and decreasing in length (and sometimes also empty). The rate of producing service to each customer also varies depending on their needs (e.g. some customer requiring many pages of print outs compared to others with single page of print out) and also depending on the number of utility payments they are settling. As per the results of this study it was observed that the arrival rate varies from 24 to 143 customers per hour while the overall average is 70 customers per hour. On the other hand, the number of servers available at the centers varies from 6 to 10, while 5 fully functional servers were available on average per hour based on the computation made using queue analysis model. The time a customer spends at Lehulu centers could also range from as minimum as 1 minute to as high as 56 minutes, and the average time ranging between 17 minutes and 21 minutes. It seems that Lehulu is meeting the set standards of 15 minutes of queue time and 3 minutes of service time, but however, it is to be noted that the average could even be higher at the most busiest centers whose data not considered in this study.

Many customers are not happy with the queue length at Lehulu centers as they refer to it as long or very long. This is mainly due to the perceived waiting time and the expectations from customers to get speedy service at all times when visiting the centers. However, as most customers prefer to settle their payment during the same periods always, and they don't prefer to shift to other periods for next time queues continue to develop and become unavoidable. The queue analysis conducted using queuing model also depicts that currently a customer has 43% of probability of waiting for a service at Lehulu centers. On the other hand, as had been observed it was obvious and easily identifiable that centers like Arat Kilo do need at least two additional service counters while centers like Lebu do require other additional centers to be opened considering the number of transactions/ customers being served under the center. Customers had also indicated the same with their additional feedbacks and concerns.

The queue is managed manually at all the centers by security guards with the application of first come first served queue discipline. Although automatic queuing machines are observed at some centers, they don't seem to be functional at all. It was also identified through the observations made, the questionnaire collected and the interview made to the management that the psychological aspect of waiting and its impacts on customer satisfaction is not given much of a consideration. This was also reflected in the assessment made on customers' satisfaction towards the perceived waiting time, the waiting environment and information provisioning. It is due to this fact that not many efforts were made to make the waiting more pleasant for customers (except the application of Queue Management System to monitor the service time at the centers). There is lack of information provisioning to customers on the waiting line and also the waiting environment is not made more conducive and convenient for waiting. As observed at the centers, long queues are usually more common during morning times and lunch hours. And so, during these times the waiting environments are not large enough to accommodate the length of the queues. There are shortages of waiting areas, chairs, shelters, TV, Wi-Fi, newspapers or magazines, etc. and also some waiting areas lack cleanness as indicated by the customers, to make the waiting pleasant (here one thing to note is TVs had been placed at some of the waiting areas but don't seem to be functional/ never been switched on as per the feedback from the customers).

This study had also tried to show the relationship that exists between the independent variables like the perceived waiting time, the information provided, the waiting environment and queue discipline and the dependent variable (overall customer satisfaction). By conducting correlation analysis using Pearson correlation coefficient results it was confirmed that all these variables have moderately strong relationship with the overall customer satisfaction and that they have positive correlation. When comparison is made between each, it seems that perceived waiting time has stronger relationship with overall satisfaction and has larger effect on overall satisfaction, followed by queue discipline, information provided and waiting environment, which all have medium effect. They all have statistical significance at 0.01 levels (2-tailed). This indicates that perceived waiting time has the higher impact on customer satisfaction compared to the others which have medium level of impact.

5.3 Recommendations

The recommendations that this study will make will be based on the findings made through the different methodologies employed as discussed in the previous parts. The first recommendation that this study will make is that Lehulu needs to consider arranging additional servers and increasing the number of skilled staffs to serve customers with speed and improve the service time in branches like Arat Kilo while opening addition centers for customers being served at branches with the number of customers similar to (and inclusive of) Lebu center. As demonstrated using queueing analysis model, the addition of 2 more servers could dramatically reduce a customer'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 centers 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.

Even if the queue time and service time are within the standard time set by the company, queue lengths going as high as 56 minutes and probably higher at the busiest centers is too

much for a customer to tolerate. Even if it won't be always and in all the payment periods that a customer could face such length queues, such long queues had resulted in majority of the customers to experience balks from queues. And so, Lehulu should give priority to analyzing the situation and working on the solutions. And still, this study recommends for the standard time to be revised as well as it was observed that if enough servers are assigned and efficiency of customer service representatives are improved & made consistent in all the centers the time a customer spends as the centers could be as low as 2 minutes. The company needs to think of continually improving the delivery time of its services and the related KPIs. Here, the study recognizes an effort being made by Lehulu in checking up each queue & service time at the centers using a system called QMS and trying to increasing the efficiency of customer service representatives (counter clerks) accordingly.

The service time of customers at the service counters is relatively good but its consistency needs to be ensured both within the same and other branches. Applying prioritization rules for Business customers (especially those from Big businesses represented with 9.3% response rate) by either arranging dedicated & quick service windows/ counters, or by arranging other payment methods needs to be think of as well. On the other hand, it would be good to note that currently utility paying customers are not happy with the prioritization and dedication of servers given to traffic punishment paying customers (expressed it in the additional feedbacks and concerns part of the questionnaire) by putting a counter argument that these are customers who didn't respect the traffic law and punished for it and so should be treated like other customers but not given priority.

The psychology of waiting and its impacts on customers' satisfaction needs to be given due consideration by Lehulu management. Lehulu should try to improve the perceptions of waiting time in the minds of customers through providing customers with information on the time of service and how much each customer will wait (also using digital signage to show the sequence of queue numbers being served) or when the systems are down and there is delay; arrangements of the waiting environment with distractions like, television, magazines, newspaper, Wi-Fi, etc. to divert the attention of customers from the length of the waiting to be served and arrangement of sheltered & clean waiting areas that could

accommodate at least 70 customers at a time (the average arrival rate number of customers) should be considered as well. The study also recommends for an automatic queueing machines to be installed at the centers to ensure every customer is served on First Come First Served queue discipline (the application of this queuing system will also eliminate customer complaints related to the need to frequently get up and siting back every few seconds to move up further in a waiting line, as queue discipline is currently managed manually). Another alternative to consider is the application of Smart Queue Management System (SQMS) (Jhala and Bhathawala, 2016), which is a queue management system with SMS notification which will issue a queue ticket to a customer (after sending a text, for e.g. "Q" to the number tagged to the branch/ service center they want to visit) and later announce the ticket number when service is available, eliminating the need to stand in line while waiting. Another queue discipline that should be monitored well is the prioritizations given to elderly, pregnant women and differently-abled customers. These all will greatly contribute to the satisfaction of customers.

In relation to creating more convenience of service to customers, Lehulu needs to consider new methods of serving its customers like developing self service facilities at the centers to reduce the number of customers waiting in line & to be served by customer service representatives. According to Kokkinou and Cranage (2013) a more recent and cost-effective approach to reduce waiting times is to introduce self-service technologies (SSTs) into the service delivery process. As also suggest by the customers in the data collected through questionnaire, online payment methods & payment options using mobile voucher cards needs to be explored in the future also. Again this will enable to reduce the number of customers waiting in line to be served by customer service representatives. It would also be good to consider creating convenience of payments for customers by ensuring they settle all their payments at one place, instead of directing to the bank for amounts above certain limits of Birr. This is because; these factors will also affect the satisfaction of customers.

It is also recommended for Lehulu to ensure no service delays occur due to power interruptions (by using UPS power back up/ automatic generators) and also ensure the existence of reliable system connectivity. This is because when the interruptions do occur currently it takes nearly 10 minutes to restart up service. This issue seems to be well known

by the management too as the management indicated that power fluctuations and system interruptions are the major ones that they think do affect the customers perception of the waiting line. And hence, needs to work on the remedy actions suggested.

Lehulu needs to consider also further adding additional working hours particularly early in the morning (open as of 7:00 am) and more staffs engagement during lunch hours (queues are developing currently during lunch hours due to only half of the service representatives/ counters will be working during lunch hours at all centers) as many customers look for settling their bills during these times and then ensure that they attend their work (office) on time.

Furthermore, it is recommended for Lehulu to conduct random studies on the waiting line at the centers and the related customer satisfaction towards the queueing system and work continuously on the improvements. This study would serve as a good basis for the organization to conduct similar studies in the future.

This study established the effect of waiting lines management strategies on customer satisfaction. Besides serving as a basis for future studies on the area, the study also recommends for future studies to investigate what impacts other waiting line variables have on the customer satisfaction apart from those explored in this study. The study also still recommends for future studies to investigate the impact levels perceived waiting time, information provided, the waiting environment and queue discipline have on customer satisfaction.

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APPENDICES 1

APPENDIX 1.1: ENGLISH QUESTIONNAIRE

Most of the questions are combined & adopted from KAMAU, G. (2012) & Mwangi, S. & Ombuni, T. (2015), except very few added by the researcher

RESEARCH QUESTIONNAIRE

ADDIS ABABA UNIVERSITY COLLEGE OF
BUSINESS & ECONOMICS SCHOOL OF COMMERCE
DEPARTMENT OF LOGISTICS AND
SUPPLY CHAIN MANAGEMENT

Dear Respondents,

I am a graduate student at Addis Ababa University School of Commerce Department of Logistics & Supply Chain Management. I am conducting a research study on the title **'*The Application of Waiting Lines System in Improving Customer Satisfaction (A case of Kifiya Financials – Lehulu)***' in partial fulfillment of the requirements for my Master's Degree in Logistics & Supply chain Management. You as esteemed customer of Lehulu have been nominated to participate in this research survey, and I would like to thank you in advance for taking your time and answering all the questions. Please answer the following questions as frankly as possible, as your genuine response is of high importance for the outcome of the project. It will only take you a few minutes.

I assure you that this questionnaire is intended for academic purpose only and your responses will be accorded confidentiality. Thank you in advance for devoting your precious time!

Asefa Demelie (Mobile No: 0911505108)

Questions for Customers

SECTION A: Demographic & General Information

1. What is your Sex?
   (a)Male (b) Female
2. What your age group
   (a) 18 - 25 (b) 26 - 35 (c) 36 - 45 (d) 46 and above

3. Occupation Distribution

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

4. Utility bill that you settle at Lehulu

(a) Water bill (b) Power bill (c) Telephone bill (d) Water & Power Bill (e) All three bill types (f) other

5. When you visit Lehulu center, how many will you be mostly?

(a) Single (b) Pairs (c) Group (d) It differs

6. When do you normally pay your bills?

(a) First week of bill payment period (b) Over the course of bill payment period

(c) Final week of the bill payment period

SECTION B: 1. Customers' ratings of waiting lines

1. How do you rate the queue length at Lehulu centers?

   (a) Short (b) Moderate (c) Long (d) Very long

2. How do you rate the serving time taken by the counter clerks?

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

3. Have you ever turned away due to long queue/ long time being taken to be served?

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

4. If yes to No. 3, 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

5. If yes to No. 3, 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

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

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

7. 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

8. How do you rate the attitudes of Lehulu staffs?

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

9. Do you recommend for Lehulu to continue providing this service?

   (a) Yes (b) No (c) Neutral

SECTION B: 2. Customers' 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.	Customers' 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 information provided? (i.e. explanations they give on time of service, or when the systems are down and there is delay)					
3	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 centers while waiting to be served)?					
4	How satisfied are you with the queue discipline (i.e. implementation of First come First Served rule)?					
5	How satisfied are you with the prioritizations given to elderly, pregnant women and differently-abled customers in serving?					
6	How satisfied are you with the overall management of waiting lines in Lehulu centers?					

7. Do you have any other comments, questions, or concerns?

_____

_____

_____

APPENDIX 1.2: AMHARIC QUESTIONNAIRE

የትምህርታዊ ጥናት መጠይቅ

አዲስ አበባ ዩኒቨርሲቲ ቢዝነስና ኢኮኖሚክስ ኮሌጅ ንግድ ስራ ት/ቤት ሎጅስቲክስና ሰፕላይ ቼይን አስተዳደር ት/ት ክፍል

የተከበራችሁ መላሾች፤

እኔ በአዲስ አበባ ዩኒቨርሲቲ ቢዝነስና ኢኮኖሚክስ ኮሌጅ ንግድ ስራ ት/ቤት ሎጀስቲክስና ሰፕላይ ቼይን አስተዳድር ት/ት ክፍል የድህረ ምረቃ ተማሪ ስሆን ለመመረቂያ ጥናታዊ ፅሁፍ እንዲሆን **ከአገልግሎት አሰጣጥ ጋር ተያይዞ የሚዘረጋ የወረፋ ስርዓት የደንበኞች እርካታን ለመጨመር ባለው አስተዋፅኦ** ላይ ትምህረታዊ ጥናት በለሁሉ አገልግሎት ማዕከላት ላይ እያካሄድኩ ነዉ። ከዚሁ ጋር ተያይዞ እርሰዎ የለሁሉ አገልግሎት ተጠቃሚ እደመሆንዎ የመጠይቁ ዋና ተሳታፊ እንዲሆኑ በክብር ተመርጠዋል። ጊዜዎትን ሰጥተው ይህንን ጥናታዊ መጠይቅ በመሙላትዎ በቅድሚያ እያመሰገንኩ ለጥያቄዎቹ ተገቢዉን ምላሽ መስጠትዎ ለጥናቱ ዉጤት ከፍተኛ ጠቀሜታ አስተዋፅዖ እንደሚኖረው ተረድተው የእርስዎን ትክክለኛና ዉስጣዊ ስሜት የሚገልፀ ምላሾች እንዲሰጡኝ በትህትና እጠይቃለሁ። ጥያቄዎቹ በተቻለ ብዙ ጊዜዎትን እንዳይወስዱ ተደርገው ነው የተዘጋጁት።

በተጨማሪም ይህ መጠይቅ የተዘጋጀው ለትምህርታዊ አላማ ብቻ መሆኑንና እርስዎ የሚሰጡት ምላሽ ሚስጥራዊነቱ በሚገባ የተጠበቀ መሆኑን ላረጋግጥሎት እወዳለሁ። መጠይቁን ሲሞሉ ስምዎትን መጥቀስ አይጠበቅቦትም። ስለ ትብብርዎና ዉድ ጊዜዎ በቅድሚያ አመሰግናለሁ።

አሰፋ ደምሌ
ሞባይል ስልክ፡ 0911505108

ለተገልጋዮች የተዘጋጁ ጥያቄዎች

ክፍል አንድ :- አጠቃላይ የደንበኛው መረጃ

ከታች በቀረቡት ጥያቄዎች ላይ የእርስዎ ምላሽ የሆነውን ምርጫ በማክበብ ያመልክቱ

1. የእርስዎ ፆታ?

   (ሀ) ወንድ (ለ) ሴት

2. የእድሜዎን ምድብ ከታች ካሉት ይምረጡ

   (ሀ) 18 - 25 (ለ) 26 - 35 (ሐ) 36 - 45 (መ) 46 እና ከዚያ በላይ

3. ስራዎ ምንድን ነው?

   (ሀ) ተማሪ (ለ) የመንግስት መ/ቤት ሰራተኛ (ሐ) የአነስተኛ ድርጅት ባለቤት/ ሰራተኛ (መ) የትልቅ ድርጅት ባለቤት/ ሰራተኛ (ሠ) ሌላ

4. የዬትኛውን አገልግሎት ክፍያ ነው እርስዎ በለሁሉ ማእከል የሚከፍሉት

   (ሀ) የውሀ ሂሳብ (ለ) የመብራት ሂሳብ (ሐ) የስልክ ሂሳብ (መ) የውሃ እና የመብራት (ሠ) ሶስቱም አገልግሎቶች (ረ) ሌላ አገልግሎት

5. የለሁሉ ማዕከላት ሲመጡ ብዙ ጊዜ ከስንት ሰዎች ጋር ነው የሚመጡት?

   (ሀ) ብቻዬን (ለ) ሁለት ሆኜ (ሐ) በቡድን ሆነን (መ) በየጊዜው በተለያየ ብዛት

6. ያለብዎትን ሂሳቡ በአብዛኛው መቼ ነው የሚከፍሉት?

   (ሀ) በመጀመሪያው የመክፈያ ሳምንት

   (ለ) በመካከል ባሉ የመክፈያ ጊዜያት

   (ሐ) በመጨረሻዎቹ የመክፈያ ቀኖች/ ሳምንት

ክፍል ሁለት: 1. ደንበኞች በወረፋ ስርዓቱ ላይ የሰጡት ውጤት/ ደረጃ

1. የለሁሉ ማዕከላትን የወረፋ ርዝመት እንዴት ይገልፁታል?

   (ሀ) አጭር (ለ) መካከለኛ (ሐ) ረጅም (መ) በጣም ረጅም

2. የሂሳብ ተቀባዮቹ አገልግሎት ለመስጠት የሚፈጅባቸውን ሰዓት እንዴት ይገልፁታል?

   (ሀ) ፈጣን (ለ) መካከለኛ (ሐ) ዘገምተኛ

3. ከወረፋ ርዝመቱ የተነሳ ወይም ከአገልግሎቱ ዘገምተኛነት የተነሳ ተመልሰው/ ወረፋውን ጥለው የሁዱበት አጋጣሚ ነበር?

   (ሀ) አዎ (ለ) አልነበረም (ሐ) አላስታውሰውም

4. ከላይ ላለው ምላሽ አዎ ከሆነ ምን ያህል ጊዜ እንደተመለሱ ቢገልፁ?

   (ሀ) አንድ ጊዜ ብቻ (ለ) ጥቂት ጊዜያት (ሐ) ቢያንስ በየወሩ አንድ ጊዜ (መ) ብዙ ጊዜ

5. ለተ.ቁ. 3 ምላሽ አዎ ከሆነ የወረፋ ርዝመቱን ችግር እንዴት ፈቱት?

(ሀ) ወረፋውን በመዝለል በሌላ መንገድ ተስተናገድኩ (ለ) ተመልሼ ወረፋው ሲቀንስ በዚያው ቀን ተስተናገድኩ

(ሐ) ትቼ በመሄድ ሌላ ቀን ተመልሼ ተስተናገድኩ

6. ቅድሚያ የመጣ ቅድሚያ ይስተናገድ የሚለው ህግ ተቀባይነት አለው እንዲሁም በአግባቡ ተተግብሯል ይላሉ?

(ሀ) አዎ ሁልጊዜ ይተገበራል (ለ) አንዳንዴ ይተገበራል (ሐ) አይተገበርም

7. የአገልግሎት ጊዜያቸውን እንዲያሻሽሉ ምን ማድረግ አለባቸው ይላሉ?

(ሀ) አሁን ካለው በበለጠ በመስራት (ለ) ተጨማሪ የሰው ሀይል በመቅጠር (ሐ) በሁለቱም (መ) እርግጠኛ አይደለሁም

8. የለሁሉን ሰራተኞች ስነምግባር እንዴት ይገልፁታል?

(ሀ) ትህትና እና ቀረቤታ የተሞላበት (ለ) ብዙም ማለት አልችልም (ሐ) ትህትና እና ቀረቤታ የጎደለው

9. የቢል ክፍያ ስርዓቱ በለሁሉ በኩል መቀጠል አለበት ይላሉ?

