

STATUS OF QUEUING OPERATIONS DURING COVID-19 PANDEMIC AS PERCEIVED BY THE DRIVERS, OPERATORS, AND PASSENGERS

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ABSTRACT

The comfort of travelers is always the ultimate target of system operations and services of every queuing of transportation stations in the country. This study determined the status of queuing operations during COVID-19 pandemic in terms of discipline, facilities, services, sanitation, and safety in the town of Ajuy as perceived by the drivers, operators, and passengers. This mixed-method descriptive study was participated by 1, 322 randomly selected respondents from the different queuing stations of in the municipality of Ajuy, Iloilo. Findings revealed that the status of queuing operation in terms of discipline, facilities, services, sanitation, and safety in the town of Ajuy was poor. Queuing operations of transportation terminals really rely on its basic components. In general, travelers, drivers, and travel operators in the Municipality of Ajuy believed that the services rendered in the queuing facilities are not enough to satisfy their needs in times of travel. These basic components should be given attention and be given a consideration. As recommendation, concerning the safety of both the passenger and driver as well as the arising needs of queuing facilities and services, the LGU shall move to provide appropriate solutions on the post delinquencies of town specifically in the small transportation system in Ajuy, Iloilo.

Keywords: COVID-19 pandemic, Drivers, Operators, Passengers, Queuing, Terminals, Transportation, Travel

INTRODUCTION

The comfort of travelers is always the ultimate target of system operations and services of every queuing of transportation stations in the country.

One of the main factors that impact the transportation competitiveness and efficiency of a developing town is the system of local transport terminal services (Saeed & Larsen, 2016). There are several modes of land transportation vehicle in the country and these include pedicab, habal-habal, tricycle and bus (Lopez-Flores, 2013).

While the number of passengers rises, the need for transportation service increases (Medhi,

2002). Queuing in transportation means a line of people or things waiting to be handled usually in sequential order starting at the beginning or top of the line or sequence (de Freitas, Becker, Zimmermann, and Axhausen, 2019). In the developing municipality, like the municipality of Ajuy, the travelling components from different places like students of the different school within the outskirts of the town, the employers from private and government business institutions and offices, business men and women and even tourist coming from other places visiting the municipality of Ajuy increase. Brought about by the increasing number of travelers in the town, the need for transportation and queuing facility is increasingly necessary (Fallaria et al., 2019).

Armero (2001) defined queuing system as simplified mathematical models to explain congestion. The analysis of the queuing system with fixed (deterministic) interarrival and service times does not present much difficulty (Medhi, 2020), in the queuing system in the town but otherwise is considerably be the concern in this study.

Amid COVID-19 pandemic, under joint action of Land Transportation Franchising Regulatory Board (LTFRB) and Inter Agency Task Force (IATF) Regulation Memorandum Circular 2020-005, all including passengers, drivers, operators, conductors, janitors and other operation staff are required to observe minimum health standard protocols in the terminal all over the country (Dela Cruz, 2020).

As modernizing country, Philippines must secure a growth in public transport terminals with provision of comfortable, complete, practical, and hygienic amenities the passenger should enjoy during their transitory stoppage, queue, board and alight from and to vehicle (Saeed, and Larsen, 2016). A good terminal where passengers and vehicles are queued shows a wide range of decent services which embraces facilities, disciplined human assets, services. Practical designs and layouts of physical plant is of good considering the terminal. For the safety of passengers, operators, staff and drivers from accidents, visible signages are adequately provided in the premises of the station. To safeguard the health of everyone against the threat of COVID-19 disease and the spread of disease and contamination in the area, minimum health protocol required by IATF should be strictly followed. Wearing of face mask and face shield, social distancing and minimized capacity was strictly observed in the queuing terminals (Thongtub, 2020). Human intervention for the safety of the people and efficiency of the terminal strategic operation impacts a large matter in the system.

