

# Improvement of Drivers' License Issuance by Reducing Waiting Time using System Simulation

Jeremy Laurence M. Bañez

Blacan State University Main Campus, City of Malolos, Bulacan

## Abstract

Getting a driver's license in the Philippines either new or renewal will take some time for there are several steps to follow based on government's Land Transportation Office (LTO) guidelines. Each of the steps has its own duration of accomplishment based on the citizen's charter of LTO. Currently, the system of LTO is to accommodate walk-ins from the time they open. There are some LTO branches which accommodate every customer while there are some which are setting limitation in accommodation. There are certain feedbacks from some LTO branches that they have poor services because customers tend to spend long hours in their transactions like issuance of driver's license which commonly happens during peak days. In this study, the researcher used quantitative research design and system simulation through ARENA software to verify and validate the claim for LTO as well as to improve its current system. It was found out that peak days (Mondays and Fridays) and peak hours (morning hours) were proven peak periods. Lacking resources like equipment contributed to long waiting times and high dispersion of service times. Because of that the researcher recommended to add equipment in areas with long waiting times like issuance of license ID, capturing photo and signature, and cashier. In addition, to reduce waiting times in issuance of application for driver's license, promotion of online appointment system is also suggested to be utilized. By adding resources in the bottleneck stations, long transaction time can be reduced by 53.85% in the current system and 30.25% in the citizen's charter of LTO.

**Keywords:** ARENA software, Land Transportation Office, peak period, system simulation, waiting time

## 1 Introduction

Government service is vital in general public for it is for them that they exist. It is for this reason that government aims to improve their processes in order to provide high quality services to the people they are serving. In the government, there are a lot of agencies and offices that are held responsible for a particular function. One of those is the Land Transportation Office (LTO). In LTO, there are regular visitors who are either transacting for their vehicle registration or issuance of driver's license.

Both are necessary transactions for an individual who owns his/her own vehicle. But there are some people even not possessing any vehicle are still getting driver's license. Their reason is that this can be added up into their valid government identification cards (IDs) or in some cases to have multiple alternative drivers for a single vehicle in case that there are more than one potential drivers in a certain household.

Getting a driver's license either new or renewal will take some time for there are several steps to follow based on LTO's guidelines. Each of the steps has its own duration of accomplishment based on the citizen's charter of LTO. Currently, the system of LTO is to accommodate walk-ins from the time

they open. There are some LTO branches which accommodate every customer while there are some which are setting limitation in accommodation. There are certain feedbacks from some LTO branches that they have poor services because customers tend to spend long hours in their transactions like issuance of driver's license which commonly happens during peak days. This study will help LTO in improving its services to its customers by reducing non-value adding activities that contribute to long transaction time specifically in getting driver's license. This study can uplift their customer service from low to high level. Aside from that, this study can be adapted by other government agencies with similar problems especially related to long transaction time.

Just like any government office, LTO is jam-packed with driver's license applicants every day, especially during peak hours (usually during 08:00 A.M. to 09:00 A.M.) and peak days (usually every Monday and Friday). [9] In a certain report, it states that vehicle registration renewal in LTO was pretty fast but renewing driver's license after a quick medical check was the opposite. It took 3 hours in the driver's license renewal from 10:30 A.M. to 01:30 P.M. It was pleasing because things moved along in an orderly fashion but still it took a while. [8] In another report, it says that LTO offices are typically crowded and have long lines which can take around 3 to 4 hours in finishing driver's license renewal. [9] Looking at the citizen's charter, driver's license renewal can be finished around 62 minutes (1 hour and 2 minutes) but based on the reports, applicants spent 3 to 4 hours which is far from expected.

This study will focus on driver's license transactions like new application or renewal. Since no distinctions are presented in LTO citizen's charter, driver's license transactions for different vehicles are the same. The LTO branch subjected for this study is LTO Tabang, Guiguinto, Bulacan due to complaints experienced by the proponent's relatives in long transaction time of getting driver's license. Peak days (Mondays and Fridays) and peak hours (08:00 AM to 11:00 AM) will be considered in data collection and in the analysis of this study. Afternoon arrival rates are not considered in this study for there are no reported significant cases that queue builds up during this period. Balking is not considered in the analysis for people tend to stay waiting on the queue. The common reason for this is that they file leave from work or school and they do not want to waste their leave. Also, issues regarding fixers will not be included in the analysis since it is not disclosed by LTO. Due to limited time of surveying, the assumption of using the data acquired from Philippine Statistics Authority (PSA) will be used in determining the volume percentage of driver's license transactions.