(ሀ) አዎ (ለ) የለበትም (ሐ) እርግጠኛ አይደለሁም

ክፍል ሁለት፡- 2. የደንበኞ አገልግሎት የወረፋ ሠርዓተ-ሂደት እርካታ

የሚከተሉት ጥያቄዎች ደንበኞች በለሁሉ ማዕከል አገልግሎት በሚያገኙበት ወቅት ስለ ወረፋው ሥርዓትና አጠቃላይ ሂደት ያላቸውን እርካታ ለመለካት የተዘጋጁ ናቸው፡፡ ስለዚህ በለሁሉ ማዕከል ከደረሱበት ደቂቃ አንስቶ አገልግሎት አግኝተው እስኪመለሱ ድረስ ስላለው ሥርዓትና ሂደት እርካታዎን ከ 1- 5 ባሉት ልኬቶች መሠረት ይግለፁ፡፡

5 = በጣም ረክቻለሁ
4 = ረክቻለሁ
3 = እርግጠኛ አይደለሁም
2 = አልረካሁም
1 = ፈፅሞ አልረካሁም

ተ.ቁ.	መስፈርቶች	(1) ፈፅሞ አልረካሁም	(2) አልረካሁም	(3) እርግጠኛ አይደለሁም	(4) ረክቻለሁ	(5) በጣም ረክቻለሁ
1	ወረፋ ይዘው አገልግሎት እስኪያገኙ ባለው የጊዜ ርዝመት ላይ ምን ያህል ረክተዋል?					
2	በወረፋ ላይ ሆነው ስለሚሰጡት መረጃ ምን ያህል ረክተዋል (ለምሳሌ፡- እያንዳንዱን ተገልጋይ ለማስተናገድ የሚፈጀውን የጊዜ ገደብ አስልቶ ለደንበኖቹ ማሳወቁ፤ እንዲሁም ሲስተም ሲዘገይ ወይም ሲቋረጥ ወዲያው ለደንበኞቹ ማሳወቁ ጋር ተያይዞ)					
3	ከወረፋ መጠበቂያ አካባቢ ምቹነት ጋር ተያይዞ ምን ያህል ረክተዋል? (ለምሳሌ፡- ምቹ የማረፊያ ቦታዎች፣ዲጂታል የወረፋ ቁጥር ማሳያ፣ ቴሌቪዥን፣ መፅሄት፣ ጋዜጣ፣ የዋይ ፋይ ኢንተርኔት አገልግሎት እና የመሳሰሉት በወረፋ ቆይታ ጊዜ ደንበኞች እንዲጠቀሟቸው በማዕከሉ ስለመዘጋጀታቸው) ?					
4	በወረፋ ስርዓተ-ሂደቱ ላይ ምን ያህል ረክተዋል (ማለትም ቅድሚያ የመጣ ቅድሚያ ይስተናገዳል በሚለው ስርዓት አፈፃፀም ላይ)?					
5	ለአረጋዊያን፣ ለነፍሰጡሮች፣ እንዲሁም ለአካል ጉዳተኞች በሚሰጠው ቅድሚያ አገልግሎት ላይ ያለዎት እርካታ ምን ያህል ነው?					
6	በአጠቃላይ በለሁሉ ማዕከላት ስላለው የወረፋ ስርዓተ-ሂደት ላይ ያለዎት አጠቃላይ እርካታ ደረጃ ምን ያክል ነው?					

7. በለሁሉ አገልግሎት ላይ ሌሎች ተጨማሪ አስተያየቶች፣ ጥያቄዎች ወይም ስጋቶች ካሉዎት ቢገልፁ

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_____

_____

APPENDICES 2

APPENDIX 2.1: Interview Questions

The following Interview questions are for management of Lehulu/ Kifiya Financials with respect to waiting line management of Lehulu centers.

1. What is your position in the organization?

   _____

2. How long have you been working under Lehulu?

   _____

3. Which of the Lehulu centers are the busiest in terms of customers queue?

   _____

4. What is the standard time defined for queue length at Lehulu centers?

   _____

5. How much do you say Kifiya is working to meet this standard time across the centers?

   _____

6. Is the average arrival rate of customers at the above mentioned busiest centers known by Kifiya?

   _____

7. If yes to No.6, what is the average arrival rate at these busiest centers?

   _____

8. How do you characterize the current waiting line management of Lehulu centers?

   _____

9. Was there any studies/ analysis conducted on the waiting line at different centers?

   _____

10. If Yes to No.9, what were the major findings and the corrective measures taken?

    _____

11. Is there any future plans designed by the company to improve the waiting line management at the centers and increase customer satisfaction?

    _____

12. If yes to No. 11, what visible measures will be taken to improve the waiting line situation?

    _____

13. What factors do you say affect customers perception of waiting lines and as a result their satisfaction to it?

    _____

14. What do you recommend should be done to improve the waiting line management at the centers and increase customer satisfaction?

    _____

    _____

    _____

APPENDICES 3

APPENDEX 3.1: Observational Data on Arrival Time, Queue Time & Service Times at Sample Lehulu Centers

Lehulu Center: Data Entry Form For Arrival & Service Times										
Customer No.	**Day**	**Branch Name**	**Server No**	**Arrival Time**	**Queue Time**	**Service Start Time**	**Service End Time**	**Service Time**	**Total Time spent in system**	**Remarks**
1	1	Arat Kilo	1	9:50	0:16	10:06	10:08	0:02	0:18	6-4-2017
2	1	Arat Kilo	6	9:51	0:19	10:10	10:12	0:02	0:21	
3	1	Arat Kilo	1	9:52	0:16	10:08	10:10	0:02	0:18	
4	1	Arat Kilo	3	9:53	0:15	10:08	10:11	0:03	0:18	
5	1	Arat Kilo	1	9:57	0:17	10:14	10:16	0:02	0:19	
6	1	Arat Kilo	1	9:58	0:18	10:16	10:17	0:01	0:19	
7	1	Arat Kilo	6	9:59	0:16	10:15	10:23	0:08	0:24	
8	1	Arat Kilo	1	10:00	0:16	10:16	10:19	0:03	0:19	
9	1	Arat Kilo	3	10:02	0:16	10:18	10:20	0:02	0:18	
10	1	Arat Kilo	3	10:03	0:17	10:20	10:26	0:06	0:23	
11	1	Arat Kilo	1	10:04	0:16	10:20	10:23	0:03	0:19	
12	1	Arat Kilo	6	10:04	0:19	10:23	10:26	0:03	0:22	
13	1	Arat Kilo	1	10:07	0:16	10:23	10:32	0:09	0:25	
14	1	Arat Kilo	6	10:08	0:18	10:26	10:30	0:04	0:22	
15	1	Arat Kilo	3	10:08	0:18	10:26	10:29	0:03	0:21	
16	1	Arat Kilo	3	10:09	0:24	10:33	10:42	0:09	0:33	Power went off for 8 minutes and it was considered in recording queue time and service
17	1	Arat Kilo	6	10:12	0:19	10:31	10:34	0:03	0:22	
18	1	Arat Kilo	6	10:13	0:21	10:34	10:37	0:03	0:24	
19	1	Arat Kilo	3	10:14	0:28	10:42	10:43	0:01	0:29	
20	1	Arat Kilo	6	10:15	0:21	10:36	10:42	0:06	0:27	
21	1	Arat Kilo	6	10:16	0:26	10:42	10:43	0:01	0:27	
22	1	Arat Kilo	1	10:17	0:24	10:41	10:45	0:04	0:28	
23	1	Arat Kilo	6	10:21	0:22	10:43	10:53	0:10	0:32	
24	1	Arat Kilo	3	10:22	0:21	10:43	10:45	0:02	0:23	
25	1	Arat Kilo	3	10:22	0:22	10:44	10:47	0:03	0:25	
26	1	Arat Kilo	3	10:22	0:23	10:45	10:48	0:03	0:26	
27	1	Arat Kilo	3	10:23	0:25	10:48	10:51	0:03	0:28	
28	1	Arat Kilo	1	10:23	0:25	10:48	10:49	0:01	0:26	

29	1	Arat Kilo	1	10:26	0:23	10:49	10:50	0:01	0:24	start time
30	1	Arat Kilo	3	10:26	0:24	10:50	10:55	0:05	0:29	
31	1	Arat Kilo	1	10:28	0:22	10:50	10:55	0:05	0:27	
32	1	Arat Kilo	3	10:28	0:25	10:53	10:56	0:03	0:28	
33	1	Arat Kilo	3	10:29	0:25	10:54	10:56	0:02	0:27	
34	1	Arat Kilo	6	10:31	0:24	10:55	10:58	0:03	0:27	
35	1	Arat Kilo	3	10:32	0:23	10:55	10:57	0:02	0:25	
36	1	Arat Kilo	1	10:32	0:24	10:56	11:01	0:05	0:29	
37	1	Arat Kilo	3	10:34	0:23	10:57	10:58	0:01	0:24	
38	1	Arat Kilo	3	10:36	0:22	10:58	11:01	0:03	0:25	
39	1	Arat Kilo	3	10:37	0:24	11:01	11:05	0:04	0:28	
40	1	Arat Kilo	6	10:40	0:23	11:03	11:04	0:01	0:24	
41	1	Arat Kilo	3	10:40	0:25	11:05	11:07	0:02	0:27	
42	1	Arat Kilo	6	10:40	0:24	11:04	11:06	0:02	0:26	
43	1	Arat Kilo	6	10:43	0:22	11:05	11:08	0:03	0:25	
44	1	Arat Kilo	3	10:43	0:24	11:07	11:10	0:03	0:27	
45	1	Arat Kilo	6	10:45	0:23	11:08	11:12	0:04	0:27	
46	1	Arat Kilo	1	10:44	0:24	11:08	11:10	0:02	0:26	
47	1	Arat Kilo	1	10:47	0:21	11:08	11:10	0:02	0:23	
48	1	Arat Kilo	6	10:45	0:25	11:10	11:12	0:02	0:27	
49	1	Arat Kilo	1	10:47	0:25	11:12	11:14	0:02	0:27	
50	1	Arat Kilo	1	10:55	0:19	11:14	11:16	0:02	0:21	
51	1	Arat Kilo	6	11:02	0:20	11:22	11:27	0:05	0:25	
52	1	Arat Kilo	1	11:05	0:15	11:20	11:22	0:02	0:17	
53	1	Arat Kilo	3	11:06	0:14	11:20	11:23	0:03	0:17	
54	1	Arat Kilo	3	11:06	0:17	11:23	11:26	0:03	0:20	
55	1	Arat Kilo	1	11:06	0:16	11:22	11:23	0:01	0:17	
56	1	Arat Kilo	3	11:10	0:16	11:26	11:29	0:03	0:19	
57	1	Arat Kilo	6	11:13	0:14	11:27	11:30	0:03	0:17	
58	1	Arat Kilo	3	11:13	0:20	11:33	11:34	0:01	0:21	
59	1	Arat Kilo	3	11:19	0:15	11:34	11:35	0:01	0:16	
60	1	Arat Kilo	3	11:20	0:15	11:35	11:37	0:02	0:17	
61	1	Arat Kilo	1	11:30	0:05	11:35	11:39	0:04	0:09	
62	1	Arat Kilo	3	11:33	0:08	11:41	11:45	0:04	0:12	
63	1	Arat Kilo	6	11:37	0:08	11:45	11:47	0:02	0:10	
64	1	Arat Kilo	3	11:37	0:12	11:49	11:50	0:01	0:13	
65	1	Arat Kilo	6	11:37	0:15	11:52	11:57	0:05	0:20	
66	1	Arat Kilo	3	11:39	0:11	11:50	11:52	0:02	0:13	
67	1	Arat Kilo	6	11:40	0:11	11:51	11:53	0:02	0:13	
68	1	Arat Kilo	3	11:44	0:08	11:52	11:56	0:04	0:12	
69	1	Arat Kilo	3	11:46	0:12	11:58	12:01	0:03	0:15	
70	1	Arat Kilo	1	13:38	0:20	13:58	14:01	0:03	0:23	
71	1	Arat Kilo	1	13:38	0:25	14:03	14:10	0:07	0:32	

72	1	Arat Kilo	4	13:38	0:26	14:04	14:06	0:02	0:28	
73	1	Arat Kilo	3	13:44	0:21	14:05	14:05	0:00	0:21	
74	1	Arat Kilo	4	13:45	0:21	14:06	14:09	0:03	0:24	
75	1	Arat Kilo	1	13:58	0:13	14:11	14:14	0:03	0:16	
76	1	Arat Kilo	1	13:58	0:16	14:14	14:18	0:04	0:20	
77	1	Arat Kilo	6	14:02	0:12	14:14	14:18	0:04	0:16	
78	1	Arat Kilo	3	14:03	0:13	14:16	14:17	0:01	0:14	
79	1	Arat Kilo	3	14:05	0:12	14:17	14:18	0:01	0:13	
80	1	Arat Kilo	3	14:06	0:12	14:18	14:21	0:03	0:15	
81	1	Arat Kilo	3	14:09	0:12	14:21	14:27	0:06	0:18	
82	1	Arat Kilo	6	14:10	0:09	14:19	14:26	0:07	0:16	
83	1	Arat Kilo	1	14:24	0:00	14:24	14:28	0:04	0:04	
84	1	Arat Kilo	4	14:32	0:00	14:32	14:36	0:04	0:04	
85	1	Arat Kilo	2	14:39	0:01	14:40	14:42	0:02	0:03	
86	1	Arat Kilo	1	14:41	0:00	14:41	14:44	0:03	0:03	
87	1	Arat Kilo	4	14:41	0:03	14:44	14:46	0:02	0:05	
88	1	Arat Kilo	4	14:41	0:02	14:43	14:45	0:02	0:04	
89	1	Arat Kilo	6	14:41	0:01	14:42	14:48	0:06	0:07	
90	1	Arat Kilo	1	14:45	0:00	14:45	14:48	0:03	0:03	
91	1	Arat Kilo	4	14:47	0:00	14:47	14:50	0:03	0:03	
92	1	Arat Kilo	1	14:53	0:00	14:53	14:56	0:03	0:03	
93	1	Arat Kilo	6	14:57	0:00	14:57	15:02	0:05	0:05	
94	1	Arat Kilo	4	14:57	0:01	14:58	15:00	0:02	0:03	
95	1	Arat Kilo	1	14:57	0:01	14:58	15:00	0:02	0:03	
96	1	Arat Kilo	4	14:57	0:03	15:00	15:02	0:02	0:05	
97	1	Arat Kilo	1	14:59	0:01	15:00	15:02	0:02	0:03	
98	1	Arat Kilo	1	14:59	0:03	15:02	15:05	0:03	0:06	
99	1	Arat Kilo	6	15:02	0:01	15:03	15:05	0:02	0:03	
100	1	Arat Kilo	6	15:04	0:01	15:05	15:09	0:04	0:05	
101	1	Arat Kilo	4	15:06	0:01	15:07	15:09	0:02	0:03	
102	1	Arat Kilo	1	15:11	0:00	15:11	15:13	0:02	0:02	
103	1	Arat Kilo	4	15:11	0:00	15:11	15:16	0:05	0:05	
104	1	Arat Kilo	6	15:11	0:01	15:12	15:15	0:03	0:04	
105	1	Arat Kilo	1	15:12	0:03	15:15	15:19	0:04	0:07	
106	1	Arat Kilo	6	15:13	0:02	15:15	15:18	0:03	0:05	
107	1	Arat Kilo	6	15:13	0:03	15:16	15:19	0:03	0:06	
108	1	Arat Kilo	4	15:16	0:02	15:18	15:20	0:02	0:04	
109	1	Arat Kilo	1	15:16	0:03	15:19	15:21	0:02	0:05	
110	1	Arat Kilo	6	15:18	0:01	15:19	15:20	0:01	0:02	
111	1	Arat Kilo	6	15:20	0:00	15:20	15:27	0:07	0:07	
112	1	Arat Kilo	1	15:18	0:03	15:21	15:24	0:03	0:06	
113	1	Arat Kilo	4	15:22	0:04	15:26	15:31	0:05	0:09	
114	1	Arat Kilo	6	15:28	0:00	15:28	15:33	0:05	0:05	

115	2	Kazanchis	8	9:23	0:05	9:28	9:30	0:02	0:07	7-4-2017
116	2	Kazanchis	7	9:26	0:03	9:29	9:31	0:02	0:05	
117	2	Kazanchis	6	9:28	0:01	9:29	9:31	0:02	0:03	
118	2	Kazanchis	2	9:28	0:02	9:30	9:31	0:01	0:03	
119	2	Kazanchis	3	9:29	0:02	9:31	9:33	0:02	0:04	
120	2	Kazanchis	2	9:30	0:01	9:31	9:34	0:03	0:04	
121	2	Kazanchis	6	9:34	0:00	9:34	9:36	0:02	0:02	
122	2	Kazanchis	2	9:34	0:00	9:34	9:36	0:02	0:02	
123	2	Kazanchis	7	9:34	0:01	9:35	9:37	0:02	0:03	
124	2	Kazanchis	8	9:35	0:01	9:36	9:37	0:01	0:02	
125	2	Kazanchis	1	9:35	0:01	9:36	9:38	0:02	0:03	
126	2	Kazanchis	3	9:35	0:01	9:36	9:38	0:02	0:03	
127	2	Kazanchis	8	9:40	0:01	9:41	9:42	0:01	0:02	
128	2	Kazanchis	5	9:40	0:01	9:41	9:44	0:03	0:04	
129	2	Kazanchis	2	9:41	0:00	9:41	9:43	0:02	0:02	
130	2	Kazanchis	8	9:41	0:00	9:41	9:43	0:02	0:02	
131	2	Kazanchis	6	9:41	0:01	9:42	9:44	0:02	0:03	
132	2	Kazanchis	7	9:42	0:00	9:42	9:44	0:02	0:02	
133	2	Kazanchis	4	9:42	0:00	9:42	9:46	0:04	0:04	
134	2	Kazanchis	3	9:42	0:00	9:42	9:45	0:03	0:03	
135	2	Kazanchis	5	9:43	0:00	9:43	9:46	0:03	0:03	
136	2	Kazanchis	1	9:44	0:02	9:46	9:48	0:02	0:04	
137	2	Kazanchis	6	9:44	0:02	9:46	9:48	0:02	0:04	
138	2	Kazanchis	3	9:45	0:01	9:46	9:49	0:03	0:04	
139	2	Kazanchis	5	9:46	0:01	9:47	9:49	0:02	0:03	
140	2	Kazanchis	6	9:46	0:01	9:47	9:51	0:04	0:05	
141	2	Kazanchis	2	9:47	0:02	9:49	9:51	0:02	0:04	
142	2	Kazanchis	7	9:47	0:03	9:50	9:52	0:02	0:05	
143	2	Kazanchis	8	9:48	0:01	9:49	9:53	0:04	0:05	
144	2	Kazanchis	5	9:50	0:01	9:51	9:55	0:04	0:05	
145	2	Kazanchis	2	9:51	0:00	9:51	9:54	0:03	0:03	
146	2	Kazanchis	6	9:51	0:01	9:52	9:55	0:03	0:04	
147	2	Kazanchis	1	9:52	0:00	9:52	9:56	0:04	0:04	
148	2	Kazanchis	7	9:52	0:00	9:52	10:00	0:08	0:08	
149	2	Kazanchis	8	9:53	0:03	9:56	9:58	0:02	0:05	
150	2	Kazanchis	2	9:53	0:03	9:56	9:58	0:02	0:05	
151	2	Kazanchis	3	9:54	0:02	9:56	9:57	0:01	0:03	
152	2	Kazanchis	6	9:55	0:01	9:56	9:57	0:01	0:02	
153	2	Kazanchis	4	9:55	0:01	9:56	9:58	0:02	0:03	
154	2	Kazanchis	4	9:57	0:02	9:59	10:01	0:02	0:04	
155	2	Kazanchis	6	9:59	0:00	9:59	10:03	0:04	0:04	
156	2	Kazanchis	7	10:00	0:00	10:00	10:02	0:02	0:02	
157	2	Kazanchis	2	10:00	0:00	10:00	10:04	0:04	0:04	