Queuing Theory is a collection of mathematical models of various queuing systems that take as inputs parameters of the above elements and that provide quantitative parameters describing the system performance (Zhen-bao, Yan-yan, C., and Ying-ying, 2010). Because of random nature of the processes involved the

queuing theory is rather demanding and all models are based on very strong assumptions (not always satisfied in practice). Many systems (especially queuing networks) are not soluble at all, so the only technique that may be applied is simulation (Arora, Chanda, 2016).

Nevertheless, queuing systems are practically very important because of the typical trade-off between the various costs of providing service and the costs associated with waiting for the service (or leaving the system without being served) (Hernandez, Monzon, de Oña, 2016). High quality fast service is expensive, but costs caused by customers waiting in the queue are minimum. On the other hand, long queues may cost a lot because customers (machines e.g.) do not work while waiting in the queue or customers leave because of long queues. So, a typical problem is to find an optimum system configuration (e.g. the optimum number of servers) (Dela Cruz, 2020). The solution may be found by applying queuing theory or by simulation (Luz, Moreno, and Santos, 2015).

The transport queuing and system in general should formulate, enhance and implement strictly its policy and guidelines in the Local Government Units in the provinces, cities and municipalities (Reyes, 2011).

This is the main objective of the Department of Energy Utilization Management Bureau (DoE-UMB) and National Economic and Development Authority (NEDA) as mentioned in the formulation of "National Transport Policy and Its Implementing Rules and Regulations" printed by Roderick M. Planta, Director, Infrastructure Staff National Development Office for Investment Programming National Economic and Development Authority. The same and parallel concerns were presented by Evelyn N. Reyes, OIC – Director, during the Energy Utilization Management Bureau, APEC Cooperative Energy Efficiency Design for Sustainability (CEEDS) – Phase 3 on September 15, 2011 at San Francisco, USA.

To maintain the efficiency of transport services such as queuing stations, transportation policy must be formulated and be strictly implemented. As stated in the CEEDS, the following are essential in the formulation of

policies: Vehicle Emission Control, Standards, and Inspection & Maintenance; Social Equity and Gender Perspectives; Public Transport Planning and Travel Demand Management; Strengthening Knowledge Base, Awareness and Public Participation; Strengthening Roadside Air Quality Monitoring and Assessment and; Environment & People Friendly Infrastructure Development (Formulation of a National Environmentally Sustainable Transport (NEST) Strategy for the Philippines, DOTC, May 2011).

The propositions above are the foundations in the determination of the status of the queuing scheme in the town of Ajuy. Moreover, this study aims to find some practices and issues on the queuing operation system in the town.

This study is anchored on the concept of “The principles of queuing systems” by *Kirill Tšernov*. This underlying principle focuses on the queue management — and, therefore, queuing solutions — rests on three main principles of queuing. These are fairness, engaging queuing, and explained waiting (Roque, Abad, and Fillone, 2021).

The principles of queuing systems also emphasizing on the specific areas of queuing such as queuing discipline, queuing facilities, queuing services, queuing safety, and queuing sanitation (*Tšernov, 2019; Mariano, 2020*).

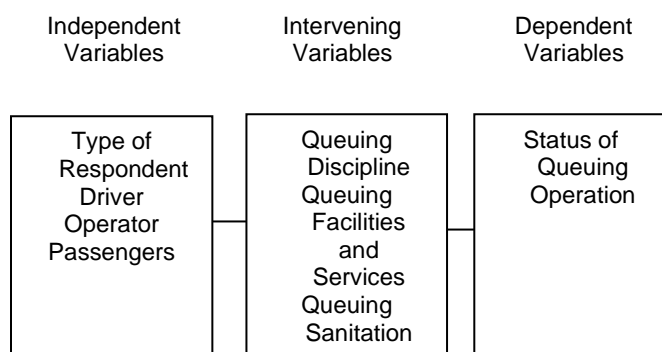


Figure 1. Paradigm of the Study

Figure 1 shows the relationship between the independent variables such as diver, operator passenger; intervening variables such as the queuing discipline, facilities and services and the dependent variable such as status of queuing operation.