This study aims to develop a simulation model that can be used as a tool to reduce the transaction time in getting driver's license in LTO during peak days that will result in faster transaction time. With faster transaction time, LTO can increase its productivity through the efficient use of its resources to accommodate more applicants. Specifically, this study aims:

- To assess the current LTO service pertaining to driver's license transactions via simulation
- To compare current LTO's issuance system of driver's license with its citizen's charter
- To identify possible causes of long transaction time in getting driver's license in LTO
- To remove unnecessary activities that prolong transaction time in getting driver's license in LTO

## 2 Brief Literature Review

### *Processing of Driver's License in the Philippines*

Based on the revised Citizen's Charter of Land Transportation Office (LTO), the following are the steps in application for new license, renewal of dormant license, change classification and additional restriction codes (RC): (LTO, 2018)

Table 1. Revised citizen's charter of LTO in driver's license issuance

STEP	APPLICANT/CLIENT	LTO ACTIVITY	DURATION OF ACTIVITY (in minutes)	PERSON IN-CHARGE	FEES
I	<ul style="list-style-type: none"> <li>Requests Application for Driver's License (ADL) form and accomplishes the same</li> <li>Obtains queue number</li> </ul>	<ul style="list-style-type: none"> <li>Issues ADL form to the applicant with complete documentary requirements</li> <li>Assigns queue number to applicant</li> </ul>		PACD/CSR	
II	Submits accomplished ADL and all the documentary requirements with the attached queue number	<ul style="list-style-type: none"> <li>Receives and evaluates the completeness and authenticity of documentary requirements</li> <li>Access the data of the applicant to generate transaction ID</li> </ul>	7	Evaluator	
III	Waits for his/her queue number/name to be called for picture taking and for capturing signature	Captures photo and signature of the applicant	10	Photo/Signature Clerk	
IV	Proceeds to the cashier for payment of fees	Accepts payment and prints Official Receipt (OR)	15	Cashier	Appl. Fee = 100 Computer Fee = 67.63  <b>TOTAL = Php 167.63</b>
V	<ul style="list-style-type: none"> <li>Attends driver's education program (video presentation/ reviewer) and takes written examination</li> </ul> If passed:	<ul style="list-style-type: none"> <li>Generates questioners and scans answers sheets</li> <li>Informs applicant of the result</li> <li>Advises the applicant to take practical driving examination</li> </ul>	60	Examiner (Written Exam)	

	Undergoes practical driving examination after the orientation  If failed: <ul style="list-style-type: none"><li>Receives the computer generated letter</li></ul>	<ul style="list-style-type: none"><li>Provides computer generated rejection letter to the applicant</li></ul>			
VI	<ul style="list-style-type: none"><li>Takes practical driving examination after the orientation (except for Conductor's License and Change Classification from Professional Driver's License to Non-Professional Driver's License)</li></ul> If passed, Proceed to the Cashier for payment of fees  If failed, <ul style="list-style-type: none"><li>Receives computer generated letter</li></ul>	<ul style="list-style-type: none"><li>Orients the applicant for the practical driving examination</li><li>Conducts practical driving examination</li><li>Accomplishes the Road Test Score Sheet</li><li>Informs the applicant of the result</li></ul>  <ul style="list-style-type: none"><li>Advises the applicant to come back for another application</li></ul>	80	Driver Skills Rater (Practical Exam)	
VII	No activity	Approves/Disapproves application	8	Approving Officer	
VIII	Proceeds to the cashier for payment of fees	Accepts payment and prints OR	15	Cashier	License Fee = 585 Comp. Fee = 67.63  <b>TOTAL = 652.63 (for new)</b>
IX	Proceeds to the encoding/biometric window	<ul style="list-style-type: none"><li>Prints a screenshot of the DL details of the applicant from the LTO IT system</li><li>Encodes the DL Details</li><li>Captures the photo, fingerprints and signature of the applicant</li><li>Prints the DL card</li></ul>	15	Photo Signature Clerk	
X	<ul style="list-style-type: none"><li>Receives OR and the Driver's License Card</li><li>Signs in the log sheet</li></ul>	<ul style="list-style-type: none"><li>Issues Driver's License Card and OR</li><li>Requires applicant to sign in the log sheet</li></ul>	15	Releasing Clerk	
<b>END OF TRANSACTIONS</b>					

TOTAL DURATION OF SERVICE

225 mins. (3 hrs and 45 mins)

In a report, LTO offices have long lines but can be avoided by being strategic about the time and day when arriving at the LTO office. To be among the first people on the line, better if the applicant comes early as 07:00 A.M. (or even earlier). Driver's license renewal in the Philippines can drive one's nuts if he/she does not plan it well and manage one's expectations. Any government transaction leaves much to be desired in terms of efficiency – the LTO is no exception. But with the right strategies (except for doing business with a fixer), one can make his/her renewal a lot faster and easier. [9]

Another report tells that renewing a driver's license is not a walk in the park. Although the Land Transportation Office (LTO), the government body responsible for issuing the driver's license, has extended its expiration from 3 to 5 years, renewing the driver's license has traditionally been a pain. There are bad experiences from some applicants in LTO from waiting more than half a day, to the computer system crashing, to waiting under the heat of the sun, and to dealing with annoying fixers. But those days are almost now gone as the current and past administrations have been slowly fixing and streamlining the renewal process. [4]

In 2017, LTO announced that it is working on creating an online system to help Filipinos get a driver's license faster and easier. Until that project is completed, Filipino drivers have to do manual process of applying for a driver's license. [9] Currently, this system is functioning in setting appointment but is only limited with driver's license renewal and motor vehicle renewal. [6]