158	2	Kazanchis	7	10:00	0:02	10:02	10:04	0:02	0:04	
159	2	Kazanchis	4	10:01	0:00	10:01	10:04	0:03	0:03	
160	2	Kazanchis	2	10:02	0:02	10:04	10:12	0:08	0:10	
161	2	Kazanchis	6	10:03	0:00	10:03	10:05	0:02	0:02	
162	2	Kazanchis	4	10:03	0:01	10:04	10:06	0:02	0:03	
163	2	Kazanchis	6	10:03	0:02	10:05	10:09	0:04	0:06	
164	2	Kazanchis	4	10:04	0:02	10:06	10:08	0:02	0:04	
165	2	Kazanchis	7	10:04	0:01	10:05	10:11	0:06	0:07	
166	2	Kazanchis	1	10:05	0:04	10:09	10:12	0:03	0:07	
167	2	Kazanchis	6	10:06	0:03	10:09	10:10	0:01	0:04	
168	2	Kazanchis	4	10:07	0:01	10:08	10:11	0:03	0:04	
169	2	Kazanchis	3	10:07	0:01	10:08	10:12	0:04	0:05	
170	2	Kazanchis	6	10:08	0:02	10:10	10:12	0:02	0:04	
171	2	Kazanchis	8	10:08	0:00	10:08	10:11	0:03	0:03	
172	2	Kazanchis	6	10:08	0:04	10:12	10:13	0:01	0:05	
173	2	Kazanchis	7	10:10	0:01	10:11	10:17	0:06	0:07	
174	2	Kazanchis	4	10:10	0:01	10:11	10:19	0:08	0:09	
175	2	Kazanchis	1	10:11	0:01	10:12	10:15	0:03	0:04	
176	2	Kazanchis	8	10:11	0:00	10:11	10:18	0:07	0:07	
177	2	Kazanchis	6	10:12	0:01	10:13	10:15	0:02	0:03	
178	2	Kazanchis	3	10:13	0:02	10:15	10:17	0:02	0:04	
179	2	Kazanchis	3	10:15	0:02	10:17	10:19	0:02	0:04	
180	2	Kazanchis	5	10:16	0:01	10:17	10:20	0:03	0:04	
181	2	Kazanchis	7	10:18	0:00	10:18	10:28	0:10	0:10	
182	2	Kazanchis	1	10:19	0:00	10:19	10:21	0:02	0:02	
183	2	Kazanchis	5	10:20	0:00	10:20	10:22	0:02	0:02	
184	2	Kazanchis	6	10:20	0:00	10:20	10:25	0:05	0:05	
185	2	Kazanchis	8	10:20	0:00	10:20	10:26	0:06	0:06	4 servers idle @10:21
186	2	Kazanchis	4	10:22	0:00	10:22	10:25	0:03	0:03	
187	2	Kazanchis	1	10:22	0:00	10:22	10:25	0:03	0:03	
188	2	Kazanchis	5	10:23	0:00	10:23	10:25	0:02	0:02	
189	2	Kazanchis	2	10:23	0:01	10:24	10:27	0:03	0:04	
190	2	Kazanchis	6	10:26	0:00	10:26	10:28	0:02	0:02	
191	2	Kazanchis	7	10:26	0:00	10:26	10:31	0:05	0:05	
192	2	Kazanchis	8	10:30	0:00	10:30	10:31	0:01	0:01	
193	2	Kazanchis	4	10:30	0:00	10:30	10:32	0:02	0:02	
194	2	Kazanchis	5	10:30	0:01	10:31	10:34	0:03	0:04	
195	2	Kazanchis	7	10:31	0:01	10:32	10:34	0:02	0:03	
196	2	Kazanchis	8	10:31	0:01	10:32	10:34	0:02	0:03	
197	2	Kazanchis	5	10:31	0:03	10:34	10:35	0:01	0:04	
198	2	Kazanchis	8	10:32	0:02	10:34	10:36	0:02	0:04	
199	2	Kazanchis	5	10:32	0:03	10:35	10:39	0:04	0:07	
200	2	Kazanchis	8	10:34	0:02	10:36	10:40	0:04	0:06	

201	2	Kazanchis	7	10:34	0:05	10:39	10:42	0:03	0:08	
202	2	Kazanchis	8	10:34	0:07	10:41	10:45	0:04	0:11	
203	2	Kazanchis	6	10:36	0:06	10:42	10:46	0:04	0:10	
204	2	Kazanchis	7	10:37	0:05	10:42	10:46	0:04	0:09	
205	2	Kazanchis	4	10:37	0:05	10:42	10:46	0:04	0:09	
206	2	Kazanchis	3	10:38	0:06	10:44	10:46	0:02	0:08	
207	2	Kazanchis	8	10:39	0:05	10:44	10:48	0:04	0:09	
208	2	Kazanchis	7	10:43	0:02	10:45	10:48	0:03	0:05	
209	2	Kazanchis	4	12:10	0:07	12:17	12:24	0:07	0:14	
210	2	Kazanchis	1	12:11	0:07	12:18	12:20	0:02	0:09	
211	2	Kazanchis	3	12:11	0:08	12:19	12:22	0:03	0:11	
212	2	Kazanchis	3	12:14	0:08	12:22	12:25	0:03	0:11	
213	2	Kazanchis	3	12:17	0:08	12:25	12:31	0:06	0:14	
214	2	Kazanchis	2	12:19	0:06	12:25	12:26	0:01	0:07	
215	2	Kazanchis	2	12:21	0:05	12:26	12:28	0:02	0:07	
216	2	Kazanchis	2	12:21	0:07	12:28	12:31	0:03	0:10	
217	2	Kazanchis	1	12:22	0:12	12:34	12:37	0:03	0:15	
218	2	Kazanchis	2	12:23	0:12	12:35	12:38	0:03	0:15	
219	2	Kazanchis	4	12:23	0:13	12:36	12:41	0:05	0:18	
220	2	Kazanchis	1	12:24	0:13	12:37	12:40	0:03	0:16	
221	2	Kazanchis	6	13:42	0:04	13:46	13:49	0:03	0:07	
222	2	Kazanchis	7	13:42	0:07	13:49	13:52	0:03	0:10	
223	2	Kazanchis	7	13:43	0:09	13:52	13:56	0:04	0:13	
224	2	Kazanchis	6	13:47	0:06	13:53	13:59	0:06	0:12	
225	2	Kazanchis	5	13:47	0:08	13:55	13:58	0:03	0:11	
226	2	Kazanchis	8	13:51	0:05	13:56	13:58	0:02	0:07	
227	2	Kazanchis	5	13:52	0:06	13:58	14:02	0:04	0:10	
228	2	Kazanchis	7	13:52	0:06	13:58	14:03	0:05	0:11	
229	2	Kazanchis	6	13:55	0:05	14:00	14:02	0:02	0:07	
230	2	Kazanchis	7	13:55	0:08	14:03	14:05	0:02	0:10	
231	2	Kazanchis	6	13:55	0:08	14:03	14:09	0:06	0:14	
232	2	Kazanchis	5	13:56	0:10	14:06	14:10	0:04	0:14	
233	2	Kazanchis	7	13:57	0:09	14:06	14:08	0:02	0:11	
234	2	Kazanchis	8	13:57	0:11	14:08	14:11	0:03	0:14	
235	2	Kazanchis	6	13:58	0:11	14:09	14:12	0:03	0:14	
236	2	Kazanchis	5	14:01	0:09	14:10	14:11	0:01	0:10	
237	2	Kazanchis	8	14:01	0:10	14:11	14:12	0:01	0:11	
238	2	Kazanchis	5	14:01	0:10	14:11	14:14	0:03	0:13	
239	2	Kazanchis	8	14:05	0:07	14:12	14:15	0:03	0:10	
240	2	Kazanchis	6	14:05	0:07	14:12	14:15	0:03	0:10	
241	2	Kazanchis	5	14:05	0:09	14:14	14:21	0:07	0:16	
242	2	Kazanchis	8	14:08	0:07	14:15	14:21	0:06	0:13	
243	2	Kazanchis	7	14:11	0:09	14:20	14:24	0:04	0:13	

244	2	Kazanchis	8	14:13	0:08	14:21	14:22	0:01	0:09	
245	2	Kazanchis	5	14:13	0:08	14:21	14:24	0:03	0:11	
246	2	Kazanchis	8	14:13	0:09	14:22	14:29	0:07	0:16	
247	2	Kazanchis	5	14:13	0:11	14:24	14:26	0:02	0:13	
248	2	Kazanchis	7	14:14	0:10	14:24	14:29	0:05	0:15	
249	2	Kazanchis	4	14:23	0:02	14:25	14:27	0:02	0:04	
250	2	Kazanchis	5	14:25	0:01	14:26	14:28	0:02	0:03	
251	2	Kazanchis	3	14:27	0:01	14:28	14:30	0:02	0:03	
252	2	Kazanchis	4	14:27	0:01	14:28	14:34	0:06	0:07	
253	2	Kazanchis	8	14:33	0:00	14:33	14:35	0:02	0:02	
254	3	Addisu Gebeya	3	8:30	0:01	8:31	8:34	0:03	0:04	8-4-2017
255	3	Addisu Gebeya	5	8:34	0:00	8:34	8:36	0:02	0:02	
256	3	Addisu Gebeya	6	8:38	0:00	8:38	8:40	0:02	0:02	
257	3	Addisu Gebeya	5	8:41	0:00	8:41	8:44	0:03	0:03	
258	3	Addisu Gebeya	1	8:41	0:00	8:41	8:50	0:09	0:09	
259	3	Addisu Gebeya	8	8:41	0:00	8:41	8:42	0:01	0:01	
260	3	Addisu Gebeya	4	8:44	0:00	8:44	8:47	0:03	0:03	
261	3	Addisu Gebeya	5	8:44	0:00	8:44	8:46	0:02	0:02	
262	3	Addisu Gebeya	8	8:45	0:00	8:45	8:47	0:02	0:02	
263	3	Addisu Gebeya	3	8:45	0:00	8:45	8:47	0:02	0:02	
264	3	Addisu Gebeya	7	8:45	0:00	8:45	8:46	0:01	0:01	
265	3	Addisu Gebeya	7	8:46	0:00	8:46	8:50	0:04	0:04	
266	3	Addisu Gebeya	5	8:46	0:00	8:46	8:48	0:02	0:02	
267	3	Addisu Gebeya	8	8:46	0:01	8:47	8:49	0:02	0:03	
268	3	Addisu Gebeya	3	8:47	0:00	8:47	8:48	0:01	0:01	
269	3	Addisu Gebeya	4	8:47	0:01	8:48	8:50	0:02	0:03	
270	3	Addisu Gebeya	1	8:50	0:00	8:50	8:54	0:04	0:04	
271	3	Addisu Gebeya	8	8:50	0:00	8:50	8:54	0:04	0:04	
272	3	Addisu Gebeya	7	8:51	0:00	8:51	8:53	0:02	0:02	
273	3	Addisu Gebeya	3	8:51	0:00	8:51	8:54	0:03	0:03	
274	3	Addisu Gebeya	5	8:51	0:00	8:51	8:53	0:02	0:02	
275	3	Addisu Gebeya	4	8:51	0:00	8:51	8:53	0:02	0:02	
276	3	Addisu Gebeya	5	9:02	0:00	9:02	9:04	0:02	0:02	
277	3	Addisu Gebeya	3	9:02	0:00	9:02	9:15	0:13	0:13	
278	3	Addisu Gebeya	1	9:02	0:00	9:02	9:08	0:06	0:06	
279	3	Addisu Gebeya	2	9:02	0:00	9:02	9:07	0:05	0:05	
280	3	Addisu Gebeya	7	9:02	0:00	9:02	9:04	0:02	0:02	
281	3	Addisu Gebeya	8	9:04	0:01	9:05	9:06	0:01	0:02	
282	3	Addisu Gebeya	4	9:05	0:00	9:05	9:07	0:02	0:02	
283	3	Addisu Gebeya	5	9:06	0:00	9:06	9:09	0:03	0:03	
284	3	Addisu Gebeya	8	9:06	0:00	9:06	9:12	0:06	0:06	
285	3	Addisu Gebeya	4	9:07	0:00	9:07	9:11	0:04	0:04	
286	3	Addisu Gebeya	7	9:07	0:00	9:07	9:09	0:02	0:02	

287	3	Addisu Gebeya	2	9:10	0:01	9:11	9:12	0:01	0:02	
288	3	Addisu Gebeya	4	9:10	0:02	9:12	9:15	0:03	0:05	
289	3	Addisu Gebeya	2	9:10	0:02	9:12	9:13	0:01	0:03	
290	3	Addisu Gebeya	4	9:11	0:01	9:12	9:15	0:03	0:04	
291	3	Addisu Gebeya	2	9:11	0:02	9:13	9:15	0:02	0:04	
292	3	Addisu Gebeya	5	9:11	0:03	9:14	9:18	0:04	0:07	
293	3	Addisu Gebeya	4	9:11	0:04	9:15	9:16	0:01	0:05	
294	3	Addisu Gebeya	2	9:12	0:03	9:15	9:18	0:03	0:06	
295	3	Addisu Gebeya	8	9:13	0:02	9:15	9:17	0:02	0:04	
296	3	Addisu Gebeya	2	9:55	0:05	10:00	10:05	0:05	0:10	
297	3	Addisu Gebeya	3	9:58	0:02	10:00	10:03	0:03	0:05	
298	3	Addisu Gebeya	5	9:58	0:04	10:02	10:05	0:03	0:07	
299	3	Addisu Gebeya	3	9:59	0:04	10:03	10:07	0:04	0:08	
300	3	Addisu Gebeya	1	9:59	0:05	10:04	10:08	0:04	0:09	
301	3	Addisu Gebeya	8	9:59	0:06	10:05	10:08	0:03	0:09	
302	3	Addisu Gebeya	3	9:59	0:07	10:06	10:07	0:01	0:08	
303	3	Addisu Gebeya	4	10:00	0:06	10:06	10:08	0:02	0:08	
304	3	Addisu Gebeya	3	10:00	0:07	10:07	10:08	0:01	0:08	
305	3	Addisu Gebeya	2	10:01	0:06	10:07	10:09	0:02	0:08	
306	3	Addisu Gebeya	2	10:29	0:04	10:33	10:38	0:05	0:09	
307	3	Addisu Gebeya	5	10:29	0:04	10:33	10:37	0:04	0:08	
308	3	Addisu Gebeya	7	10:30	0:03	10:33	10:37	0:04	0:07	
309	3	Addisu Gebeya	4	10:31	0:03	10:34	10:36	0:02	0:05	
310	3	Addisu Gebeya	2	10:32	0:02	10:34	10:39	0:05	0:07	
311	3	Addisu Gebeya	3	10:33	0:02	10:35	10:37	0:02	0:04	
312	3	Addisu Gebeya	4	10:34	0:02	10:36	10:40	0:04	0:06	
313	3	Addisu Gebeya	3	10:34	0:03	10:37	10:38	0:01	0:04	
314	3	Addisu Gebeya	8	10:33	0:04	10:37	10:39	0:02	0:06	
315	3	Addisu Gebeya	1	10:33	0:05	10:38	10:40	0:02	0:07	
316	3	Addisu Gebeya	3	10:34	0:04	10:38	10:40	0:02	0:06	
317	3	Addisu Gebeya	8	10:33	0:06	10:39	10:41	0:02	0:08	
318	3	Addisu Gebeya	3	10:35	0:04	10:39	10:41	0:02	0:06	
319	3	Addisu Gebeya	8	10:35	0:04	10:39	10:42	0:03	0:07	
320	3	Addisu Gebeya	4	10:36	0:03	10:39	10:42	0:03	0:06	
321	3	Addisu Gebeya	2	10:37	0:02	10:39	10:42	0:03	0:05	
322	3	Addisu Gebeya	5	10:37	0:03	10:40	10:42	0:02	0:05	
323	4	Arat Kilo	3	9:15	0:24	9:39	9:42	0:03	0:27	10-4-2017
324	4	Arat Kilo	4	9:15	0:25	9:40	9:43	0:03	0:28	
325	4	Arat Kilo	6	9:16	0:24	9:40	9:44	0:04	0:28	
326	4	Arat Kilo	3	9:17	0:24	9:41	9:43	0:02	0:26	
327	4	Arat Kilo	1	9:18	0:24	9:42	9:46	0:04	0:28	
328	4	Arat Kilo	3	9:18	0:25	9:43	9:45	0:02	0:27	

329	4	Arat Kilo	4	9:18	0:25	9:43	9:46	0:03	0:28	
330	4	Arat Kilo	4	9:19	0:25	9:44	9:48	0:04	0:29	
331	4	Arat Kilo	6	9:19	0:25	9:44	9:48	0:04	0:29	
332	4	Arat Kilo	1	9:20	0:26	9:46	9:52	0:06	0:32	
333	4	Arat Kilo	3	9:20	0:26	9:46	9:48	0:02	0:28	
334	4	Arat Kilo	4	9:20	0:26	9:46	9:51	0:05	0:31	
335	4	Arat Kilo	6	9:20	0:28	9:48	9:50	0:02	0:30	
336	4	Arat Kilo	3	9:20	0:28	9:48	9:53	0:05	0:33	
337	4	Arat Kilo	6	9:20	0:30	9:50	9:53	0:03	0:33	
338	4	Arat Kilo	4	9:20	0:31	9:51	9:55	0:04	0:35	
339	4	Arat Kilo	1	9:20	0:32	9:52	9:53	0:01	0:33	
340	4	Arat Kilo	3	9:20	0:33	9:53	9:56	0:03	0:36	
341	4	Arat Kilo	6	9:21	0:32	9:53	9:55	0:02	0:34	
342	4	Arat Kilo	1	9:21	0:33	9:54	9:56	0:02	0:35	
343	4	Arat Kilo	1	9:22	0:34	9:56	9:59	0:03	0:37	
344	4	Arat Kilo	4	9:22	0:33	9:55	10:00	0:05	0:38	
345	4	Arat Kilo	3	9:23	0:33	9:56	10:00	0:04	0:37	
346	4	Arat Kilo	6	9:25	0:30	9:55	9:57	0:02	0:32	
347	4	Arat Kilo	6	9:26	0:31	9:57	9:59	0:02	0:33	
348	4	Arat Kilo	1	9:28	0:31	9:59	10:02	0:03	0:34	
349	4	Arat Kilo	6	9:28	0:31	9:59	10:00	0:01	0:32	
350	4	Arat Kilo	4	9:30	0:30	10:00	10:02	0:02	0:32	
351	4	Arat Kilo	4	9:31	0:31	10:02	10:05	0:03	0:34	
352	4	Arat Kilo	6	9:31	0:29	10:00	10:05	0:05	0:34	
353	4	Arat Kilo	3	9:31	0:29	10:00	10:04	0:04	0:33	
354	4	Arat Kilo	4	9:31	0:32	10:03	10:05	0:02	0:34	
355	4	Arat Kilo	1	9:36	0:26	10:02	10:04	0:02	0:28	
356	4	Arat Kilo	6	9:38	0:27	10:05	10:06	0:01	0:28	
357	4	Arat Kilo	4	9:40	0:25	10:05	10:09	0:04	0:29	
358	4	Arat Kilo	1	9:40	0:24	10:04	10:09	0:05	0:29	
359	4	Arat Kilo	3	9:40	0:24	10:04	10:10	0:06	0:30	
360	4	Arat Kilo	6	9:40	0:25	10:05	10:09	0:04	0:29	
361	4	Arat Kilo	1	9:44	0:25	10:09	10:12	0:03	0:28	
362	4	Arat Kilo	6	9:47	0:22	10:09	10:11	0:02	0:24	
363	4	Arat Kilo	3	9:47	0:23	10:10	10:13	0:03	0:26	
364	4	Arat Kilo	6	9:48	0:22	10:10	10:11	0:01	0:23	
365	4	Arat Kilo	4	9:48	0:22	10:10	10:12	0:02	0:24	
366	4	Arat Kilo	6	9:49	0:22	10:11	10:13	0:02	0:24	
367	4	Arat Kilo	4	9:50	0:22	10:12	10:13	0:01	0:23	
368	4	Arat Kilo	1	9:51	0:21	10:12	10:17	0:05	0:26	
369	4	Arat Kilo	6	9:54	0:19	10:13	10:16	0:03	0:22	
370	4	Arat Kilo	4	9:54	0:19	10:13	10:16	0:03	0:22	
371	4	Arat Kilo	3	9:55	0:18	10:13	10:19	0:06	0:24	