OBJECTIVES OF THE STUDY

The study aimed to assess the queuing operations in the town of Ajuy, Iloilo. It sought to fulfill the following specific objectives:

1. To determine the status of queuing operation in the town of Ajuy as perceived by the drivers, operators, and passengers.
2. To find out the status of queuing operation in terms of discipline, facilities, services, sanitation, and safety when categorized according to type of respondent.
3. To determine relationships between the status of queuing operation and the queuing discipline, queuing facilities and services and queuing sanitation and safety.

METHODOLOGY

In this study, the researchers employed the descriptive survey method to to determine the status of queuing operation in the town of Ajuy as perceived by the drivers, operators, and passengers and the status of queuing operation in terms of discipline, facilities, services, sanitation, and safety when categorized according to type of respondents. The respondents of this study were the 1, 322 randomly selected drivers, operators, and passengers in the town of Ajuy who were available during the range of the study. The respondents of this study were composed of two hundred ninety-one (22.01%) drivers, one hundred thirty-six (10.29%) operators and eight hundred ninety- five (67.70%) passengers.

Table 1
Sample Distribution

Respondents	n	Percentage
Driver	291	22.01
Operator	136	10.29
Passenger	895	67.70
Total	1,322	100

Questionnaire checklists were distributed to respondents from the different points of the municipality of Ajuy where there were queuing site or where passengers were queuing or waiting a public utility vehicle in the town or roadside of the municipality of Ajuy. To safeguard the health and



safety of the respondents against COVID-19 disease, researchers always had observed minimum health standard protocol during the distribution of the research instruments. In this study, the researcher-made questionnaire was used. The data gathering instrument is composed of two (2) parts. Part 1 is the demographics which asks the respondents to choose among the types of respondents they are. It has a space for name which is optional for the respondents to fill up or not. Part 2 is the Status of the Queuing Operation System which divided into three (3) parameters namely: queuing discipline, queuing facilities and services, and queuing sanitation and safety. The respondents were asked to check on the box which corresponds to his observation and practices in the queuing system in the municipality of Ajuy.

Cronbach’s alpha was used to measure the reliability and internal consistency of the research instrument used in this study. Frequency was used to determine the respondents and its categories. Mean was used to determine and to describe the status of queuing operation in terms of discipline, facilities and services and sanitation and safety as perceived by the drivers, operators, and passengers. ANOVA was also used to determine significant differences in the status of queuing operation, queuing discipline, queuing facilities and services and queuing sanitation and safety as perceived by the drivers, operators, and passengers and for variables with more than two categories. On the other hand, Person *r* was used to determine the significant correlation between the status of queuing operation and in terms of discipline, facilities and services and sanitation and safety as perceived by the drivers, operators, and passengers.

RESULT AND DISCUSSION

1. Status of queuing operation as perceived by the drivers, operators, and passengers

The status of queuing operation as perceived by the drivers, operators and passengers was determined with the use of mean and its corresponding description.

The result of the study revealed the status of queuing operation as perceived by the drivers

was fair (M = 3.01, SD = 0.17), for operators, fair (M = 3.09, SD = 0.23) and for passengers, fair, (M = 3.13, SD = 0.16).

Table 2
Status of Queuing Operation as Perceived by the Drivers, Operators and Passengers

Category	f	Mean	SD	Description
Entire Group	1322	3.10	0.17	Fair
Driver	291	3.01	0.17	Fair
Operator	136	3.09	0.23	Fair
Passenger	895	3.13	0.16	Fair

1.1 in terms of discipline as perceived by the drivers, operators, and passengers

Table 3
Status of Queuing Operation in Terms of Discipline as Perceived by the Drivers, Operators and Passengers

Category	f	Mean	SD	Description
Entire Group	1322	3.97	0.41	Fair
Driver	291	3.95	0.49	Fair
Operator	136	3.87	0.58	Fair
Passenger	895	4.01	0.35	Good

The status of queuing operation in terms of discipline as perceived by the drivers, operators and passengers was determined with the use of mean and its corresponding description.