#### *Simulation Process of Isfahan Post Office Using Arena*

Postal service organization is among the most important service organizations of any county that providing the customers with proper services leads to their satisfaction. As customers' satisfaction level is greatly important for any service-providing organization, then considering the customers' needs is an important factor in the post service success. One of the customers' satisfaction elements is reducing the waiting time. This time could be evaluated through simulation. Computerized simulation includes those methods that study the real systems through numerical evaluations. To do so, the simulations copy and mimic the functions and system features in the time through utilizing the software. The aim of this study is reducing the customers' waiting time and increasing organizational efficiency through computerized simulations in order to increase the customers' satisfaction. The offered services in each counter, the number of the customers receiving services in each counter, and the average waiting time for standing in line were determined and the related model was designed through Arena simulation software. [7]

#### *Improving Efficiency in Social Services with Discrete Event Simulation*

The Kentucky Cabinet for Health and Family Services' main office in Louisville, Kentucky deals with hundreds of clients with various needs each day. The office provides food stamps, childcare assistance, and financial support among other services. A simulation model of the intake process was developed and analyzed in order to investigate various alternatives concerning process flow, staffing, and layout. The simulation model shows long wait times for clients coming into the system to receive benefits. Working with a state budget during variable economic times leaves no room for hiring new workers, so changes must come from within. The flexibility of the simulation model allows for experiments on the system to be created and observed. [5]

#### *A Discrete Event Simulation Model for Performance Evaluation at University Service Center*

The purpose of this study is to evaluate the performance of University Service Center (USC) in giving services to the students. The simulation model is developed to represent the real operation system of the USC. Two scenarios have been created for what-if analysis finding ways to improve the service

performance. The findings can help the management of USC to plan and manage resources efficiently while providing the best services.[3]

### *Synthesis*

Based from the related studies, discrete event simulation (DES) is being utilized in developing models which are multiphase and multichannel which is currently applied to service sectors including government services to improve a system. Moreover, simulation is found useful in scenario analysis (what-if analysis) to evaluate alternatives in improving a particular system. Currently, there is no simulation study developed to improve the driver's license issuance system in LTO which is a multiphase and multichannel system. Aside from that, simulation study can be used in scenario analysis for the LTO case wherein no actual operation will be hampered.

## 3 Materials and Methods

### 3.1 Input Analysis

#### *Data Collection*

Based from the system simulation components, the researcher was able to identify the necessary data needed to be collected. First, under the entities components, applicant was identified to be those who will get driver's license (excluding those who register motor vehicles). The proportion of different license transaction was based from the LTO reports for the past 3 years (2016-2018). Then, the researcher identified the activities involved in the process under the scope of the study through the citizen's charter of Land Transportation Office (LTO) which is available online. For the other data needed, the researchers conducted observation, recording, and interview. Based from the related literatures, peak days are during Mondays and Fridays and non-peak days are during Tuesdays to Thursdays. On the other hand, peak hours are during morning. This is to be verified to support the claim by getting arrival rates both for a representative peak day and non-peak day. For the service time per driver's license transaction in LTO, the researcher conducted observation based on the maximum and minimum values that is why uniform distribution was made to be the assumption of service time distribution. For the number of counters/equipment/devices, the researcher went to the LTO to actually see and count them. For the equipment/device failure, the researcher conducted interview with the personnel in LTO and it was found out that failures come from system offline of computers and devices used for capturing photo, signature and fingerprints.

#### *Data Analysis*

To support the claim that peak days are during Mondays and Fridays and non-peak days are during Tuesdays to Thursdays, the researcher conducted hypothesis testing specifically 2-sample t-test. The data used in this test is the reciprocal of the arrival rate counted per time interval (every 10 minutes) in two consecutive days (one Thursday and one Friday due to time constraint). The hypothesis statements used in this test are:

**H<sub>0</sub>:** *Mean interarrival time of non-peak day is equal to mean interarrival time of peak day*

**H<sub>1</sub>:** *Mean interarrival time of non-peak day is not equal to mean interarrival time of peak day*

Based from the result with 95% confidence level in Figure 1, the p-value is less than the significance level of 0.05 which leads to conclusion of reject null hypothesis (H<sub>0</sub>). This means that mean interarrival time of non-peak day and mean interarrival time of peak day. To identify the extent of volume of arrival rate between two representative days, boxplot was used as seen in Figure 2. It can be seen that the claimed peak day and non-peak day are true.