372	4	Arat Kilo	6	9:55	0:21	10:16	10:17	0:01	0:22	
373	4	Arat Kilo	4	9:56	0:20	10:16	10:18	0:02	0:22	
374	4	Arat Kilo	1	9:55	0:22	10:17	10:19	0:02	0:24	
375	4	Arat Kilo	6	9:56	0:21	10:17	10:21	0:04	0:25	
376	4	Arat Kilo	4	9:56	0:22	10:18	10:22	0:04	0:26	
377	4	Arat Kilo	3	9:58	0:21	10:19	10:22	0:03	0:24	
378	4	Arat Kilo	1	10:00	0:19	10:19	10:25	0:06	0:25	
379	4	Arat Kilo	3	10:00	0:22	10:22	10:25	0:03	0:25	
380	4	Arat Kilo	6	10:01	0:20	10:21	10:26	0:05	0:25	
381	4	Arat Kilo	4	10:01	0:21	10:22	10:25	0:03	0:24	
382	4	Arat Kilo	3	10:02	0:23	10:25	10:28	0:03	0:26	
383	4	Arat Kilo	4	10:02	0:23	10:25	10:29	0:04	0:27	
384	4	Arat Kilo	1	10:05	0:20	10:25	10:26	0:01	0:21	
385	4	Arat Kilo	1	10:05	0:21	10:26	10:27	0:01	0:22	
386	4	Arat Kilo	6	10:06	0:20	10:26	10:32	0:06	0:26	
387	4	Arat Kilo	1	10:07	0:20	10:27	10:28	0:01	0:21	
388	4	Arat Kilo	3	10:07	0:21	10:28	10:31	0:03	0:24	
389	4	Arat Kilo	1	10:14	0:14	10:28	10:29	0:01	0:15	
390	4	Arat Kilo	1	10:14	0:15	10:29	10:32	0:03	0:18	
391	4	Arat Kilo	4	10:14	0:16	10:30	10:32	0:02	0:18	
392	4	Arat Kilo	3	10:14	0:17	10:31	10:38	0:07	0:24	
393	4	Arat Kilo	6	10:14	0:17	10:31	10:32	0:01	0:18	
394	4	Arat Kilo	6	10:14	0:18	10:32	10:34	0:02	0:20	
395	4	Arat Kilo	4	10:14	0:18	10:32	10:34	0:02	0:20	
396	4	Arat Kilo	6	10:17	0:17	10:34	10:36	0:02	0:19	
397	4	Arat Kilo	6	10:18	0:18	10:36	10:41	0:05	0:23	
398	4	Arat Kilo	4	10:18	0:16	10:34	10:36	0:02	0:18	
399	4	Arat Kilo	4	10:18	0:18	10:36	10:39	0:03	0:21	
400	4	Arat Kilo	1	10:18	0:19	10:37	10:39	0:02	0:21	
401	4	Arat Kilo	3	10:19	0:19	10:38	10:41	0:03	0:22	
402	4	Arat Kilo	4	10:20	0:19	10:39	10:41	0:02	0:21	
403	4	Arat Kilo	1	10:21	0:18	10:39	10:41	0:02	0:20	
404	4	Arat Kilo	6	10:25	0:16	10:41	10:45	0:04	0:20	
405	4	Arat Kilo	4	10:25	0:16	10:41	10:44	0:03	0:19	
406	4	Arat Kilo	3	10:25	0:16	10:41	10:45	0:04	0:20	
407	4	Arat Kilo	1	10:26	0:15	10:41	10:43	0:02	0:17	
408	4	Arat Kilo	6	10:26	0:15	10:41	10:46	0:05	0:20	
409	4	Arat Kilo	1	10:27	0:15	10:42	10:45	0:03	0:18	
410	4	Arat Kilo	4	10:27	0:16	10:43	10:46	0:03	0:19	
411	4	Arat Kilo	3	10:28	0:16	10:44	10:49	0:05	0:21	
412	4	Arat Kilo	6	10:33	0:17	10:50	10:53	0:03	0:20	
413	4	Arat Kilo	1	10:50	0:28	11:18	11:21	0:03	0:31	
414	4	Arat Kilo	3	10:51	0:30	11:21	11:24	0:03	0:33	

415	4	Arat Kilo	4	10:53	0:29	11:22	11:25	0:03	0:32	
416	4	Arat Kilo	3	10:53	0:31	11:24	11:29	0:05	0:36	
417	4	Arat Kilo	6	10:55	0:29	11:24	11:28	0:04	0:33	
418	4	Arat Kilo	1	10:59	0:26	11:25	11:31	0:06	0:32	
419	4	Arat Kilo	6	10:59	0:28	11:27	11:38	0:11	0:39	
420	4	Arat Kilo	6	11:00	0:29	11:29	11:42	0:13	0:42	
421	4	Arat Kilo	4	11:00	0:29	11:29	11:30	0:01	0:30	
422	4	Arat Kilo	3	11:00	0:29	11:29	11:33	0:04	0:33	
423	4	Arat Kilo	4	11:01	0:29	11:30	11:34	0:04	0:33	
424	4	Arat Kilo	1	11:01	0:30	11:31	11:38	0:07	0:37	
425	4	Arat Kilo	3	11:02	0:31	11:33	11:35	0:02	0:33	
426	4	Arat Kilo	4	11:03	0:31	11:34	11:39	0:05	0:36	
427	4	Arat Kilo	3	11:04	0:31	11:35	11:44	0:09	0:40	
428	4	Arat Kilo	1	11:09	0:29	11:38	11:40	0:02	0:31	
429	4	Arat Kilo	4	11:10	0:29	11:39	11:43	0:04	0:33	
430	4	Arat Kilo	1	11:12	0:28	11:40	11:43	0:03	0:31	
431	4	Arat Kilo	3	11:12	0:32	11:44	11:54	0:10	0:42	
432	4	Arat Kilo	1	11:14	0:30	11:44	11:46	0:02	0:32	
433	4	Arat Kilo	1	11:16	0:30	11:46	11:48	0:02	0:32	
434	4	Arat Kilo	1	11:16	0:32	11:48	11:51	0:03	0:35	
435	4	Arat Kilo	1	11:16	0:35	11:51	11:55	0:04	0:39	
436	4	Arat Kilo	1	11:17	0:38	11:55	11:56	0:01	0:39	
437	4	Arat Kilo	3	11:18	0:36	11:54	11:56	0:02	0:38	
438	4	Arat Kilo	1	11:18	0:38	11:56	11:58	0:02	0:40	
439	4	Arat Kilo	3	11:20	0:38	11:58	12:00	0:02	0:40	
440	4	Arat Kilo	1	11:22	0:38	12:00	12:02	0:02	0:40	
441	4	Arat Kilo	3	11:23	0:39	12:02	12:05	0:03	0:42	
442	4	Arat Kilo	1	11:23	0:40	12:03	12:08	0:05	0:45	
443	4	Arat Kilo	3	11:23	0:42	12:05	12:08	0:03	0:45	
444	4	Arat Kilo	1	11:24	0:44	12:08	12:13	0:05	0:49	
445	4	Arat Kilo	1	11:24	0:49	12:13	12:15	0:02	0:51	
446	4	Arat Kilo	3	11:25	0:50	12:15	12:18	0:03	0:53	
447	4	Arat Kilo	1	11:25	0:50	12:15	12:17	0:02	0:52	
448	4	Arat Kilo	1	11:25	0:52	12:17	12:20	0:03	0:55	
449	4	Arat Kilo	3	11:26	0:52	12:18	12:21	0:03	0:55	
450	4	Arat Kilo	1	11:26	0:54	12:20	12:21	0:01	0:55	
451	4	Arat Kilo	1	11:28	0:53	12:21	12:24	0:03	0:56	
452	4	Arat Kilo	3	11:29	0:52	12:21	12:22	0:01	0:53	
453	4	Arat Kilo	3	11:29	0:53	12:22	12:24	0:02	0:55	
454	4	Arat Kilo	1	11:31	0:53	12:24	12:27	0:03	0:56	
455	5	Kazanchis	1	8:19	0:31	8:50	8:54	0:04	0:35	11-4-2017

456	5	Kazanchis	6	8:19	0:31	8:50	8:53	0:03	0:34	
457	5	Kazanchis	2	8:20	0:30	8:50	8:55	0:05	0:35	
458	5	Kazanchis	3	8:20	0:31	8:51	8:55	0:04	0:35	
459	5	Kazanchis	6	8:23	0:30	8:53	8:58	0:05	0:35	
460	5	Kazanchis	1	8:24	0:30	8:54	9:06	0:12	0:42	
461	5	Kazanchis	3	8:24	0:31	8:55	8:58	0:03	0:34	
462	5	Kazanchis	2	8:24	0:31	8:55	8:56	0:01	0:32	
463	5	Kazanchis	2	8:24	0:32	8:56	9:01	0:05	0:37	Servers 7&8 for traffic paymen t
464	5	Kazanchis	3	8:25	0:33	8:58	9:00	0:02	0:35	
465	5	Kazanchis	7	8:25	0:34	8:59	9:01	0:02	0:36	
466	5	Kazanchis	5	8:26	0:33	8:59	9:01	0:02	0:35	
467	5	Kazanchis	6	8:26	0:33	8:59	9:00	0:01	0:34	
468	5	Kazanchis	4	8:27	0:32	8:59	9:02	0:03	0:35	
469	5	Kazanchis	6	8:28	0:32	9:00	9:02	0:02	0:34	
470	5	Kazanchis	3	8:27	0:33	9:00	9:03	0:03	0:36	
471	5	Kazanchis	5	8:28	0:33	9:01	9:03	0:02	0:35	
472	5	Kazanchis	4	8:28	0:34	9:02	9:04	0:02	0:36	
473	5	Kazanchis	6	8:29	0:33	9:02	9:05	0:03	0:36	
474	5	Kazanchis	2	8:29	0:33	9:02	9:03	0:01	0:34	
475	5	Kazanchis	3	8:29	0:34	9:03	9:05	0:02	0:36	
476	5	Kazanchis	5	8:29	0:34	9:03	9:05	0:02	0:36	
477	5	Kazanchis	2	8:29	0:34	9:03	9:06	0:03	0:37	
478	5	Kazanchis	4	8:29	0:35	9:04	9:07	0:03	0:38	
479	5	Kazanchis	6	8:30	0:35	9:05	9:07	0:02	0:37	
480	5	Kazanchis	5	8:30	0:35	9:05	9:07	0:02	0:37	
481	5	Kazanchis	3	8:30	0:35	9:05	9:08	0:03	0:38	
482	5	Kazanchis	2	8:30	0:36	9:06	9:08	0:02	0:38	
483	5	Kazanchis	7	8:31	0:35	9:06	9:08	0:02	0:37	
484	5	Kazanchis	4	8:31	0:36	9:07	9:10	0:03	0:39	
485	5	Kazanchis	6	8:31	0:36	9:07	9:10	0:03	0:39	
486	5	Kazanchis	5	8:31	0:36	9:07	9:10	0:03	0:39	
487	5	Kazanchis	7	8:35	0:33	9:08	9:11	0:03	0:36	
488	5	Kazanchis	3	8:35	0:33	9:08	9:11	0:03	0:36	
489	5	Kazanchis	2	8:35	0:33	9:08	9:13	0:05	0:38	
490	5	Kazanchis	1	8:35	0:34	9:09	9:14	0:05	0:39	
491	5	Kazanchis	6	8:37	0:33	9:10	9:16	0:06	0:39	
492	5	Kazanchis	5	8:39	0:31	9:10	9:14	0:04	0:35	
493	5	Kazanchis	4	8:39	0:31	9:10	9:14	0:04	0:35	
494	5	Kazanchis	3	8:39	0:32	9:11	9:17	0:06	0:38	
495	5	Kazanchis	7	8:39	0:32	9:11	9:14	0:03	0:35	
496	5	Kazanchis	2	8:39	0:34	9:13	9:16	0:03	0:37	
497	5	Kazanchis	5	8:39	0:35	9:14	9:20	0:06	0:41	
498	5	Kazanchis	7	8:40	0:34	9:14	9:18	0:04	0:38	

499	5	Kazanchis	4	8:40	0:34	9:14	9:17	0:03	0:37	
500	5	Kazanchis	3	8:40	0:35	9:15	9:18	0:03	0:38	
501	5	Kazanchis	1	8:40	0:35	9:15	9:16	0:01	0:36	
502	5	Kazanchis	2	8:43	0:33	9:16	9:20	0:04	0:37	
503	5	Kazanchis	1	8:43	0:33	9:16	9:19	0:03	0:36	
504	5	Kazanchis	4	8:44	0:33	9:17	9:19	0:02	0:35	
505	5	Kazanchis	3	8:44	0:34	9:18	9:19	0:01	0:35	
506	5	Kazanchis	7	8:44	0:34	9:18	9:23	0:05	0:39	
507	5	Kazanchis	1	8:44	0:35	9:19	9:22	0:03	0:38	
508	5	Kazanchis	3	8:45	0:34	9:19	9:21	0:02	0:36	
509	5	Kazanchis	4	8:44	0:35	9:19	9:22	0:03	0:38	
510	5	Kazanchis	2	8:44	0:36	9:20	9:22	0:02	0:38	
511	5	Kazanchis	3	8:44	0:37	9:21	9:24	0:03	0:40	
512	5	Kazanchis	2	8:45	0:37	9:22	9:24	0:02	0:39	
513	5	Kazanchis	5	8:46	0:36	9:22	9:24	0:02	0:38	
514	5	Kazanchis	4	8:46	0:36	9:22	9:23	0:01	0:37	
515	5	Kazanchis	1	8:46	0:36	9:22	9:26	0:04	0:40	
516	5	Kazanchis	4	8:46	0:37	9:23	9:26	0:03	0:40	
517	5	Kazanchis	5	8:48	0:36	9:24	9:33	0:09	0:45	
518	5	Kazanchis	3	8:51	0:33	9:24	9:28	0:04	0:37	
519	5	Kazanchis	2	8:51	0:33	9:24	9:28	0:04	0:37	
520	5	Kazanchis	4	8:51	0:35	9:26	9:31	0:05	0:40	
521	5	Kazanchis	1	8:51	0:35	9:26	9:29	0:03	0:38	
522	5	Kazanchis	2	8:51	0:37	9:28	9:29	0:01	0:38	
523	5	Kazanchis	3	8:52	0:36	9:28	9:31	0:03	0:39	
524	5	Kazanchis	1	8:52	0:37	9:29	9:31	0:02	0:39	
525	5	Kazanchis	2	8:53	0:36	9:29	9:32	0:03	0:39	
526	5	Kazanchis	3	8:54	0:37	9:31	9:33	0:02	0:39	
527	5	Kazanchis	4	8:54	0:37	9:31	9:34	0:03	0:40	
528	5	Kazanchis	1	8:54	0:37	9:31	9:42	0:11	0:48	
529	5	Kazanchis	8	8:55	0:37	9:32	9:35	0:03	0:40	
530	5	Kazanchis	2	8:55	0:37	9:32	9:35	0:03	0:40	
531	5	Kazanchis	5	8:57	0:36	9:33	9:38	0:05	0:41	
532	5	Kazanchis	3	8:58	0:35	9:33	9:34	0:01	0:36	
533	5	Kazanchis	4	8:58	0:36	9:34	9:36	0:02	0:38	
534	5	Kazanchis	3	8:58	0:36	9:34	9:38	0:04	0:40	
535	5	Kazanchis	2	8:59	0:36	9:35	9:37	0:02	0:38	
536	5	Kazanchis	6	8:59	0:36	9:35	9:40	0:05	0:41	
537	5	Kazanchis	4	8:59	0:37	9:36	9:37	0:01	0:38	
538	5	Kazanchis	2	9:00	0:37	9:37	9:39	0:02	0:39	
539	5	Kazanchis	4	9:02	0:35	9:37	9:39	0:02	0:37	
540	5	Kazanchis	5	9:02	0:36	9:38	9:44	0:06	0:42	
541	5	Kazanchis	3	9:02	0:36	9:38	9:42	0:04	0:40	

542	5	Kazanchis	6	9:02	0:36	9:38	9:41	0:03	0:39	
543	5	Kazanchis	2	9:02	0:37	9:39	9:42	0:03	0:40	
544	5	Kazanchis	4	9:02	0:37	9:39	9:41	0:02	0:39	
545	5	Kazanchis	4	9:02	0:39	9:41	9:44	0:03	0:42	
546	5	Kazanchis	6	9:03	0:38	9:41	9:46	0:05	0:43	
547	5	Kazanchis	3	9:04	0:38	9:42	9:45	0:03	0:41	
548	5	Kazanchis	2	9:06	0:36	9:42	9:44	0:02	0:38	
549	5	Kazanchis	5	9:06	0:38	9:44	9:46	0:02	0:40	
550	5	Kazanchis	1	9:06	0:38	9:44	9:48	0:04	0:42	
551	5	Kazanchis	2	9:06	0:38	9:44	9:45	0:01	0:39	
552	5	Kazanchis	4	9:07	0:37	9:44	9:47	0:03	0:40	
553	5	Kazanchis	2	9:07	0:38	9:45	9:46	0:01	0:39	
554	5	Kazanchis	3	9:08	0:37	9:45	9:48	0:03	0:40	
555	5	Kazanchis	5	9:08	0:38	9:46	9:50	0:04	0:42	
556	5	Kazanchis	6	9:08	0:38	9:46	9:53	0:07	0:45	
557	5	Kazanchis	2	9:08	0:38	9:46	9:48	0:02	0:40	
558	5	Kazanchis	4	9:08	0:39	9:47	9:49	0:02	0:41	
559	5	Kazanchis	1	9:09	0:39	9:48	9:53	0:05	0:44	
560	5	Kazanchis	4	9:09	0:40	9:49	9:53	0:04	0:44	
561	5	Kazanchis	3	9:10	0:39	9:49	9:53	0:04	0:43	
562	5	Kazanchis	2	9:12	0:38	9:50	9:51	0:01	0:39	
563	5	Kazanchis	5	9:13	0:37	9:50	9:52	0:02	0:39	
564	5	Kazanchis	2	9:14	0:37	9:51	9:55	0:04	0:41	
565	5	Kazanchis	7	9:13	0:38	9:51	9:55	0:04	0:42	
566	5	Kazanchis	5	9:14	0:38	9:52	9:53	0:01	0:39	
567	5	Kazanchis	8	9:14	0:38	9:52	10:01	0:09	0:47	
568	5	Kazanchis	6	9:14	0:39	9:53	9:59	0:06	0:45	
569	5	Kazanchis	4	9:14	0:39	9:53	9:55	0:02	0:41	
570	5	Kazanchis	5	9:16	0:37	9:53	9:57	0:04	0:41	
571	5	Kazanchis	3	9:16	0:37	9:53	9:57	0:04	0:41	
572	5	Kazanchis	6	9:16	0:38	9:54	10:01	0:07	0:45	
573	5	Kazanchis	2	9:16	0:39	9:55	9:56	0:01	0:40	
574	5	Kazanchis	4	9:17	0:38	9:55	10:02	0:07	0:45	
575	5	Kazanchis	7	9:20	0:35	9:55	9:56	0:01	0:36	
576	5	Kazanchis	7	9:21	0:35	9:56	10:04	0:08	0:43	
577	5	Kazanchis	2	9:21	0:35	9:56	9:57	0:01	0:36	
578	5	Kazanchis	5	9:25	0:32	9:57	9:59	0:02	0:34	
579	5	Kazanchis	3	9:26	0:31	9:57	10:02	0:05	0:36	
580	5	Kazanchis	2	9:26	0:31	9:57	10:00	0:03	0:34	
581	5	Kazanchis	5	9:26	0:33	9:59	10:01	0:02	0:35	
582	5	Kazanchis	1	9:26	0:33	9:59	10:22	0:23	0:56	
583	5	Kazanchis	2	9:26	0:34	10:00	10:02	0:02	0:36	
584	5	Kazanchis	8	9:27	0:34	10:01	10:04	0:03	0:37	