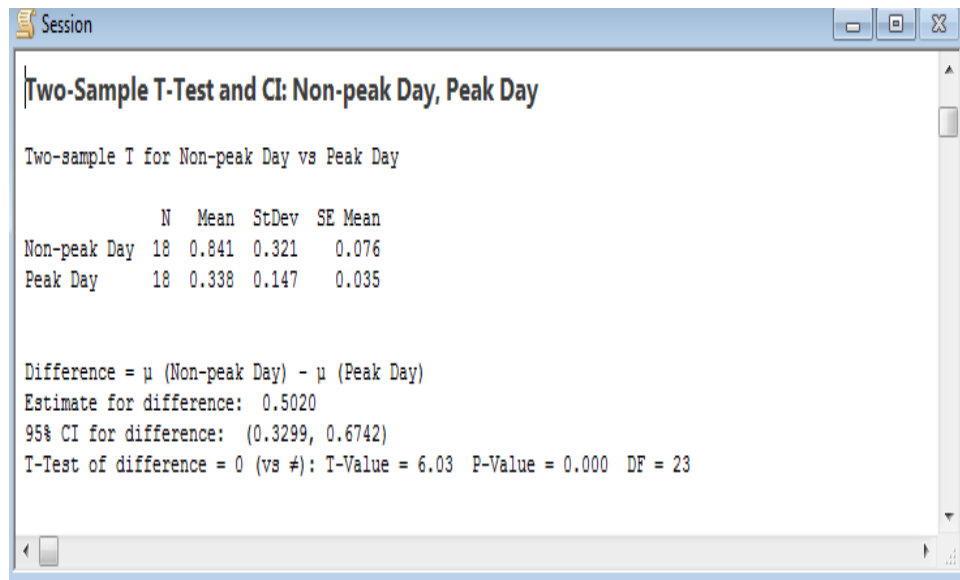
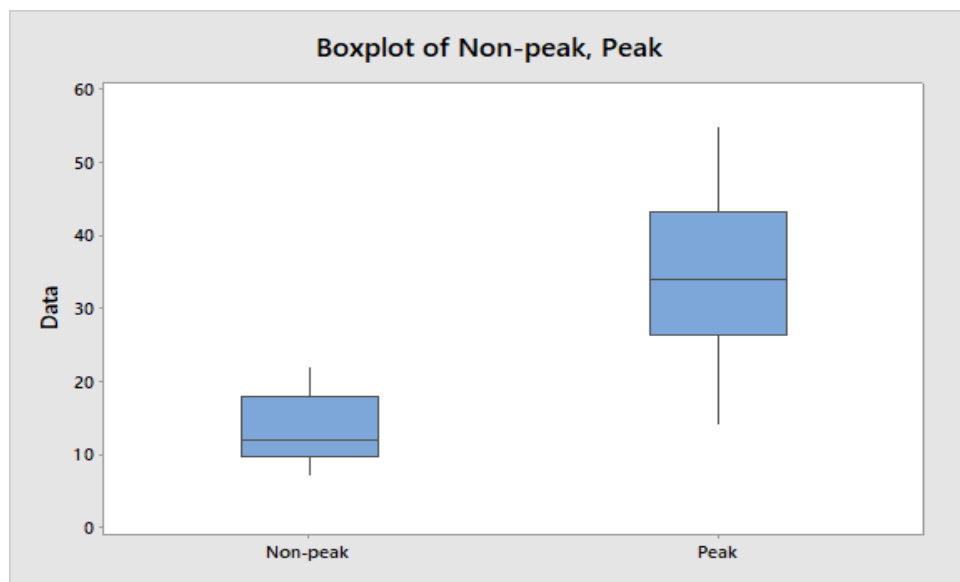


Figure 1 Minitab result of 2-sample t-test of peak and non-peak arrival rate



*Modeling Time Series Data*

To identify the trend of the time series data, the researchers plot the arrival rate per 10-minute interval during non-peak days and peak days. This was made due to time constraint of having many days of observation. The significance of this trend will be the justification that peak hours are during morning in either peak or non-peak days as shown in Figures 3 and 4.