585	5	Kazanchis	5	9:27	0:34	10:01	10:04	0:03	0:37	
586	5	Kazanchis	3	9:27	0:35	10:02	10:05	0:03	0:38	
587	5	Kazanchis	2	9:28	0:34	10:02	10:04	0:02	0:36	
588	5	Kazanchis	6	9:28	0:34	10:02	10:06	0:04	0:38	
589	5	Kazanchis	8	9:30	0:35	10:05	10:08	0:03	0:38	
590	5	Kazanchis	2	9:31	0:35	10:06	10:08	0:02	0:37	
591	5	Kazanchis	6	14:43	0:19	15:02	15:11	0:09	0:28	
592	5	Kazanchis	7	14:43	0:19	15:02	15:09	0:07	0:26	
593	5	Kazanchis	1	14:43	0:20	15:03	15:09	0:06	0:26	
594	5	Kazanchis	5	14:48	0:16	15:04	15:06	0:02	0:18	
595	5	Kazanchis	2	14:49	0:15	15:04	15:08	0:04	0:19	
596	5	Kazanchis	8	14:49	0:16	15:05	15:08	0:03	0:19	
597	5	Kazanchis	5	14:53	0:13	15:06	15:09	0:03	0:16	
598	5	Kazanchis	2	14:54	0:14	15:08	15:11	0:03	0:17	
599	5	Kazanchis	1	14:54	0:15	15:09	15:11	0:02	0:17	
600	5	Kazanchis	5	14:57	0:12	15:09	15:11	0:02	0:14	
601	5	Kazanchis	7	14:57	0:12	15:09	15:10	0:01	0:13	
602	5	Kazanchis	7	14:58	0:12	15:10	15:16	0:06	0:18	
603	5	Kazanchis	5	14:58	0:13	15:11	15:12	0:01	0:14	
604	5	Kazanchis	6	15:00	0:11	15:11	15:14	0:03	0:14	
605	5	Kazanchis	1	15:01	0:10	15:11	15:12	0:01	0:11	
606	5	Kazanchis	5	15:02	0:10	15:12	15:16	0:04	0:14	
607	5	Kazanchis	1	15:02	0:10	15:12	15:13	0:01	0:11	
608	5	Kazanchis	1	15:03	0:10	15:13	15:18	0:05	0:15	
609	5	Kazanchis	6	15:03	0:11	15:14	15:17	0:03	0:14	
610	5	Kazanchis	7	15:03	0:13	15:16	15:19	0:03	0:16	
611	5	Kazanchis	5	15:04	0:12	15:16	15:19	0:03	0:15	
612	5	Kazanchis	6	15:04	0:13	15:17	15:25	0:08	0:21	
613	5	Kazanchis	1	15:05	0:13	15:18	15:22	0:04	0:17	
614	5	Kazanchis	7	15:05	0:14	15:19	15:23	0:04	0:18	
615	5	Kazanchis	5	15:05	0:14	15:19	15:21	0:02	0:16	
616	5	Kazanchis	4	15:05	0:15	15:20	15:32	0:12	0:27	
617	5	Kazanchis	5	15:05	0:16	15:21	15:30	0:09	0:25	
618	5	Kazanchis	1	15:06	0:16	15:22	15:28	0:06	0:22	
619	5	Kazanchis	3	15:06	0:17	15:23	15:26	0:03	0:20	
620	5	Kazanchis	3	15:08	0:18	15:26	15:29	0:03	0:21	
621	5	Kazanchis	6	15:08	0:18	15:26	15:30	0:04	0:22	
622	5	Kazanchis	2	15:09	0:18	15:27	15:31	0:04	0:22	
623	5	Kazanchis	1	15:09	0:19	15:28	15:34	0:06	0:25	
624	5	Kazanchis	7	15:09	0:20	15:29	15:31	0:02	0:22	
625	5	Kazanchis	3	15:09	0:20	15:29	15:35	0:06	0:26	
626	5	Kazanchis	6	15:09	0:21	15:30	15:35	0:05	0:26	
627	5	Kazanchis	4	15:12	0:21	15:33	15:34	0:01	0:22	

628	5	Kazanchis	5	15:13	0:17	15:30	15:34	0:04	0:21	
629	5	Kazanchis	2	15:15	0:16	15:31	15:33	0:02	0:18	
630	5	Kazanchis	7	15:16	0:15	15:31	15:37	0:06	0:21	
631	5	Kazanchis	2	15:16	0:17	15:33	15:39	0:06	0:23	
632	5	Kazanchis	1	15:16	0:18	15:34	15:37	0:03	0:21	
633	5	Kazanchis	5	15:18	0:16	15:34	15:36	0:02	0:18	
634	5	Kazanchis	4	15:19	0:15	15:34	15:37	0:03	0:18	
635	5	Kazanchis	3	15:22	0:13	15:35	15:38	0:03	0:16	
636	5	Kazanchis	5	15:24	0:12	15:36	15:38	0:02	0:14	
637	5	Kazanchis	1	15:24	0:13	15:37	15:40	0:03	0:16	
638	5	Kazanchis	4	15:24	0:13	15:37	15:43	0:06	0:19	
639	5	Kazanchis	7	15:24	0:13	15:37	15:39	0:02	0:15	
640	5	Kazanchis	3	15:25	0:13	15:38	15:43	0:05	0:18	
641	5	Kazanchis	5	15:25	0:13	15:38	15:40	0:02	0:15	
642	5	Kazanchis	2	15:26	0:13	15:39	15:44	0:05	0:18	
643	5	Kazanchis	7	15:26	0:13	15:39	15:41	0:02	0:15	
644	5	Kazanchis	5	15:26	0:14	15:40	15:41	0:01	0:15	
645	5	Kazanchis	1	15:27	0:13	15:40	15:55	0:15	0:28	
646	5	Kazanchis	5	15:27	0:14	15:41	15:45	0:04	0:18	
647	5	Kazanchis	7	15:27	0:14	15:41	15:46	0:05	0:19	
648	5	Kazanchis	6	15:27	0:16	15:43	15:48	0:05	0:21	
649	5	Kazanchis	4	15:28	0:15	15:43	15:47	0:04	0:19	
650	5	Kazanchis	2	15:30	0:14	15:44	15:47	0:03	0:17	
651	5	Kazanchis	5	15:32	0:13	15:45	15:46	0:01	0:14	
652	5	Kazanchis	5	15:35	0:11	15:46	15:48	0:02	0:13	
653	5	Kazanchis	2	15:37	0:10	15:47	15:49	0:02	0:12	
654	5	Kazanchis	4	15:37	0:10	15:47	15:55	0:08	0:18	
655	5	Kazanchis	5	15:37	0:11	15:48	15:50	0:02	0:13	
656	5	Kazanchis	2	15:37	0:12	15:49	15:53	0:04	0:16	
657	5	Kazanchis	5	15:38	0:12	15:50	15:52	0:02	0:14	
658	5	Kazanchis	3	15:38	0:13	15:51	15:56	0:05	0:18	
659	5	Kazanchis	5	15:38	0:14	15:52	15:57	0:05	0:19	
660	5	Kazanchis	2	15:39	0:14	15:53	15:56	0:03	0:17	
661	5	Kazanchis	6	15:39	0:14	15:53	15:57	0:04	0:18	
662	5	Kazanchis	4	15:39	0:16	15:55	16:02	0:07	0:23	
663	5	Kazanchis	2	15:40	0:16	15:56	15:57	0:01	0:17	
664	5	Kazanchis	3	15:40	0:16	15:56	16:00	0:04	0:20	
665	5	Kazanchis	6	15:40	0:17	15:57	16:00	0:03	0:20	
666	5	Kazanchis	5	15:41	0:16	15:57	15:59	0:02	0:18	
667	5	Kazanchis	2	15:41	0:16	15:57	15:58	0:01	0:17	
668	5	Kazanchis	1	15:42	0:16	15:58	16:01	0:03	0:19	
669	5	Kazanchis	5	15:42	0:17	15:59	16:00	0:01	0:18	
670	5	Kazanchis	2	15:42	0:16	15:58	16:00	0:02	0:18	

671	5	Kazanchis	3	15:43	0:17	16:00	16:01	0:01	0:18	
672	5	Kazanchis	6	15:43	0:17	16:00	16:02	0:02	0:19	
673	5	Kazanchis	5	15:44	0:16	16:00	16:01	0:01	0:17	
674	5	Kazanchis	2	15:44	0:16	16:00	16:02	0:02	0:18	
675	5	Kazanchis	3	15:44	0:17	16:01	16:04	0:03	0:20	
676	5	Kazanchis	5	15:45	0:16	16:01	16:02	0:01	0:17	
677	5	Kazanchis	1	15:45	0:16	16:01	16:03	0:02	0:18	
678	5	Kazanchis	2	15:46	0:16	16:02	16:04	0:02	0:18	
679	5	Kazanchis	5	15:46	0:16	16:02	16:07	0:05	0:21	
680	5	Kazanchis	4	15:48	0:14	16:02	16:06	0:04	0:18	
681	5	Kazanchis	6	15:50	0:12	16:02	16:07	0:05	0:17	
682	5	Kazanchis	1	15:55	0:08	16:03	16:08	0:05	0:13	
683	5	Kazanchis	3	15:56	0:08	16:04	16:06	0:02	0:10	
684	5	Kazanchis	2	15:56	0:08	16:04	16:07	0:03	0:11	
685	5	Kazanchis	3	15:56	0:10	16:06	16:12	0:06	0:16	
686	5	Kazanchis	4	15:57	0:09	16:06	16:08	0:02	0:11	
687	5	Kazanchis	2	15:57	0:10	16:07	16:08	0:01	0:11	
688	5	Kazanchis	5	15:58	0:09	16:07	16:11	0:04	0:13	
689	5	Kazanchis	6	15:58	0:09	16:07	16:11	0:04	0:13	
690	5	Kazanchis	4	15:59	0:09	16:08	16:09	0:01	0:10	
691	6	Addisu Gebeya	1	8:23	0:00	8:23	8:28	0:05	0:05	18-4-2017
692	6	Addisu Gebeya	2	8:23	0:00	8:23	8:30	0:07	0:07	
693	6	Addisu Gebeya	8	8:25	0:00	8:25	8:28	0:03	0:03	
694	6	Addisu Gebeya	4	8:25	0:00	8:25	8:28	0:03	0:03	
695	6	Addisu Gebeya	6	8:26	0:00	8:26	8:28	0:02	0:02	Power went off and system took nearly 20 minutes to be up
696	6	Addisu Gebeya	3	8:27	0:00	8:27	8:31	0:04	0:04	
697	6	Addisu Gebeya	8	8:28	0:00	8:28	8:31	0:03	0:03	
698	6	Addisu Gebeya	7	8:28	0:00	8:28	8:31	0:03	0:03	
699	6	Addisu Gebeya	4	8:30	0:00	8:30	8:33	0:03	0:03	
700	6	Addisu Gebeya	2	8:30	0:00	8:30	8:34	0:04	0:04	
701	6	Addisu Gebeya	6	8:30	0:00	8:30	8:33	0:03	0:03	
702	6	Addisu Gebeya	3	8:31	0:00	8:31	8:35	0:04	0:04	
703	6	Addisu Gebeya	8	8:32	0:00	8:32	8:38	0:06	0:06	
704	6	Addisu Gebeya	6	8:32	0:01	8:33	8:36	0:03	0:04	
705	6	Addisu Gebeya	4	8:33	0:00	8:33	8:36	0:03	0:03	
706	6	Addisu Gebeya	1	8:33	0:01	8:34	8:38	0:04	0:05	
707	6	Addisu Gebeya	2	8:33	0:01	8:34	8:39	0:05	0:06	
708	6	Addisu Gebeya	3	8:33	0:02	8:35	8:37	0:02	0:04	
709	6	Addisu Gebeya	4	8:33	0:03	8:36	8:39	0:03	0:06	
710	6	Addisu Gebeya	6	8:33	0:03	8:36	8:39	0:03	0:06	
711	6	Addisu Gebeya	7	8:34	0:02	8:36	8:38	0:02	0:04	
712	6	Addisu Gebeya	3	8:34	0:03	8:37	8:40	0:03	0:06	

713	6	Addisu Gebeya	8	8:34	0:04	8:38	8:40	0:02	0:06	
714	6	Addisu Gebeya	1	8:34	0:04	8:38	8:40	0:02	0:06	
715	6	Addisu Gebeya	5	8:34	0:04	8:38	8:42	0:04	0:08	
716	6	Addisu Gebeya	7	8:34	0:04	8:38	8:42	0:04	0:08	
717	6	Addisu Gebeya	6	8:34	0:05	8:39	8:42	0:03	0:08	
718	6	Addisu Gebeya	4	8:35	0:04	8:39	8:40	0:01	0:05	
719	6	Addisu Gebeya	2	8:37	0:02	8:39	8:42	0:03	0:05	
720	6	Addisu Gebeya	8	8:37	0:03	8:40	8:42	0:02	0:05	
721	6	Addisu Gebeya	1	8:37	0:03	8:40	8:41	0:01	0:04	
722	6	Addisu Gebeya	3	8:38	0:02	8:40	8:41	0:01	0:03	
723	6	Addisu Gebeya	4	8:39	0:01	8:40	8:43	0:03	0:04	
724	6	Addisu Gebeya	3	8:40	0:01	8:41	8:43	0:02	0:03	
725	6	Addisu Gebeya	1	8:40	0:01	8:41	8:43	0:02	0:03	
726	6	Addisu Gebeya	5	8:40	0:02	8:42	8:44	0:02	0:04	
727	6	Addisu Gebeya	2	8:40	0:02	8:42	8:44	0:02	0:04	
728	6	Addisu Gebeya	8	8:40	0:02	8:42	8:45	0:03	0:05	
729	6	Addisu Gebeya	4	8:41	0:02	8:43	8:46	0:03	0:05	
730	6	Addisu Gebeya	1	8:41	0:02	8:43	8:45	0:02	0:04	
731	6	Addisu Gebeya	2	8:41	0:03	8:44	8:46	0:02	0:05	
732	6	Addisu Gebeya	5	8:41	0:03	8:44	8:47	0:03	0:06	
733	6	Addisu Gebeya	1	8:41	0:04	8:45	8:48	0:03	0:07	
734	6	Addisu Gebeya	8	8:42	0:03	8:45	8:48	0:03	0:06	
735	6	Addisu Gebeya	4	8:43	0:03	8:46	8:47	0:01	0:04	
736	6	Addisu Gebeya	2	8:43	0:03	8:46	8:48	0:02	0:05	
737	6	Addisu Gebeya	3	8:44	0:03	8:47	8:50	0:03	0:06	
738	6	Addisu Gebeya	4	8:45	0:02	8:47	8:49	0:02	0:04	
739	6	Addisu Gebeya	5	8:47	0:00	8:47	8:50	0:03	0:03	
740	6	Addisu Gebeya	1	8:47	0:01	8:48	8:49	0:01	0:02	
741	6	Addisu Gebeya	8	8:47	0:01	8:48	8:51	0:03	0:04	
742	6	Addisu Gebeya	2	8:48	0:00	8:48	8:51	0:03	0:03	
743	6	Addisu Gebeya	4	8:48	0:01	8:49	8:51	0:02	0:03	
744	6	Addisu Gebeya	7	8:49	0:00	8:49	8:52	0:03	0:03	
745	6	Addisu Gebeya	1	8:49	0:00	8:49	8:51	0:02	0:02	
746	6	Addisu Gebeya	5	8:49	0:01	8:50	8:52	0:02	0:03	
747	6	Addisu Gebeya	3	8:49	0:01	8:50	8:53	0:03	0:04	
748	6	Addisu Gebeya	8	8:50	0:01	8:51	8:56	0:05	0:06	
749	6	Addisu Gebeya	4	8:50	0:01	8:51	8:52	0:01	0:02	
750	6	Addisu Gebeya	2	8:50	0:01	8:51	8:52	0:01	0:02	
751	6	Addisu Gebeya	3	8:59	0:02	9:01	9:04	0:03	0:05	
752	6	Addisu Gebeya	1	8:59	0:02	9:01	9:05	0:04	0:06	
753	6	Addisu Gebeya	7	8:59	0:02	9:01	9:05	0:04	0:06	
754	6	Addisu Gebeya	2	8:59	0:03	9:02	9:07	0:05	0:08	
755	6	Addisu Gebeya	4	8:59	0:04	9:03	9:05	0:02	0:06	

756	6	Addisu Gebeya	5	8:59	0:04	9:03	9:05	0:02	0:06	
757	6	Addisu Gebeya	8	8:59	0:05	9:04	9:05	0:01	0:06	
758	6	Addisu Gebeya	3	8:59	0:05	9:04	9:06	0:02	0:07	
759	6	Addisu Gebeya	1	9:00	0:05	9:05	9:07	0:02	0:07	
760	6	Addisu Gebeya	7	9:00	0:05	9:05	9:10	0:05	0:10	
761	6	Addisu Gebeya	4	9:00	0:05	9:05	9:06	0:01	0:06	
762	6	Addisu Gebeya	8	9:01	0:04	9:05	9:07	0:02	0:06	
763	6	Addisu Gebeya	5	9:01	0:04	9:05	9:07	0:02	0:06	
764	6	Addisu Gebeya	3	9:01	0:05	9:06	9:09	0:03	0:08	
765	6	Addisu Gebeya	4	9:01	0:05	9:06	9:12	0:06	0:11	
766	6	Addisu Gebeya	5	9:02	0:05	9:07	9:08	0:01	0:06	
767	6	Addisu Gebeya	2	9:02	0:05	9:07	9:08	0:01	0:06	
768	6	Addisu Gebeya	8	9:02	0:05	9:07	9:11	0:04	0:09	
769	6	Addisu Gebeya	1	9:02	0:05	9:07	9:09	0:02	0:07	
770	6	Addisu Gebeya	5	9:02	0:06	9:08	9:09	0:01	0:07	
771	6	Addisu Gebeya	2	9:02	0:06	9:08	9:10	0:02	0:08	
772	6	Addisu Gebeya	1	9:03	0:06	9:09	9:12	0:03	0:09	
773	6	Addisu Gebeya	3	9:03	0:06	9:09	9:12	0:03	0:09	
774	6	Addisu Gebeya	5	9:03	0:06	9:09	9:11	0:02	0:08	
775	6	Addisu Gebeya	2	9:04	0:06	9:10	9:13	0:03	0:09	
776	6	Addisu Gebeya	7	9:04	0:06	9:10	9:13	0:03	0:09	
777	6	Addisu Gebeya	6	9:04	0:07	9:11	9:13	0:02	0:09	
778	6	Addisu Gebeya	5	9:05	0:06	9:11	9:14	0:03	0:09	
779	6	Addisu Gebeya	8	9:05	0:06	9:11	9:13	0:02	0:08	
780	6	Addisu Gebeya	4	9:05	0:07	9:12	9:15	0:03	0:10	
781	6	Addisu Gebeya	3	9:06	0:06	9:12	9:15	0:03	0:09	
782	6	Addisu Gebeya	5	10:31	0:03	10:34	10:35	0:01	0:04	
783	6	Addisu Gebeya	4	10:31	0:03	10:34	10:39	0:05	0:08	
784	6	Addisu Gebeya	8	10:31	0:03	10:34	10:38	0:04	0:07	
785	6	Addisu Gebeya	1	10:32	0:03	10:35	10:36	0:01	0:04	
786	6	Addisu Gebeya	7	10:32	0:03	10:35	10:40	0:05	0:08	
787	6	Addisu Gebeya	5	10:33	0:02	10:35	10:38	0:03	0:05	
788	6	Addisu Gebeya	2	10:33	0:03	10:36	10:41	0:05	0:08	
789	6	Addisu Gebeya	1	10:34	0:02	10:36	10:37	0:01	0:03	
790	6	Addisu Gebeya	6	10:34	0:03	10:37	10:41	0:04	0:07	
791	6	Addisu Gebeya	1	10:34	0:03	10:37	10:39	0:02	0:05	not much observed priority for elderly
792	6	Addisu Gebeya	3	10:34	0:04	10:38	10:40	0:02	0:06	
793	6	Addisu Gebeya	8	10:35	0:03	10:38	10:40	0:02	0:05	
794	6	Addisu Gebeya	5	10:35	0:03	10:38	10:41	0:03	0:06	
795	6	Addisu Gebeya	4	10:36	0:03	10:39	10:44	0:05	0:08	
796	6	Addisu Gebeya	1	10:36	0:03	10:39	10:44	0:05	0:08	
797	6	Addisu Gebeya	6	10:37	0:04	10:41	10:45	0:04	0:08	
798	6	Addisu Gebeya	2	10:37	0:04	10:41	10:45	0:04	0:08	