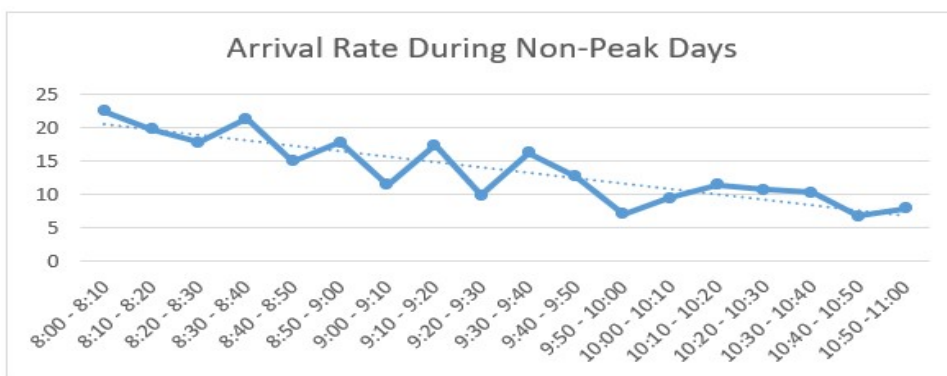


Figure 3 Graphical illustration of arrival rate during non-peak days

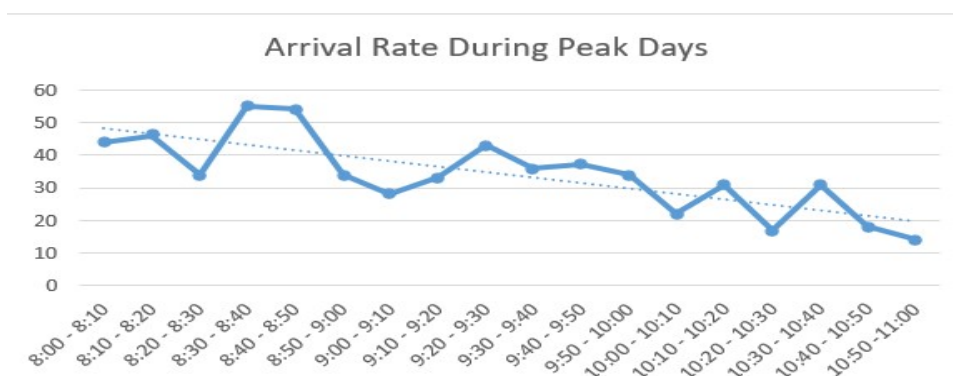


Figure 4 Graphical illustration of arrival rate during peak days

*Goodness-of-Fit Testing*

In order to identify the distribution of the interarrival time during peak days, the researcher used ARENA Input Analyzer. Peak days are the only concern of this study that is why it was only considered in goodness-of-fitting testing. Based from the results generated by the ARENA Input Analyzer, the distribution of the interarrival time during peak days is lognormal.

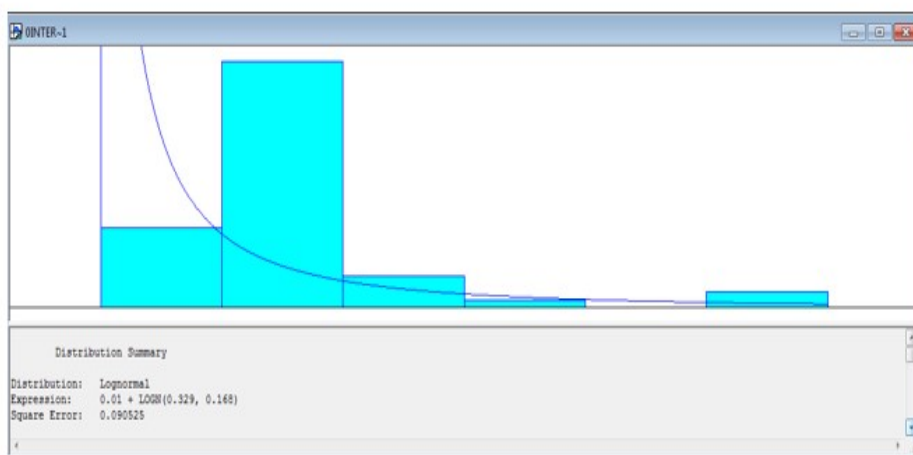


Figure 5 ARENA Input Analyzer results of interarrival time during peak days



Distribution Summary

**Distribution: Lognormal**

**Expression: 0.01 + LOGN (0.329, 0.168)**

Square Error: 0.090525

Chi Square Test

Number of intervals = 3

Degrees of freedom = 0

Test Statistic = 14.7

**Corresponding p-value ; 0.005**

Kolmogorov-Smirnov Test

Test Statistic = 0.19

**Corresponding p-value = 0.0571**

*Simulation Model Components*

In this study, the following are used as the system simulation model components:

1. **Entities** - objects of interest in the system
  - Applicants, Resources
2. **Attributes** - properties of entities
  - Arrival rate, Service time
3. **Activities** - operations/processes with time periods of specified length
  - 9 General Steps in Driver’s License Application and Renewal
4. **States** - collection of variables that describe the system in any time
  - Counter status like busy, idle, down
5. **Events** - instantaneous occurrences that might change the states of the system
  - Device glitches (offline)

For the detailed system simulation components, Table 2 has the list with ARENA nomenclature and description.

Table 2. List of system simulation components used in this study

System Simulation Component	Specific Component	Nomenclature (ARENA Software)	Description
Entity	Applicant	Applicant	This is the customer who will get driver’s license (student, non-professional or professional) either new license or renewal license
	Resources	Customer Service	This is the counter where Application for Driver’s License (ADL) is submitted after getting the ADL form and queue number

		Renewal	This is the evaluation counter for the renewal of driver's license either for non-professional or professional
		New License	This is the evaluation counter for new application of driver's license either for non-professional or professional
		Student	This is the evaluation counter for the application of student driver's license
		Examination Room	This is the room where written exam is taken for those who will get new driver's license or with violation
		Testing Car	This is the car used in test driving as the practical test which is taken by those who will get new driver's license or with violation
		Cashier1	This is the counter where payment of application and computer fees are given
		Cashier2	This is the counter where payment of license and computer fees are given which is applicable to those who have taken written and practical tests
		PhotoSign	This is a booth where photo and signature of the applicant are captured
		Biometrics1	These are devices (in booths) for finger scanning
		Biometrics2	
		Biometrics3	
		Biometrics4	
		IDCounter	This is the counter wherein licenses (new, renewal or student) are released
Arrival rate	Not Applicable	This is the rate by which applicants arrive in LTO for a certain period length (per 5 minutes)	
Service time	Not Applicable	This is the process times in LTO per transaction type which are assumed to be uniformly distributed (having the minimum and maximum values)	
Activity	Issuance of form and queue number	Form and Queue Number	This is the process where Application for Driver's License and queue number are issued
	Evaluation	Evaluation	This is process wherein the application of the customer is approved or disapproved
	Capturing photo and signature	Photo and Signature	This is the process of getting photo and signature of the applicant for the ID

	Cashier payment	Cashier 1	This is the process wherein application and computer fees are paid
	Written exam	Written Exam	This is the process of assessing the knowledge of the applicant in basic driving theories
	Practical exam	Practical Exam	This is the process of assessing the applicant's competency and readiness for driving through test driving
	Cashier payment	Cashier 2	This is the process wherein license and computer fees are paid
	Finger Scanning	Finger Scanning	This is the process wherein fingerprints of the applicant are scanned for verification purposes
	Issuance of identification card (ID)	ID Issuance	This is the process wherein driver's license is released to the applicant
State	Idle	Idle	This is the state wherein counters are not being utilized
	Busy	Busy	This is the state wherein counters are being utilized
	Photo and Signature Down Biometrics Down	Down	This is the state wherein failure has occurred and the devices for capturing photo and signature and biometrics are not working
Event	Computer offline	Random Failures Photo	This is the event wherein the computer used for capturing photo and signature is offline and cannot be used for a certain period
	Biometrics offline	Random Failures Biometrics	This is the event wherein the device used for finger scanning is offline and cannot be used for a certain period

To visualize the simulation model components in the current system of LTO, an influence diagram was made. This diagram is aligned with the LTO's Citizen's Charter in driver's license issuance. The ARENA model is patterned to this diagram as its blueprint in simulation modelling.

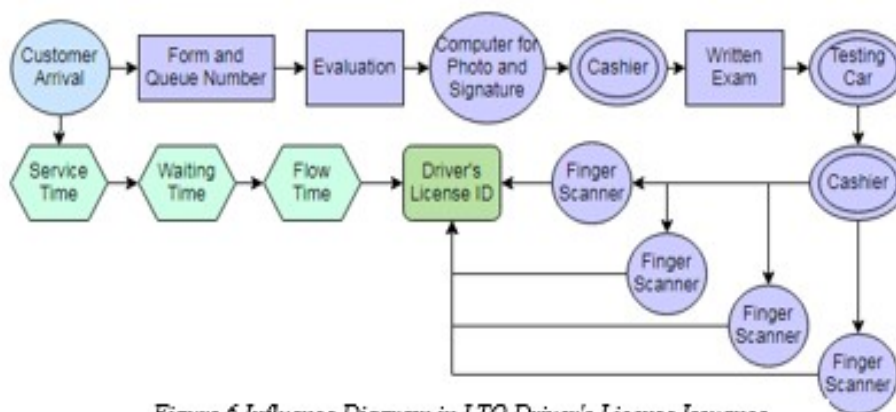


Figure 6 Influence Diagram in LTO Driver's License Issuance

### 3.2 ARENA Model

After identifying the system simulation components, gathering, analyzing, modelling, and fitting data, the researcher can be able to develop the model of the study scope. The study scope is limited to waiting time (delay time as used in this study) in getting driver’s license from LTO during peak days. To view the relationship of the system components in LTO driver’s license issuance, influence diagram is created (Figure 6). These components are placed in a model as shown in Figure 7 which starts from applicant arrival until the applicant departs.

To simplify the interface and record the waiting time per transaction, the researcher used Submodel ReadWrite features of ARENA as shown in Figure 8. This model is for general transactions in getting driver’s license either student, new or renewal license. The differentiating module in this model is the decision block wherein it screens the type of transaction whether there is a need for an applicant to undergo written and practical tests.

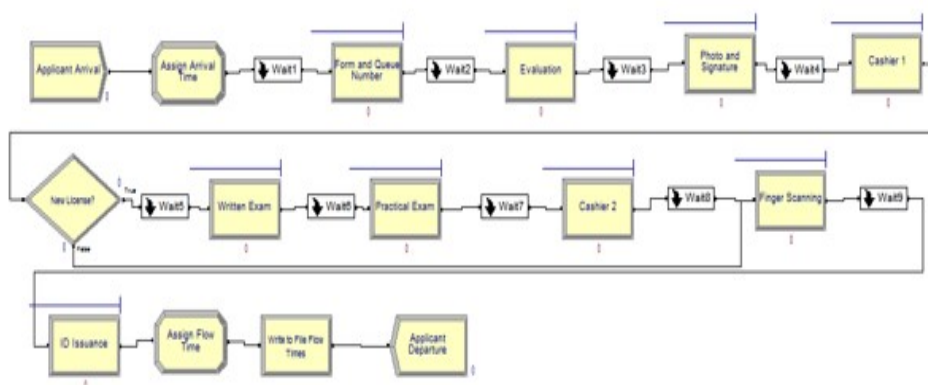


Figure 7. ARENA model interface of LTO driver’s license issuance

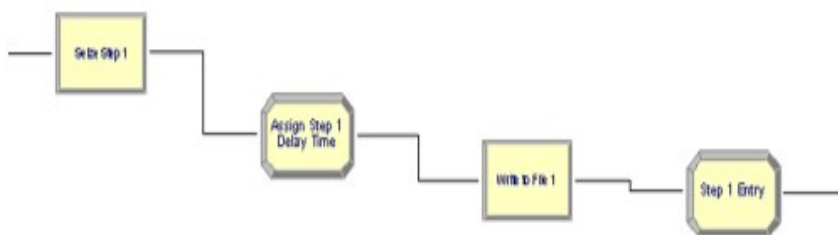


Figure 8. Submodel of ARENA model of LTO driver’s license issuance

## 4 Result and Discussion

After running the current system model of LTO driver’s license issuance, the following empirical cumulative distribution function (CDF) graph was acquired. The horizontal axis represents the waiting time (delay time) in days. It can be shown that Step 9 (issuance of ID), Step 1 (issuance of ADL and queue number) and Step 3 (capturing photo and signature) are having long waiting times. This result was generated by Minitab software after collecting the written outputs of waiting times in the model.