799	6	Addisu Gebeya	5	10:38	0:03	10:41	10:44	0:03	0:06	
800	6	Addisu Gebeya	8	10:39	0:02	10:41	10:43	0:02	0:04	
801	6	Addisu Gebeya	3	10:40	0:03	10:43	10:46	0:03	0:06	
802	6	Addisu Gebeya	8	10:40	0:03	10:43	10:46	0:03	0:06	
803	6	Addisu Gebeya	5	10:40	0:04	10:44	10:46	0:02	0:06	
804	6	Addisu Gebeya	4	10:40	0:04	10:44	10:46	0:02	0:06	
805	6	Addisu Gebeya	6	10:41	0:04	10:45	10:48	0:03	0:07	
806	6	Addisu Gebeya	2	10:41	0:04	10:45	10:48	0:03	0:07	
807	6	Addisu Gebeya	4	10:42	0:04	10:46	10:50	0:04	0:08	
808	6	Addisu Gebeya	3	10:46	0:03	10:49	10:54	0:05	0:08	
809	6	Addisu Gebeya	6	10:46	0:04	10:50	10:53	0:03	0:07	
810	6	Addisu Gebeya	4	10:47	0:03	10:50	10:54	0:04	0:07	
811	6	Addisu Gebeya	1	10:47	0:04	10:51	10:52	0:01	0:05	
812	6	Addisu Gebeya	5	10:47	0:04	10:51	10:57	0:06	0:10	
813	6	Addisu Gebeya	8	10:48	0:03	10:51	10:53	0:02	0:05	
814	6	Addisu Gebeya	1	10:48	0:04	10:52	10:54	0:02	0:06	
815	6	Addisu Gebeya	4	10:49	0:03	10:52	10:53	0:01	0:04	
816	6	Addisu Gebeya	6	10:50	0:03	10:53	10:55	0:02	0:05	
817	6	Addisu Gebeya	7	10:50	0:03	10:53	10:55	0:02	0:05	
818	6	Addisu Gebeya	8	10:51	0:02	10:53	10:56	0:03	0:05	
819	6	Addisu Gebeya	4	10:51	0:02	10:53	10:54	0:01	0:03	
820	6	Addisu Gebeya	2	10:51	0:02	10:53	10:54	0:01	0:03	
821	6	Addisu Gebeya	4	10:51	0:03	10:54	10:56	0:02	0:05	
822	6	Addisu Gebeya	3	10:51	0:03	10:54	10:56	0:02	0:05	
823	6	Addisu Gebeya	1	10:51	0:03	10:54	10:57	0:03	0:06	
824	6	Addisu Gebeya	2	10:51	0:03	10:54	10:59	0:05	0:08	
825	6	Addisu Gebeya	6	10:53	0:02	10:55	11:05	0:10	0:12	
826	6	Addisu Gebeya	7	10:53	0:02	10:55	10:58	0:03	0:05	
827	6	Addisu Gebeya	5	10:53	0:04	10:57	11:01	0:04	0:08	
828	6	Addisu Gebeya	8	10:53	0:03	10:56	11:01	0:05	0:08	
829	6	Addisu Gebeya	4	10:53	0:03	10:56	10:59	0:03	0:06	
830	6	Addisu Gebeya	3	10:54	0:02	10:56	10:58	0:02	0:04	
831	6	Addisu Gebeya	1	10:54	0:03	10:57	10:59	0:02	0:05	
832	6	Addisu Gebeya	7	10:56	0:02	10:58	11:01	0:03	0:05	
833	6	Addisu Gebeya	3	10:56	0:02	10:58	10:59	0:01	0:03	
834	6	Addisu Gebeya	1	10:56	0:03	10:59	11:01	0:02	0:05	
835	6	Addisu Gebeya	3	10:56	0:03	10:59	11:02	0:03	0:06	
836	6	Addisu Gebeya	2	10:56	0:03	10:59	11:01	0:02	0:05	
837	6	Addisu Gebeya	4	10:57	0:02	10:59	11:01	0:02	0:04	
838	6	Addisu Gebeya	8	10:57	0:03	11:00	11:02	0:02	0:05	
839	6	Addisu Gebeya	4	10:57	0:04	11:01	11:04	0:03	0:07	
840	6	Addisu Gebeya	7	10:58	0:03	11:01	11:05	0:04	0:07	
841	6	Addisu Gebeya	5	10:58	0:03	11:01	11:03	0:02	0:05	

842	6	Addisu Gebeya	1	10:58	0:03	11:01	11:04	0:03	0:06	
843	6	Addisu Gebeya	2	10:58	0:03	11:01	11:05	0:04	0:07	
844	6	Addisu Gebeya	8	10:58	0:04	11:02	11:10	0:08	0:12	
845	6	Addisu Gebeya	3	10:59	0:03	11:02	11:11	0:09	0:12	
846	6	Addisu Gebeya	5	10:59	0:04	11:03	11:08	0:05	0:09	
847	6	Addisu Gebeya	4	11:00	0:04	11:04	11:05	0:01	0:05	
848	6	Addisu Gebeya	1	11:00	0:04	11:04	11:10	0:06	0:10	
849	6	Addisu Gebeya	6	11:00	0:05	11:05	11:07	0:02	0:07	
850	6	Addisu Gebeya	2	11:01	0:04	11:05	11:08	0:03	0:07	
851	6	Addisu Gebeya	7	11:02	0:03	11:05	11:07	0:02	0:05	
852	6	Addisu Gebeya	4	11:03	0:02	11:05	11:08	0:03	0:05	
853	6	Addisu Gebeya	7	11:04	0:03	11:07	11:10	0:03	0:06	
854	6	Addisu Gebeya	6	11:04	0:03	11:07	11:09	0:02	0:05	
855	6	Addisu Gebeya	2	11:04	0:04	11:08	11:09	0:01	0:05	
856	6	Addisu Gebeya	4	11:05	0:03	11:08	11:10	0:02	0:05	
857	6	Addisu Gebeya	5	11:05	0:03	11:08	11:10	0:02	0:05	
858	6	Addisu Gebeya	2	11:05	0:04	11:09	11:13	0:04	0:08	
859	6	Addisu Gebeya	6	11:07	0:02	11:09	11:13	0:04	0:06	
860	6	Addisu Gebeya	1	11:07	0:03	11:10	11:13	0:03	0:06	
861	6	Addisu Gebeya	5	14:00	0:00	14:00	14:04	0:04	0:04	
862	6	Addisu Gebeya	1	14:01	0:00	14:01	14:07	0:06	0:06	
863	6	Addisu Gebeya	4	14:01	0:02	14:03	14:05	0:02	0:04	
864	6	Addisu Gebeya	5	14:02	0:02	14:04	14:05	0:01	0:03	
865	6	Addisu Gebeya	4	14:02	0:03	14:05	14:06	0:01	0:04	
866	6	Addisu Gebeya	5	14:02	0:03	14:05	14:09	0:04	0:07	
867	6	Addisu Gebeya	4	14:04	0:02	14:06	14:09	0:03	0:05	
868	6	Addisu Gebeya	1	14:05	0:02	14:07	14:10	0:03	0:05	
869	6	Addisu Gebeya	2	14:05	0:02	14:07	14:08	0:01	0:03	
870	6	Addisu Gebeya	7	14:06	0:02	14:08	14:09	0:01	0:03	
871	6	Addisu Gebeya	2	14:07	0:02	14:09	14:11	0:02	0:04	
872	6	Addisu Gebeya	5	14:08	0:01	14:09	14:11	0:02	0:03	
873	6	Addisu Gebeya	7	14:09	0:00	14:09	14:12	0:03	0:03	
874	6	Addisu Gebeya	4	14:09	0:00	14:09	14:12	0:03	0:03	
875	6	Addisu Gebeya	1	14:10	0:00	14:10	14:14	0:04	0:04	
876	6	Addisu Gebeya	5	14:11	0:00	14:11	14:14	0:03	0:03	
877	6	Addisu Gebeya	4	14:12	0:00	14:12	14:15	0:03	0:03	
878	6	Addisu Gebeya	7	14:12	0:00	14:12	14:14	0:02	0:02	
879	6	Addisu Gebeya	1	14:13	0:01	14:14	14:15	0:01	0:02	
880	6	Addisu Gebeya	2	14:14	0:00	14:14	14:17	0:03	0:03	
881	6	Addisu Gebeya	5	14:16	0:00	14:16	14:18	0:02	0:02	
882	6	Addisu Gebeya	7	14:19	0:00	14:19	14:22	0:03	0:03	
883	6	Addisu Gebeya	4	14:19	0:00	14:19	14:22	0:03	0:03	
884	6	Addisu Gebeya	5	14:22	0:00	14:22	14:24	0:02	0:02	

885	6	Addisu Gebeya	1	14:24	0:00	14:24	14:32	0:08	0:08	
886	6	Addisu Gebeya	3	14:25	0:00	14:25	14:28	0:03	0:03	
887	6	Addisu Gebeya	8	14:26	0:00	14:26	14:32	0:06	0:06	
888	6	Addisu Gebeya	5	14:26	0:00	14:26	14:29	0:03	0:03	
889	6	Addisu Gebeya	7	14:27	0:00	14:27	14:29	0:02	0:02	
890	6	Addisu Gebeya	2	14:28	0:00	14:28	14:32	0:04	0:04	
891	6	Addisu Gebeya	3	14:28	0:00	14:28	14:33	0:05	0:05	
892	6	Addisu Gebeya	1	14:28	0:01	14:29	14:32	0:03	0:04	
893	6	Addisu Gebeya	7	14:30	0:00	14:30	14:33	0:03	0:03	
894	6	Addisu Gebeya	5	14:31	0:01	14:32	14:34	0:02	0:03	
895	6	Addisu Gebeya	5	14:33	0:01	14:34	14:36	0:02	0:03	
896	6	Addisu Gebeya	3	14:34	0:00	14:34	14:36	0:02	0:02	
897	6	Addisu Gebeya	4	14:35	0:00	14:35	14:38	0:03	0:03	
898	6	Addisu Gebeya	2	14:35	0:00	14:35	14:38	0:03	0:03	
899	6	Addisu Gebeya	1	14:35	0:00	14:35	14:39	0:04	0:04	
900	6	Addisu Gebeya	3	14:36	0:00	14:36	14:38	0:02	0:02	
901	6	Addisu Gebeya	7	14:37	0:00	14:37	14:39	0:02	0:02	
902	6	Addisu Gebeya	4	14:38	0:00	14:38	14:40	0:02	0:02	
903	6	Addisu Gebeya	1	14:40	0:00	14:40	14:42	0:02	0:02	
904	6	Addisu Gebeya	8	14:40	0:00	14:40	14:43	0:03	0:03	
905	6	Addisu Gebeya	4	14:44	0:00	14:44	14:46	0:02	0:02	
906	6	Addisu Gebeya	1	14:46	0:00	14:46	14:48	0:02	0:02	
907	6	Addisu Gebeya	5	14:47	0:00	14:47	14:48	0:01	0:01	
908	6	Addisu Gebeya	7	14:47	0:00	14:47	14:50	0:03	0:03	
909	6	Addisu Gebeya	8	14:47	0:00	14:47	14:49	0:02	0:02	
910	6	Addisu Gebeya	4	14:48	0:00	14:48	14:50	0:02	0:02	
911	6	Addisu Gebeya	3	14:49	0:01	14:50	14:55	0:05	0:06	
912	6	Addisu Gebeya	4	14:49	0:01	14:50	14:56	0:06	0:07	
913	6	Addisu Gebeya	1	14:52	0:00	14:52	14:56	0:04	0:04	
914	6	Addisu Gebeya	8	14:52	0:00	14:52	14:54	0:02	0:02	
915	6	Addisu Gebeya	2	14:52	0:02	14:54	14:57	0:03	0:05	
916	6	Addisu Gebeya	2	14:55	0:00	14:55	14:57	0:02	0:02	
917	6	Addisu Gebeya	5	14:56	0:00	14:56	14:58	0:02	0:02	
918	6	Addisu Gebeya	3	14:57	0:00	14:57	15:00	0:03	0:03	
919	6	Addisu Gebeya	7	15:00	0:00	15:00	15:04	0:04	0:04	
920	6	Addisu Gebeya	2	15:12	0:00	15:12	15:14	0:02	0:02	
921	6	Addisu Gebeya	4	15:13	0:00	15:13	15:20	0:07	0:07	
922	6	Addisu Gebeya	2	15:15	0:00	15:15	15:18	0:03	0:03	
923	6	Addisu Gebeya	5	15:15	0:00	15:15	15:18	0:03	0:03	
924	6	Addisu Gebeya	3	15:15	0:00	15:15	15:18	0:03	0:03	
925	6	Addisu Gebeya	6	15:15	0:02	15:17	15:18	0:01	0:03	
926	6	Addisu Gebeya	7	15:16	0:01	15:17	15:19	0:02	0:03	
927	6	Addisu Gebeya	1	15:17	0:01	15:18	15:20	0:02	0:03	

928	6	Addisu Gebeya	2	15:18	0:00	15:18	15:20	0:02	0:02	
929	6	Addisu Gebeya	5	15:18	0:00	15:18	15:20	0:02	0:02	
930	6	Addisu Gebeya	3	15:18	0:01	15:19	15:22	0:03	0:04	
931	6	Addisu Gebeya	8	15:20	0:00	15:20	15:23	0:03	0:03	
932	6	Addisu Gebeya	4	15:20	0:00	15:20	15:23	0:03	0:03	
933	6	Addisu Gebeya	6	15:20	0:00	15:20	15:23	0:03	0:03	
934	6	Addisu Gebeya	7	15:24	0:00	15:24	15:27	0:03	0:03	
935	6	Addisu Gebeya	1	15:28	0:00	15:28	15:32	0:04	0:04	
936	6	Addisu Gebeya	7	15:29	0:00	15:29	15:33	0:04	0:04	
937	6	Addisu Gebeya	8	15:29	0:00	15:29	15:32	0:03	0:03	
938	6	Addisu Gebeya	3	15:31	0:00	15:31	15:33	0:02	0:02	
939	6	Addisu Gebeya	2	15:32	0:01	15:33	15:35	0:02	0:03	
940	6	Addisu Gebeya	7	15:32	0:01	15:33	15:36	0:03	0:04	
941	6	Addisu Gebeya	5	15:32	0:01	15:33	15:35	0:02	0:03	
942	6	Addisu Gebeya	8	15:38	0:00	15:38	15:46	0:08	0:08	
943	6	Addisu Gebeya	4	15:40	0:00	15:40	15:44	0:04	0:04	
944	6	Addisu Gebeya	2	15:42	0:00	15:42	15:45	0:03	0:03	
945	6	Addisu Gebeya	5	15:42	0:00	15:42	15:46	0:04	0:04	
946	6	Addisu Gebeya	1	15:43	0:00	15:43	15:47	0:04	0:04	
947	6	Addisu Gebeya	3	15:45	0:00	15:45	15:47	0:02	0:02	
948	7	Lebu	6	8:26	0:15	8:41	8:45	0:04	0:19	19-4-2017
949	7	Lebu	5	8:27	0:14	8:41	8:46	0:05	0:19	
950	7	Lebu	1	8:27	0:15	8:42	8:49	0:07	0:22	
951	7	Lebu	2	8:28	0:15	8:43	8:46	0:03	0:18	
952	7	Lebu	9	8:28	0:15	8:43	8:45	0:02	0:17	
953	7	Lebu	10	8:29	0:14	8:43	8:51	0:08	0:22	
954	7	Lebu	6	8:29	0:16	8:45	8:49	0:04	0:20	
955	7	Lebu	9	8:30	0:15	8:45	8:47	0:02	0:17	
956	7	Lebu	5	8:30	0:16	8:46	8:47	0:01	0:17	
957	7	Lebu	2	8:30	0:16	8:46	8:50	0:04	0:20	
958	7	Lebu	5	8:30	0:17	8:47	8:50	0:03	0:20	
959	7	Lebu	9	8:31	0:16	8:47	8:50	0:03	0:19	
960	7	Lebu	8	8:32	0:16	8:48	8:50	0:02	0:18	
961	7	Lebu	6	8:32	0:17	8:49	8:51	0:02	0:19	
962	7	Lebu	9	8:32	0:18	8:50	8:52	0:02	0:20	
963	7	Lebu	2	8:32	0:18	8:50	8:54	0:04	0:22	
964	7	Lebu	5	8:33	0:17	8:50	8:53	0:03	0:20	
965	7	Lebu	8	8:33	0:17	8:50	8:54	0:04	0:21	
966	7	Lebu	10	8:33	0:18	8:51	8:57	0:06	0:24	
967	7	Lebu	6	8:33	0:18	8:51	8:55	0:04	0:22	
968	7	Lebu	9	8:34	0:18	8:52	8:53	0:01	0:19	
969	7	Lebu	5	8:34	0:19	8:53	8:57	0:04	0:23	

970	7	Lebu	9	8:35	0:18	8:53	8:56	0:03	0:21	
971	7	Lebu	2	8:35	0:19	8:54	8:58	0:04	0:23	
972	7	Lebu	8	8:35	0:19	8:54	8:56	0:02	0:21	
973	7	Lebu	6	8:36	0:19	8:55	8:58	0:03	0:22	
974	7	Lebu	9	8:37	0:19	8:56	8:57	0:01	0:20	
975	7	Lebu	8	8:38	0:18	8:56	8:58	0:02	0:20	
976	7	Lebu	9	8:38	0:19	8:57	9:01	0:04	0:23	
977	7	Lebu	5	8:38	0:19	8:57	8:59	0:02	0:21	
978	7	Lebu	10	8:39	0:18	8:57	8:59	0:02	0:20	
979	7	Lebu	8	8:39	0:19	8:58	9:00	0:02	0:21	
980	7	Lebu	2	8:39	0:19	8:58	9:01	0:03	0:22	
981	7	Lebu	6	8:39	0:19	8:58	9:01	0:03	0:22	
982	7	Lebu	5	8:39	0:20	8:59	9:03	0:04	0:24	
983	7	Lebu	10	8:39	0:20	8:59	9:00	0:01	0:21	
984	7	Lebu	8	8:40	0:20	9:00	9:01	0:01	0:21	
985	7	Lebu	4	8:41	0:19	9:00	9:02	0:02	0:21	
986	7	Lebu	10	8:41	0:19	9:00	9:04	0:04	0:23	
987	7	Lebu	2	8:41	0:20	9:01	9:04	0:03	0:23	
988	7	Lebu	6	8:41	0:20	9:01	9:03	0:02	0:22	
989	7	Lebu	3	8:43	0:18	9:01	9:05	0:04	0:22	
990	7	Lebu	9	8:43	0:18	9:01	9:07	0:06	0:24	
991	7	Lebu	8	8:44	0:17	9:01	9:05	0:04	0:21	
992	7	Lebu	4	8:44	0:18	9:02	9:09	0:07	0:25	
993	7	Lebu	5	8:44	0:19	9:03	9:04	0:01	0:20	
994	7	Lebu	6	8:45	0:18	9:03	9:08	0:05	0:23	
995	7	Lebu	5	8:46	0:18	9:04	9:10	0:06	0:24	
996	7	Lebu	10	8:46	0:18	9:04	9:06	0:02	0:20	
997	7	Lebu	2	8:48	0:16	9:04	9:06	0:02	0:18	
998	7	Lebu	3	8:48	0:17	9:05	9:08	0:03	0:20	
999	7	Lebu	8	8:49	0:16	9:05	9:07	0:02	0:18	
1000	7	Lebu	10	8:51	0:15	9:06	9:09	0:03	0:18	
1001	7	Lebu	2	8:52	0:14	9:06	9:08	0:02	0:16	
1002	7	Lebu	9	8:52	0:15	9:07	9:08	0:01	0:16	
1003	7	Lebu	8	8:52	0:15	9:07	9:12	0:05	0:20	
1004	7	Lebu	3	8:52	0:16	9:08	9:10	0:02	0:18	
1005	7	Lebu	2	8:52	0:16	9:08	9:09	0:01	0:17	
1006	7	Lebu	6	8:52	0:16	9:08	9:10	0:02	0:18	
1007	7	Lebu	9	8:52	0:16	9:08	9:10	0:02	0:18	
1008	7	Lebu	2	8:52	0:17	9:09	9:12	0:03	0:20	
1009	7	Lebu	10	8:52	0:17	9:09	9:11	0:02	0:19	
1010	7	Lebu	3	8:53	0:17	9:10	9:14	0:04	0:21	
1011	7	Lebu	6	8:53	0:17	9:10	9:14	0:04	0:21	
1012	7	Lebu	9	8:54	0:16	9:10	9:15	0:05	0:21	