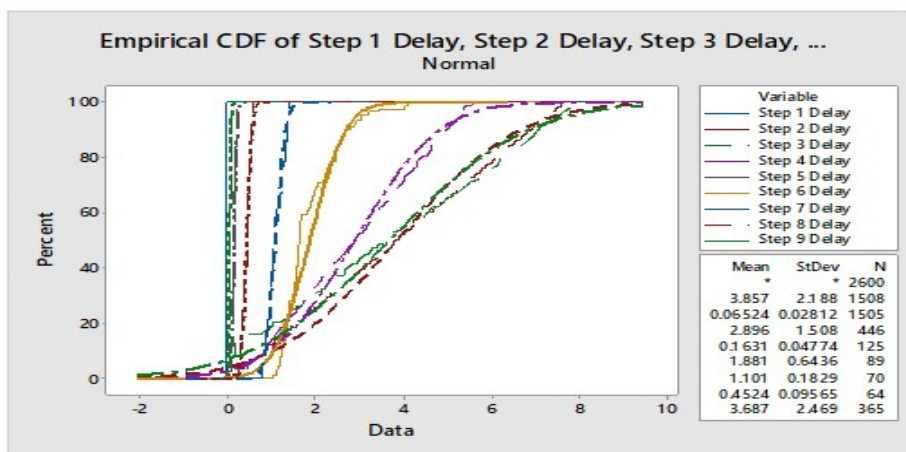


Figure 9. Minitab empirical CDF of waiting times in LTO driver’s license issuance model

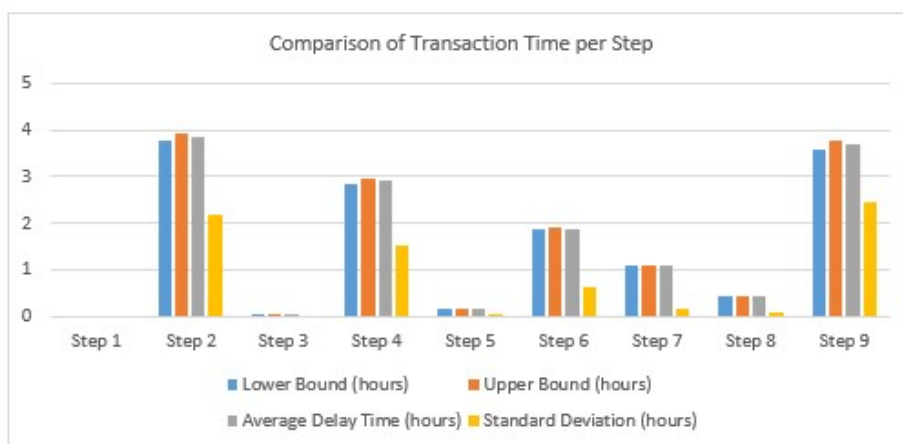


Figure 10 Confidence intervals of the activities in LTO driver’s license issuance model

To identify the mean in a certain confidence level (95% is used in this study), the researcher gets confidence intervals which is graphically illustrated in Figure 10. It can be seen that in Steps 2, 4 and 9 more than 2 hours are consumed by the applicant. To visually see the differences of waiting times for the activities, the researchers graphed the average delay time (in hours) and standard deviation (in hours) for the dispersion of data. It was found out that this was aligned with the results of the empirical CDF of Minitab as shown in Figures 9.

To improve the current system of LTO driver’s license issuance, the researcher proposed potential alternatives to reduce transaction times through addition of resources like equipment and changing policies. Table 1 shown below is the list of potential alternatives that can be done to reduce waiting times (delay times) during peak days and hours in LTO in the issuance of driver’s license. These alternatives are simulated same with the current system using ARENA.