1013	7	Lebu	4	8:56	0:14	9:10	9:15	0:05	0:19	
1014	7	Lebu	10	8:56	0:15	9:11	9:13	0:02	0:17	
1015	7	Lebu	8	8:56	0:16	9:12	9:13	0:01	0:17	
1016	7	Lebu	2	8:56	0:16	9:12	9:16	0:04	0:20	
1017	7	Lebu	5	8:56	0:16	9:12	9:17	0:05	0:21	
1018	7	Lebu	10	8:56	0:17	9:13	9:15	0:02	0:19	
1019	7	Lebu	8	8:58	0:15	9:13	9:19	0:06	0:21	
1020	7	Lebu	6	8:58	0:16	9:14	9:17	0:03	0:19	
1021	7	Lebu	3	8:59	0:15	9:14	9:16	0:02	0:17	
1022	7	Lebu	10	9:00	0:15	9:15	9:18	0:03	0:18	
1023	7	Lebu	9	9:01	0:14	9:15	9:18	0:03	0:17	
1024	7	Lebu	2	9:01	0:14	9:15	9:16	0:01	0:15	
1025	7	Lebu	3	9:01	0:15	9:16	9:21	0:05	0:20	
1026	7	Lebu	4	9:01	0:15	9:16	9:17	0:01	0:16	
1027	7	Lebu	2	9:01	0:15	9:16	9:20	0:04	0:19	
1028	7	Lebu	4	9:02	0:15	9:17	9:18	0:01	0:16	
1029	7	Lebu	5	9:02	0:15	9:17	9:19	0:02	0:17	
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1031	7	Lebu	9	9:03	0:15	9:18	9:23	0:05	0:20	
1032	7	Lebu	10	9:03	0:15	9:18	9:21	0:03	0:18	
1033	7	Lebu	4	9:04	0:14	9:18	9:24	0:06	0:20	
1034	7	Lebu	8	9:04	0:15	9:19	9:20	0:01	0:16	
1035	7	Lebu	5	9:04	0:15	9:19	9:23	0:04	0:19	
1036	7	Lebu	6	9:04	0:15	9:19	9:24	0:05	0:20	
1037	7	Lebu	2	9:04	0:16	9:20	9:23	0:03	0:19	
1038	7	Lebu	8	9:07	0:13	9:20	9:21	0:01	0:14	
1039	7	Lebu	10	9:07	0:14	9:21	9:23	0:02	0:16	
1040	7	Lebu	3	9:07	0:14	9:21	9:25	0:04	0:18	
1041	7	Lebu	8	9:08	0:13	9:21	9:25	0:04	0:17	
1042	7	Lebu	5	9:08	0:15	9:23	9:25	0:02	0:17	
1043	7	Lebu	9	9:08	0:15	9:23	9:26	0:03	0:18	
1044	7	Lebu	2	9:10	0:13	9:23	9:27	0:04	0:17	
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1046	7	Lebu	4	9:10	0:14	9:24	9:25	0:01	0:15	
1047	7	Lebu	6	9:11	0:13	9:24	9:26	0:02	0:15	
1048	7	Lebu	3	9:10	0:15	9:25	9:33	0:08	0:23	
1049	7	Lebu	5	9:10	0:15	9:25	9:27	0:02	0:17	
1050	7	Lebu	8	9:11	0:14	9:25	9:28	0:03	0:17	
1051	7	Lebu	4	9:11	0:14	9:25	9:31	0:06	0:20	
1052	7	Lebu	9	9:11	0:15	9:26	9:28	0:02	0:17	
1053	7	Lebu	6	9:11	0:15	9:26	9:30	0:04	0:19	
1054	7	Lebu	2	9:12	0:15	9:27	9:28	0:01	0:16	
1055	7	Lebu	5	9:12	0:15	9:27	9:29	0:02	0:17	

1056	7	Lebu	9	9:12	0:16	9:28	9:28	0:00	0:16	
1057	7	Lebu	10	9:13	0:15	9:28	9:30	0:02	0:17	Power went off @09:35 -09:44 and so 9 minutes was considered in queue and service time records
1058	7	Lebu	8	9:13	0:15	9:28	9:30	0:02	0:17	
1059	7	Lebu	9	9:14	0:14	9:28	9:30	0:02	0:16	
1060	7	Lebu	2	9:15	0:13	9:28	9:31	0:03	0:16	
1061	7	Lebu	5	9:15	0:14	9:29	9:32	0:03	0:17	
1062	7	Lebu	9	9:15	0:15	9:30	9:32	0:02	0:17	
1063	7	Lebu	8	9:15	0:15	9:30	9:36	0:06	0:21	
1064	7	Lebu	10	9:16	0:14	9:30	9:34	0:04	0:18	
1065	7	Lebu	6	9:16	0:14	9:30	9:35	0:05	0:19	
1066	7	Lebu	2	9:16	0:15	9:31	9:32	0:01	0:16	
1067	7	Lebu	4	9:17	0:14	9:31	9:34	0:03	0:17	
1068	7	Lebu	9	9:17	0:15	9:32	9:41	0:09	0:24	
1069	7	Lebu	5	9:17	0:15	9:32	9:35	0:03	0:18	
1070	7	Lebu	2	9:17	0:15	9:32	9:34	0:02	0:17	
1071	7	Lebu	3	9:18	0:15	9:33	9:35	0:02	0:17	
1072	7	Lebu	10	9:19	0:15	9:34	9:36	0:02	0:17	
1073	7	Lebu	2	9:19	0:15	9:34	9:38	0:04	0:19	
1074	7	Lebu	4	9:19	0:15	9:34	9:37	0:03	0:18	
1075	7	Lebu	6	9:20	0:15	9:35	9:44	0:09	0:24	
1076	7	Lebu	3	9:20	0:15	9:35	9:38	0:03	0:18	
1077	7	Lebu	5	9:20	0:15	9:35	9:40	0:05	0:20	
1078	7	Lebu	10	9:21	0:15	9:36	9:38	0:02	0:17	
1079	7	Lebu	8	9:21	0:15	9:36	9:40	0:04	0:19	
1080	7	Lebu	4	9:21	0:16	9:37	9:42	0:05	0:21	
1081	7	Lebu	3	9:22	0:16	9:38	9:41	0:03	0:19	
1082	7	Lebu	2	9:22	0:16	9:38	9:39	0:01	0:17	
1083	7	Lebu	10	9:22	0:16	9:38	9:42	0:04	0:20	
1084	7	Lebu	2	9:23	0:16	9:39	9:43	0:04	0:20	
1085	7	Lebu	8	9:24	0:16	9:40	9:41	0:01	0:17	
1086	7	Lebu	5	9:26	0:14	9:40	9:48	0:08	0:22	
1087	7	Lebu	3	9:26	0:15	9:41	9:42	0:01	0:16	
1088	7	Lebu	9	9:26	0:15	9:41	9:52	0:11	0:26	
1089	7	Lebu	8	9:26	0:15	9:41	9:52	0:11	0:26	
1090	7	Lebu	10	9:27	0:15	9:42	9:45	0:03	0:18	
1091	7	Lebu	4	9:27	0:15	9:42	9:45	0:03	0:18	
1092	7	Lebu	3	9:27	0:15	9:42	9:44	0:02	0:17	
1093	7	Lebu	2	9:28	0:15	9:43	9:47	0:04	0:19	
1094	7	Lebu	3	9:28	0:16	9:44	9:51	0:07	0:23	
1095	7	Lebu	6	9:28	0:16	9:44	9:56	0:12	0:28	
1096	7	Lebu	4	9:28	0:17	9:45	9:49	0:04	0:21	
1097	7	Lebu	10	9:29	0:16	9:45	9:53	0:08	0:24	
1098	7	Lebu	2	9:29	0:18	9:47	9:49	0:02	0:20	

1099	7	Lebu	5	9:29	0:19	9:48	9:56	0:08	0:27	
1100	7	Lebu	4	9:29	0:20	9:49	9:52	0:03	0:23	
1101	7	Lebu	2	9:29	0:20	9:49	9:53	0:04	0:24	
1102	7	Lebu	4	9:29	0:23	9:52	9:53	0:01	0:24	
1103	7	Lebu	8	9:30	0:22	9:52	9:54	0:02	0:24	
1104	7	Lebu	9	9:30	0:22	9:52	9:55	0:03	0:25	
1105	7	Lebu	4	9:30	0:23	9:53	9:55	0:02	0:25	
1106	7	Lebu	10	9:30	0:23	9:53	9:58	0:05	0:28	
1107	7	Lebu	2	9:32	0:21	9:53	9:55	0:02	0:23	
1108	7	Lebu	8	9:32	0:22	9:54	9:57	0:03	0:25	
1109	7	Lebu	4	9:33	0:22	9:55	9:59	0:04	0:26	
1110	7	Lebu	2	9:33	0:22	9:55	10:00	0:05	0:27	
1111	7	Lebu	9	9:33	0:22	9:55	9:57	0:02	0:24	
1112	7	Lebu	5	9:33	0:23	9:56	9:57	0:01	0:24	
1113	7	Lebu	6	9:34	0:22	9:56	9:57	0:01	0:23	
1114	7	Lebu	9	9:34	0:23	9:57	9:59	0:02	0:25	
1115	7	Lebu	8	9:37	0:20	9:57	10:01	0:04	0:24	
1116	7	Lebu	5	9:37	0:20	9:57	10:01	0:04	0:24	
1117	7	Lebu	6	9:38	0:19	9:57	10:00	0:03	0:22	
1118	7	Lebu	10	9:38	0:20	9:58	10:00	0:02	0:22	
1119	7	Lebu	4	9:38	0:21	9:59	10:00	0:01	0:22	
1120	7	Lebu	9	9:39	0:20	9:59	10:03	0:04	0:24	
1121	7	Lebu	10	9:39	0:21	10:00	10:04	0:04	0:25	
1122	7	Lebu	4	9:40	0:20	10:00	10:04	0:04	0:24	
1123	7	Lebu	2	9:50	0:10	10:00	10:05	0:05	0:15	
1124	7	Lebu	6	9:51	0:09	10:00	10:02	0:02	0:11	
1125	7	Lebu	8	9:51	0:10	10:01	10:02	0:01	0:11	
1126	7	Lebu	5	9:51	0:10	10:01	10:05	0:04	0:14	
1127	7	Lebu	6	9:51	0:11	10:02	10:07	0:05	0:16	
1128	7	Lebu	1	9:51	0:11	10:02	10:09	0:07	0:18	
1129	7	Lebu	8	9:52	0:10	10:02	10:09	0:07	0:17	
1130	7	Lebu	9	9:52	0:11	10:03	10:05	0:02	0:13	
1131	7	Lebu	4	9:52	0:12	10:04	10:09	0:05	0:17	
1132	7	Lebu	10	9:52	0:12	10:04	10:09	0:05	0:17	
1133	7	Lebu	2	9:52	0:13	10:05	10:08	0:03	0:16	
1134	7	Lebu	3	9:52	0:13	10:05	10:08	0:03	0:16	
1135	7	Lebu	5	9:52	0:13	10:05	10:09	0:04	0:17	
1136	7	Lebu	9	9:52	0:13	10:05	10:12	0:07	0:20	
1137	7	Lebu	6	9:52	0:15	10:07	10:12	0:05	0:20	
1138	7	Lebu	2	9:53	0:15	10:08	10:10	0:02	0:17	
1139	7	Lebu	3	9:53	0:15	10:08	10:12	0:04	0:19	
1140	7	Lebu	5	9:53	0:16	10:09	10:17	0:08	0:24	
1141	7	Lebu	1	9:54	0:15	10:09	10:11	0:02	0:17	

1142	7	Lebu	8	9:54	0:15	10:09	10:10	0:01	0:16	
1143	7	Lebu	10	9:54	0:15	10:09	10:13	0:04	0:19	
1144	7	Lebu	2	9:54	0:16	10:10	10:13	0:03	0:19	
1145	7	Lebu	8	9:55	0:15	10:10	10:13	0:03	0:18	
1146	7	Lebu	3	9:56	0:16	10:12	10:16	0:04	0:20	
1147	7	Lebu	6	9:56	0:16	10:12	10:19	0:07	0:23	
1148	7	Lebu	10	9:56	0:17	10:13	10:14	0:01	0:18	
1149	7	Lebu	2	9:57	0:16	10:13	10:15	0:02	0:18	
1150	7	Lebu	8	9:58	0:15	10:13	10:16	0:03	0:18	
1151	7	Lebu	10	9:58	0:16	10:14	10:18	0:04	0:20	
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1155	7	Lebu	3	10:00	0:16	10:16	10:18	0:02	0:18	
1156	7	Lebu	5	10:00	0:17	10:17	10:20	0:03	0:20	
1157	7	Lebu	2	10:00	0:17	10:17	10:19	0:02	0:19	
1158	7	Lebu	10	10:00	0:18	10:18	10:29	0:11	0:29	
1159	7	Lebu	3	10:00	0:18	10:18	10:24	0:06	0:24	
1160	7	Lebu	9	10:01	0:17	10:18	10:20	0:02	0:19	
1161	7	Lebu	8	10:01	0:18	10:19	10:22	0:03	0:21	
1162	7	Lebu	2	10:01	0:18	10:19	10:21	0:02	0:20	
1163	7	Lebu	6	10:01	0:19	10:20	10:21	0:01	0:20	
1164	7	Lebu	5	10:02	0:18	10:20	10:22	0:02	0:20	
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1166	7	Lebu	2	10:02	0:19	10:21	10:22	0:01	0:20	
1167	7	Lebu	9	10:02	0:19	10:21	10:24	0:03	0:22	
1168	7	Lebu	6	10:03	0:18	10:21	10:25	0:04	0:22	
1169	7	Lebu	8	10:03	0:19	10:22	10:27	0:05	0:24	
1170	7	Lebu	2	10:03	0:19	10:22	10:30	0:08	0:27	
1171	7	Lebu	5	10:03	0:19	10:22	10:26	0:04	0:23	
1172	7	Lebu	9	10:03	0:21	10:24	10:25	0:01	0:22	
1173	7	Lebu	3	10:04	0:20	10:24	10:27	0:03	0:23	
1174	7	Lebu	4	10:05	0:20	10:25	10:29	0:04	0:24	
1175	7	Lebu	9	10:05	0:20	10:25	10:30	0:05	0:25	
1176	7	Lebu	6	10:08	0:17	10:25	10:28	0:03	0:20	
1177	7	Lebu	5	10:08	0:18	10:26	10:29	0:03	0:21	
1178	7	Lebu	8	10:08	0:19	10:27	10:28	0:01	0:20	
1179	7	Lebu	3	10:08	0:19	10:27	10:31	0:04	0:23	
1180	7	Lebu	8	10:10	0:18	10:28	10:30	0:02	0:20	
1181	7	Lebu	6	10:10	0:18	10:28	10:32	0:04	0:22	
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1183	7	Lebu	5	10:11	0:18	10:29	10:37	0:08	0:26	
1184	7	Lebu	9	10:11	0:19	10:30	10:36	0:06	0:25	

1185	7	Lebu	8	10:12	0:18	10:30	10:31	0:01	0:19	
1186	7	Lebu	10	10:13	0:17	10:30	10:32	0:02	0:19	
1187	7	Lebu	3	10:13	0:18	10:31	10:34	0:03	0:21	
1188	7	Lebu	8	10:13	0:18	10:31	10:32	0:01	0:19	
1189	7	Lebu	8	10:13	0:19	10:32	10:33	0:01	0:20	
1190	7	Lebu	10	10:13	0:19	10:32	10:33	0:01	0:20	
1191	7	Lebu	6	10:14	0:18	10:32	10:37	0:05	0:23	
1192	7	Lebu	10	10:14	0:19	10:33	10:36	0:03	0:22	
1193	7	Lebu	8	10:14	0:19	10:33	10:35	0:02	0:21	
1194	7	Lebu	3	10:14	0:20	10:34	10:38	0:04	0:24	
1195	7	Lebu	4	10:16	0:18	10:34	10:35	0:01	0:19	
1196	7	Lebu	2	10:16	0:18	10:34	10:39	0:05	0:23	
1197	7	Lebu	4	10:16	0:19	10:35	10:36	0:01	0:20	
1198	7	Lebu	8	10:16	0:19	10:35	10:37	0:02	0:21	
1199	7	Lebu	10	10:16	0:20	10:36	10:37	0:01	0:21	
1200	7	Lebu	9	10:18	0:18	10:36	10:38	0:02	0:20	
1201	7	Lebu	4	10:18	0:18	10:36	10:43	0:07	0:25	
1202	7	Lebu	5	10:18	0:19	10:37	10:39	0:02	0:21	
1203	7	Lebu	8	10:20	0:17	10:37	10:39	0:02	0:19	
1204	7	Lebu	10	10:20	0:17	10:37	10:40	0:03	0:20	
1205	7	Lebu	6	10:20	0:17	10:37	10:39	0:02	0:19	
1206	7	Lebu	9	10:20	0:18	10:38	10:40	0:02	0:20	
1207	7	Lebu	3	10:29	0:09	10:38	10:42	0:04	0:13	
1208	7	Lebu	5	10:29	0:10	10:39	10:42	0:03	0:13	
1209	7	Lebu	2	10:29	0:10	10:39	10:41	0:02	0:12	
1210	7	Lebu	6	10:30	0:09	10:39	10:44	0:05	0:14	
1211	7	Lebu	8	10:30	0:09	10:39	10:43	0:04	0:13	
1212	7	Lebu	10	10:30	0:10	10:40	10:46	0:06	0:16	
1213	7	Lebu	9	10:31	0:09	10:40	10:42	0:02	0:11	
1214	7	Lebu	2	10:32	0:09	10:41	10:44	0:03	0:12	
1215	7	Lebu	9	10:32	0:09	10:41	10:45	0:04	0:13	
1216	7	Lebu	3	10:32	0:10	10:42	10:45	0:03	0:13	
1217	7	Lebu	5	10:32	0:10	10:42	10:48	0:06	0:16	
1218	7	Lebu	4	10:32	0:11	10:43	10:45	0:02	0:13	
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1220	7	Lebu	2	10:32	0:12	10:44	10:45	0:01	0:13	
1221	7	Lebu	6	10:33	0:11	10:44	10:47	0:03	0:14	
1222	7	Lebu	4	10:33	0:12	10:45	10:46	0:01	0:13	
1223	7	Lebu	9	10:33	0:12	10:45	10:50	0:05	0:17	
1224	7	Lebu	8	10:33	0:12	10:45	10:48	0:03	0:15	
1225	7	Lebu	3	10:33	0:12	10:45	10:47	0:02	0:14	
1226	7	Lebu	2	10:33	0:12	10:45	10:47	0:02	0:14	
1227	7	Lebu	10	10:33	0:13	10:46	10:48	0:02	0:15	