Table 1. Potential alternatives to reduce waiting time in LTO driver's license issuance

Alternatives	Description	Costs	Benefits
<b>Alternative 1</b>	Addition of equipment in counters with long transaction times based on citizen's charter and strict policy implementation for exam duration (both written and practical) setting infinite capacity to customer service counter	1 Camera: ₱ 5,413 1 Finger Scanner: ₱ 3,888 1 Digital Writing Pad: ₱ 1,289 1 ID Card Making Machine: ₱ 36,500 Total: ₱ 47,090  <i>Source: Google</i>	Increased productivity on the side of the LTO by reducing transaction time by 126.89 minutes (2.11 hours) per applicant
<b>Alternative 2</b>	Addition of more equipment in counters with long transaction times based on citizen's charter and strict policy implementation for exam duration (both written and practical) setting single capacity to customer service counter	1 Camera: ₱ 5,413 1 Finger Scanner: ₱ 3,888 1 Digital Writing Pad: ₱ 1,289 1 ID Card Making Machine: ₱ 36,500 Total: ₱ 47,090  <i>Source: Google</i>	Increased productivity on the side of the LTO by reducing transaction time by 147.37 minutes (2.46 hours) per applicant
<b>Alternative 3</b>	Addition of more equipment in counters with long transaction times based on citizen's charter, strict policy implementation for exam duration (both written and practical) and elimination of written application forms using online database	1 Camera: ₱ 5,413 1 Finger Scanner: ₱ 3,888 1 Digital Writing Pad: ₱ 1,289 1 ID Card Making Machine: ₱ 36,500 Total: ₱ 47,090  <i>Source: Google</i>	Increased productivity on the side of the LTO by reducing transaction time by 150.37 minutes (2.51 hours) per applicant
<b>Alternative 4</b>	Addition of more equipment in counters with long transaction times based on citizen's charter, strict policy implementation for exam duration (both written and practical), elimination of written application forms using online database and rescheduling acquisition of license ID	1 Camera: ₱ 5,413 1 Finger Scanner: ₱ 3,888 1 Digital Writing Pad: ₱ 1,289 1 ID Card Making Machine: ₱ 36,500 Total: ₱ 47,090  <i>Source: Google</i>	Increased productivity on the side of the LTO by reducing transaction time by 154.66 minutes (2.58 hours) per applicant

Table 2 below are the summary of the proposed changes in transaction times and number of resources, respectively.

Table 2. Comparison of LTO driver's

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Current	1	3	1	1	1	1	1	4	1
Alternative 1	Infinite	3	3	1	1	1	2	4	2
Alternative 2	1	3	5	3	1	1	3	4	7
Alternative 3	0	3	5	3	1	1	3	4	0
Alternative 4	0	3	5	3	1	1	3	4	0

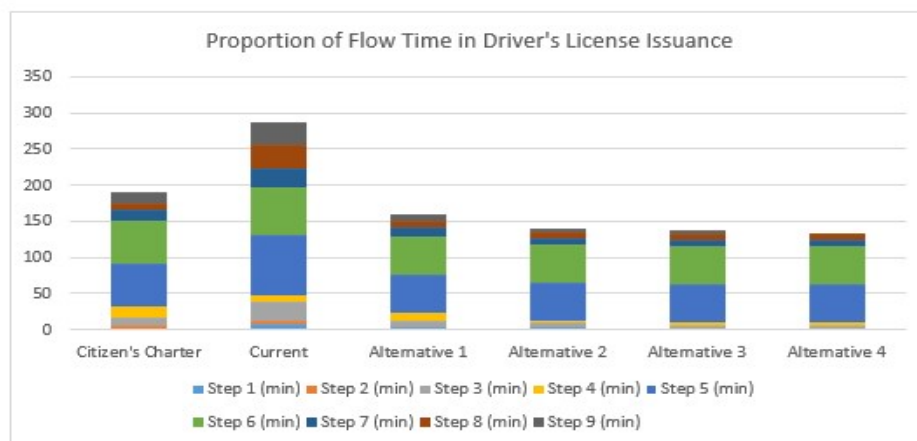


Figure 11 Comparison of flow times between citizen's charter, actual, and alternatives

To visually see the differences in the flow time, the researcher illustrate this as seen on Figure 11. It shows that through the alternatives, waiting times (delay times) can be reduced and the highest reduction is on Alternative 4. Alternatives presented are requiring LTO to add more resources like additional cameras and digital signature devices, cashier counters, and license ID printers. Practically speaking, adding resources are costly especially if buying new equipment. That is why, the researcher proposes the utilization of the resources during non-peak days and hours. It can be done by setting cutoffs in the accommodation during peak days and hours for waiting time (delay time) is prevalent as shown in the results. Though transaction times are reduced, the citizen's charter was still not achieved. Another proposal would be promoting the use of online appointment system which is currently available only for renewal of driver's license to lessen transactions to be made in the application. Its other benefit is that applicant is prioritized if online appointment system is used than through walk-ins.

## 5 Conclusion

Based from the results, the researcher was able to assess the current system of driver's license issuance in LTO during peak days and peak hours and the complaints against waiting times were justified. If compared to the citizen's charter, the processing times for each transaction in LTO driver's license issuance are really deviated that led to waiting times (delay times). In addition, insufficient equipment also contributed to the said problem. It can be seen on the results generated in the output analysis. To improve the current system, additional equipment are needed and can be resolved via utilizing the equipment during non-peak days and hours instead of buying new equipment. It can be done through setting cutoffs during peak days and hours and by using online appointment system which is currently available for renewal of driver's license. To check the validity of the recommended alternatives, further study is to be made during non-peak days and hours. This can give the whole picture of the driver's license issuance in LTO which include parameters like resource capacity and utilization. Also, economic evaluation on the alternatives can also be considered.

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## 7 Conflicts of Interest

The author declares no conflict of interest.



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