1228	7	Lebu	4	10:33	0:13	10:46	10:56	0:10	0:23	
1229	7	Lebu	6	10:33	0:14	10:47	10:49	0:02	0:16	
1230	7	Lebu	3	10:33	0:14	10:47	10:50	0:03	0:17	
1231	7	Lebu	2	10:33	0:14	10:47	10:50	0:03	0:17	
1232	7	Lebu	8	10:33	0:15	10:48	10:50	0:02	0:17	
1233	7	Lebu	10	10:33	0:15	10:48	10:51	0:03	0:18	
1234	7	Lebu	1	10:34	0:15	10:49	10:54	0:05	0:20	
1235	7	Lebu	5	10:34	0:15	10:49	10:52	0:03	0:18	
1236	7	Lebu	6	10:34	0:15	10:49	10:52	0:03	0:18	
1237	7	Lebu	3	10:34	0:16	10:50	10:52	0:02	0:18	
1238	7	Lebu	2	10:34	0:16	10:50	10:53	0:03	0:19	
1239	7	Lebu	8	10:35	0:15	10:50	10:53	0:03	0:18	
1240	7	Lebu	9	10:35	0:16	10:51	10:52	0:01	0:17	
1241	7	Lebu	10	10:35	0:16	10:51	10:54	0:03	0:19	
1242	7	Lebu	3	10:35	0:17	10:52	10:58	0:06	0:23	
1243	7	Lebu	9	10:36	0:16	10:52	10:53	0:01	0:17	
1244	7	Lebu	6	10:36	0:16	10:52	10:55	0:03	0:19	
1245	7	Lebu	5	10:36	0:16	10:52	10:53	0:01	0:17	
1246	7	Lebu	9	10:36	0:17	10:53	10:59	0:06	0:23	
1247	7	Lebu	8	10:36	0:17	10:53	10:54	0:01	0:18	
1248	7	Lebu	2	10:36	0:17	10:53	10:55	0:02	0:19	
1249	7	Lebu	5	10:37	0:16	10:53	10:59	0:06	0:22	
1250	7	Lebu	8	10:37	0:17	10:54	10:56	0:02	0:19	
1251	7	Lebu	1	10:37	0:17	10:54	10:56	0:02	0:19	
1252	7	Lebu	10	10:37	0:17	10:54	10:57	0:03	0:20	
1253	7	Lebu	2	10:37	0:18	10:55	10:56	0:01	0:19	
1254	7	Lebu	6	10:38	0:17	10:55	11:00	0:05	0:22	
1255	7	Lebu	2	10:38	0:18	10:56	10:59	0:03	0:21	
1256	7	Lebu	8	10:38	0:18	10:56	10:57	0:01	0:19	
1257	7	Lebu	1	10:38	0:18	10:56	10:58	0:02	0:20	
1258	7	Lebu	4	10:39	0:18	10:57	10:59	0:02	0:20	
1259	7	Lebu	10	10:39	0:18	10:57	11:00	0:03	0:21	
1260	7	Lebu	8	10:39	0:18	10:57	11:00	0:03	0:21	
1261	7	Lebu	1	10:39	0:19	10:58	11:03	0:05	0:24	
1262	7	Lebu	2	10:39	0:19	10:58	10:59	0:01	0:20	
1263	7	Lebu	4	10:40	0:19	10:59	11:02	0:03	0:22	
1264	7	Lebu	2	10:40	0:19	10:59	11:02	0:03	0:22	
1265	7	Lebu	9	10:40	0:19	10:59	11:03	0:04	0:23	
1266	7	Lebu	8	10:40	0:20	11:00	11:05	0:05	0:25	
1267	7	Lebu	10	10:40	0:20	11:00	11:05	0:05	0:25	
1268	7	Lebu	3	11:00	0:15	11:15	11:20	0:05	0:20	
1269	7	Lebu	4	11:00	0:15	11:15	11:17	0:02	0:17	
1270	7	Lebu	9	11:00	0:16	11:16	11:17	0:01	0:17	

1271	7	Lebu	8	11:01	0:15	11:16	11:17	0:01	0:16	
1272	7	Lebu	2	11:01	0:16	11:17	11:20	0:03	0:19	
1273	7	Lebu	10	11:02	0:15	11:17	11:18	0:01	0:16	
1274	7	Lebu	8	11:02	0:15	11:17	11:18	0:01	0:16	
1275	7	Lebu	9	11:04	0:13	11:17	11:19	0:02	0:15	
1276	7	Lebu	8	11:04	0:14	11:18	11:22	0:04	0:18	
1277	7	Lebu	4	11:05	0:13	11:18	11:19	0:01	0:14	
1278	7	Lebu	6	11:05	0:13	11:18	11:20	0:02	0:15	
1279	7	Lebu	10	11:05	0:13	11:18	11:28	0:10	0:23	
1280	7	Lebu	9	11:06	0:13	11:19	11:24	0:05	0:18	
1281	7	Lebu	4	11:06	0:13	11:19	11:21	0:02	0:15	
1282	7	Lebu	6	11:07	0:13	11:20	11:21	0:01	0:14	
1283	7	Lebu	2	11:07	0:13	11:20	11:22	0:02	0:15	
1284	7	Lebu	3	11:07	0:13	11:20	11:21	0:01	0:14	
1285	7	Lebu	6	11:08	0:13	11:21	11:23	0:02	0:15	
1286	7	Lebu	4	11:08	0:13	11:21	11:23	0:02	0:15	
1287	7	Lebu	3	11:09	0:12	11:21	11:24	0:03	0:15	
1288	7	Lebu	8	11:09	0:13	11:22	11:24	0:02	0:15	
1289	7	Lebu	2	11:09	0:13	11:22	11:28	0:06	0:19	
1290	7	Lebu	1	11:10	0:13	11:23	11:28	0:05	0:18	
1291	7	Lebu	5	11:11	0:12	11:23	11:30	0:07	0:19	
1292	7	Lebu	4	11:11	0:12	11:23	11:25	0:02	0:14	
1293	7	Lebu	6	11:12	0:11	11:23	11:32	0:09	0:20	
1294	7	Lebu	9	11:14	0:10	11:24	11:25	0:01	0:11	
1295	7	Lebu	3	11:14	0:10	11:24	11:29	0:05	0:15	
1296	7	Lebu	8	11:14	0:10	11:24	11:26	0:02	0:12	
1297	7	Lebu	9	11:15	0:10	11:25	11:26	0:01	0:11	
1298	7	Lebu	4	11:15	0:10	11:25	11:30	0:05	0:15	
1299	7	Lebu	9	11:15	0:11	11:26	11:30	0:04	0:15	
1300	7	Lebu	8	11:17	0:09	11:26	11:33	0:07	0:16	
1301	7	Lebu	10	11:19	0:09	11:28	11:31	0:03	0:12	
1302	7	Lebu	2	11:19	0:09	11:28	11:31	0:03	0:12	
1303	7	Lebu	3	11:20	0:09	11:29	11:33	0:04	0:13	
1304	7	Lebu	9	11:20	0:10	11:30	11:31	0:01	0:11	
1305	7	Lebu	5	11:21	0:09	11:30	11:34	0:04	0:13	
1306	7	Lebu	9	11:21	0:10	11:31	11:32	0:01	0:11	
1307	7	Lebu	2	11:21	0:10	11:31	11:42	0:11	0:21	
1308	7	Lebu	10	11:22	0:09	11:31	11:35	0:04	0:13	
1309	7	Lebu	9	11:23	0:09	11:32	11:34	0:02	0:11	
1310	7	Lebu	6	11:23	0:09	11:32	11:38	0:06	0:15	
1311	7	Lebu	3	11:24	0:09	11:33	11:42	0:09	0:18	
1312	7	Lebu	8	11:24	0:09	11:33	11:37	0:04	0:13	
1313	7	Lebu	5	11:25	0:09	11:34	11:38	0:04	0:13	

1314	7	Lebu	9	11:25	0:09	11:34	11:35	0:01	0:10	
1315	7	Lebu	9	11:25	0:10	11:35	11:36	0:01	0:11	
1316	7	Lebu	10	11:25	0:10	11:35	11:38	0:03	0:13	
1317	7	Lebu	9	11:25	0:11	11:36	11:37	0:01	0:12	
1318	7	Lebu	8	11:25	0:12	11:37	11:40	0:03	0:15	
1319	7	Lebu	9	11:26	0:11	11:37	11:38	0:01	0:12	
1320	7	Lebu	6	11:26	0:12	11:38	11:40	0:02	0:14	
1321	7	Lebu	9	11:26	0:12	11:38	11:42	0:04	0:16	
1322	7	Lebu	1	11:26	0:12	11:38	11:40	0:02	0:14	
1323	7	Lebu	4	11:26	0:13	11:39	11:40	0:01	0:14	
1324	7	Lebu	1	11:26	0:14	11:40	11:43	0:03	0:17	
1325	7	Lebu	8	11:26	0:14	11:40	11:42	0:02	0:16	
1326	7	Lebu	2	11:26	0:16	11:42	11:47	0:05	0:21	
1327	7	Lebu	8	11:26	0:16	11:42	11:48	0:06	0:22	
1328	7	Lebu	3	11:27	0:15	11:42	11:47	0:05	0:20	
1329	7	Lebu	1	11:28	0:15	11:43	11:48	0:05	0:20	
1330	7	Lebu	2	11:28	0:19	11:47	11:55	0:08	0:27	
1331	7	Lebu	8	11:28	0:20	11:48	11:49	0:01	0:21	
1332	7	Lebu	8	11:30	0:19	11:49	11:51	0:02	0:21	
1333	7	Lebu	8	11:31	0:20	11:51	11:52	0:01	0:21	
1334	7	Lebu	8	11:31	0:21	11:52	11:54	0:02	0:23	
1335	7	Lebu	8	11:33	0:21	11:54	11:55	0:01	0:22	
1336	7	Lebu	9	11:34	0:20	11:54	12:00	0:06	0:26	
1337	7	Lebu	8	11:34	0:21	11:55	12:00	0:05	0:26	
1338	7	Lebu	2	11:34	0:22	11:56	11:59	0:03	0:25	
1339	7	Lebu	2	11:35	0:24	11:59	12:04	0:05	0:29	
1340	7	Lebu	8	11:35	0:25	12:00	12:01	0:01	0:26	
1341	7	Lebu	9	11:35	0:25	12:00	12:04	0:04	0:29	
1342	7	Lebu	8	11:36	0:25	12:01	12:02	0:01	0:26	
1343	7	Lebu	8	11:36	0:26	12:02	12:05	0:03	0:29	
1344	7	Lebu	1	11:37	0:27	12:04	12:07	0:03	0:30	
1345	7	Lebu	2	11:37	0:27	12:04	12:06	0:02	0:29	
1346	7	Lebu	9	11:38	0:26	12:04	12:08	0:04	0:30	
1347	7	Lebu	8	11:38	0:27	12:05	12:10	0:05	0:32	
1348	7	Lebu	2	11:39	0:27	12:06	12:08	0:02	0:29	
1349	7	Lebu	9	11:40	0:28	12:08	12:10	0:02	0:30	
1350	7	Lebu	2	11:43	0:25	12:08	12:09	0:01	0:26	
1351	7	Lebu	2	11:43	0:26	12:09	12:14	0:05	0:31	
1352	7	Lebu	8	11:44	0:26	12:10	12:12	0:02	0:28	
1353	7	Lebu	9	11:44	0:26	12:10	12:12	0:02	0:28	
1354	7	Lebu	9	11:44	0:28	12:12	12:13	0:01	0:29	
1355	7	Lebu	8	11:44	0:28	12:12	12:14	0:02	0:30	
1356	7	Lebu	9	11:47	0:26	12:13	12:15	0:02	0:28	

1357	7	Lebu	8	11:47	0:27	12:14	12:16	0:02	0:29	
1358	7	Lebu	2	11:47	0:27	12:14	12:22	0:08	0:35	
1359	7	Lebu	9	11:49	0:26	12:15	12:17	0:02	0:28	
1360	7	Lebu	8	11:49	0:27	12:16	12:18	0:02	0:29	
1361	7	Lebu	9	11:49	0:28	12:17	12:20	0:03	0:31	
1362	7	Lebu	8	11:53	0:25	12:18	12:21	0:03	0:28	
1363	7	Lebu	9	11:53	0:27	12:20	12:23	0:03	0:30	
1364	7	Lebu	8	11:53	0:28	12:21	12:23	0:02	0:30	
1365	7	Lebu	2	11:54	0:28	12:22	12:23	0:01	0:29	
1366	7	Lebu	2	11:54	0:29	12:23	12:24	0:01	0:30	
1367	7	Lebu	8	11:56	0:27	12:23	12:24	0:01	0:28	
1368	7	Lebu	9	12:02	0:21	12:23	12:25	0:02	0:23	
1369	7	Lebu	2	12:02	0:22	12:24	12:26	0:02	0:24	
1370	7	Lebu	8	12:02	0:22	12:24	12:27	0:03	0:25	
1371	7	Lebu	9	12:02	0:23	12:25	12:27	0:02	0:25	
1372	7	Lebu	2	12:02	0:24	12:26	12:30	0:04	0:28	
1373	7	Lebu	8	12:04	0:23	12:27	12:28	0:01	0:24	
1374	7	Lebu	9	12:05	0:22	12:27	12:29	0:02	0:24	
1375	7	Lebu	8	12:05	0:23	12:28	12:34	0:06	0:29	
1376	7	Lebu	9	12:06	0:22	12:28	12:29	0:01	0:23	
1377	7	Lebu	9	12:06	0:23	12:29	12:31	0:02	0:25	
1378	7	Lebu	2	12:08	0:22	12:30	12:33	0:03	0:25	
1379	7	Lebu	9	12:08	0:23	12:31	12:34	0:03	0:26	
1380	7	Lebu	2	12:08	0:25	12:33	12:36	0:03	0:28	
1381	7	Lebu	2	12:10	0:24	12:34	12:35	0:01	0:25	
1382	7	Lebu	8	12:12	0:22	12:34	12:35	0:01	0:23	
1383	7	Lebu	2	12:15	0:20	12:35	12:36	0:01	0:21	
1384	7	Lebu	8	12:15	0:20	12:35	12:38	0:03	0:23	
1385	7	Lebu	2	12:16	0:20	12:36	12:38	0:02	0:22	
1386	7	Lebu	9	12:16	0:20	12:36	12:38	0:02	0:22	
1387	7	Lebu	2	12:19	0:19	12:38	12:40	0:02	0:21	
1388	7	Lebu	9	12:20	0:18	12:38	12:40	0:02	0:20	
1389	7	Lebu	8	12:21	0:17	12:38	12:44	0:06	0:23	
1390	7	Lebu	2	12:21	0:19	12:40	12:43	0:03	0:22	
1391	7	Lebu	9	12:22	0:18	12:40	12:41	0:01	0:19	
1392	7	Lebu	9	12:22	0:19	12:41	12:43	0:02	0:21	
1393	7	Lebu	9	12:22	0:21	12:43	12:46	0:03	0:24	
1394	7	Lebu	2	12:24	0:19	12:43	12:44	0:01	0:20	
1395	7	Lebu	2	12:27	0:17	12:44	12:48	0:04	0:21	
1396	7	Lebu	8	12:27	0:17	12:44	12:45	0:01	0:18	
1397	7	Lebu	8	12:29	0:16	12:45	12:48	0:03	0:19	
1398	7	Lebu	9	12:30	0:16	12:46	12:48	0:02	0:18	
1399	7	Lebu	2	15:09	0:00	15:09	15:14	0:05	0:05	

1400	7	Lebu	9	15:09	0:01	15:10	15:12	0:02	0:03	
1401	7	Lebu	8	15:10	0:00	15:10	15:12	0:02	0:02	
1402	7	Lebu	4	15:10	0:00	15:10	15:14	0:04	0:04	
1403	7	Lebu	9	15:10	0:02	15:12	15:15	0:03	0:05	
1404	7	Lebu	10	15:10	0:02	15:12	15:15	0:03	0:05	
1405	7	Lebu	8	15:12	0:01	15:13	15:14	0:01	0:02	
1406	7	Lebu	4	15:13	0:01	15:14	15:16	0:02	0:03	
1407	7	Lebu	8	15:13	0:01	15:14	15:18	0:04	0:05	
1408	7	Lebu	9	15:13	0:02	15:15	15:20	0:05	0:07	
1409	7	Lebu	10	15:13	0:02	15:15	15:22	0:07	0:09	
1410	7	Lebu	6	15:13	0:04	15:17	15:22	0:05	0:09	
1411	7	Lebu	8	15:13	0:05	15:18	15:20	0:02	0:07	
1412	7	Lebu	8	15:14	0:06	15:20	15:21	0:01	0:07	
1413	7	Lebu	9	15:14	0:06	15:20	15:23	0:03	0:09	
1414	7	Lebu	5	15:14	0:06	15:20	15:22	0:02	0:08	
1415	7	Lebu	8	15:16	0:05	15:21	15:25	0:04	0:09	
1416	7	Lebu	10	15:16	0:06	15:22	15:25	0:03	0:09	
1417	7	Lebu	6	15:16	0:06	15:22	15:24	0:02	0:08	
1418	7	Lebu	5	15:17	0:05	15:22	15:23	0:01	0:06	
1419	7	Lebu	3	15:17	0:04	15:21	15:24	0:03	0:07	
1420	7	Lebu	5	15:20	0:03	15:23	15:25	0:02	0:05	
1421	7	Lebu	6	15:22	0:02	15:24	15:28	0:04	0:06	
1422	7	Lebu	5	15:22	0:03	15:25	15:27	0:02	0:05	
1423	7	Lebu	10	15:24	0:01	15:25	15:29	0:04	0:05	
1424	7	Lebu	9	15:25	0:01	15:26	15:29	0:03	0:04	
1425	7	Lebu	5	15:26	0:01	15:27	15:30	0:03	0:04	
1426	7	Lebu	9	15:27	0:02	15:29	15:30	0:01	0:03	
1427	7	Lebu	10	15:27	0:02	15:29	15:30	0:01	0:03	
1428	7	Lebu	4	15:27	0:03	15:30	15:32	0:02	0:05	
1429	7	Lebu	9	15:28	0:02	15:30	15:35	0:05	0:07	
1430	7	Lebu	5	15:28	0:02	15:30	15:31	0:01	0:03	
1431	7	Lebu	5	15:31	0:02	15:33	15:34	0:01	0:03	
1432	7	Lebu	10	15:33	0:01	15:34	15:37	0:03	0:04	
1433	7	Lebu	1	15:33	0:02	15:35	15:36	0:01	0:03	
1434	7	Lebu	8	15:35	0:01	15:36	15:41	0:05	0:06	
1435	7	Lebu	4	15:37	0:00	15:37	15:40	0:03	0:03	
1436	7	Lebu	5	15:37	0:02	15:39	15:41	0:02	0:04	
1437	7	Lebu	4	15:37	0:03	15:40	15:44	0:04	0:07	
1438	7	Lebu	5	15:37	0:04	15:41	15:43	0:02	0:06	
1439	7	Lebu	10	15:37	0:05	15:42	15:45	0:03	0:08	
1440	7	Lebu	9	15:38	0:04	15:42	15:45	0:03	0:07	
1441	7	Lebu	8	15:38	0:04	15:42	15:47	0:05	0:09	
1442	7	Lebu	6	15:39	0:03	15:42	15:44	0:02	0:05	

1443	7	Lebu	5	15:39	0:04	15:43	15:45	0:02	0:06	
1444	7	Lebu	6	15:40	0:04	15:44	15:46	0:02	0:06	
1445	7	Lebu	4	15:41	0:03	15:44	15:48	0:04	0:07	
1446	7	Lebu	5	15:43	0:03	15:46	15:47	0:01	0:04	
1447	7	Lebu	6	15:44	0:02	15:46	15:49	0:03	0:05	
1448	7	Lebu	5	15:44	0:03	15:47	15:48	0:01	0:04	
1449	7	Lebu	6	15:44	0:05	15:49	15:51	0:02	0:07	
1450	7	Lebu	5	15:44	0:04	15:48	15:50	0:02	0:06	
1451	7	Lebu	10	15:50	0:01	15:51	15:54	0:03	0:04	

Average	**0:13:56**			**0:03:10**	**0:17:06**	

N.B:- 1. From the 8 servers under Kazanchis center up to 2 are sometimes dedicated for traffic punishment pay

2. From the 10 servers installed at Lebu center 1 is out of service and from the remaining 9 servers available 1 is sometimes dedicated for traffic punishment pay