The result of the study revealed the status of queuing operation in terms of discipline as perceived by the drivers was fair (M = 3.95, SD = 0.49), for operators were fair (M = 3.87, SD = 0.58) and for passengers good, (M = 4.01, SD = 0.35).

1.2. in terms of facilities and services as perceived by the drivers, operators, and passengers

The status of queuing operation in terms of facilities and services as perceived by the drivers, operators and passengers was determined with the use of mean and its corresponding description.



Table 4
Status of Queuing Operation in Terms of Facilities and Services as Perceived by the Drivers, Operators, and Passengers

Category	f	Mean	SD	Description
Entire Group	1322	3.07	0.28	Fair
Driver	291	2.97	0.22	Poor
Operator	136	3.04	0.41	Fair
Passenger	895	3.17	0.23	Fair

The result of the study revealed the status of queuing operation in terms of facilities and services as perceived by the drivers is poor (M = 2.97, SD = 0.22), for operators is fair (M = 3.04, SD = 0.41) and for passengers is fair, (M = 3.17, SD = 0.23).

1.3. in terms of sanitation and safety as perceived by the drivers, operators, and passengers

Table 5
Status of Queuing Operation in terms of Sanitation and Safety as Perceived by the Drivers, Operators, and Passengers

Category	f	Mean	SD	Description
Entire Group	1322	2.24	0.24	Poor
Driver	291	2.97	0.22	Poor
Operator	136	3.04	0.41	Fair
Passenger	895	3.17	0.23	Fair

The status of queuing operation in terms of sanitation and safety as perceived by the drivers, operators and passengers was determined with the use of mean and its corresponding description.

The result of the study revealed the status of queuing operation in terms of sanitation and safety as perceived by the drivers is poor (M = 2.97, SD = 0.22), for operators is poor (M = 2.04, SD = 0.41) and for passengers is poor, (M = 3.17 SD = 0.23).

2. Relationship between facilities and services and queuing sanitation and safety Status of queuing operation, queuing discipline,

facilities and services, and queuing sanitation and safety

Pearson-r correlation was used to determine the significant correlation between status of queuing operation in queuing discipline, facilities and services and queuing sanitation and safety.

The result of the study showed that queuing discipline has moderately high correlation correlated to the status of queuing operation (r = 0.677, n = 1322, p < 0.000), facilities and services is fairly correlated to the status of queuing operation (r = 0.540, n = 1322, p < 0.000), while queuing sanitation and safety is fairly correlated to the status of queuing operation, (r = 0.379, n = 1322, p < 0.002).

Table 6
Significant Correlation Between Status of Queuing Operation, Queuing Discipline, Facilities and Services and Queuing

Categories		Queuing Status
Queuing Discipline	r	.677**
	Sig. (2-tailed)	.000
	N	1322
Queuing Facility and Services	r	.540**
	Sig. (2-tailed)	.000
	N	1322
Queuing Sanitation and Safety	r	.379**
	Sig. (2-tailed)	.002
	N	1322

Sanitation and Safety

The result of the study revealed the status of queuing operation in terms of facilities and services as perceived by the drivers is poor, operators is fair, and passengers is fair.

The result of the study revealed the status of queuing operation in terms of sanitation and safety as perceived by the drivers, operators, and passengers is all poor.

Pearson-r correlation was used to determine the significant correlation between status of queuing operation in queuing discipline,



facilities and services and queuing sanitation and safety.

The result of the study showed that queuing discipline has moderately high correlation correlated to the status of queuing operation, facilities and services is fairly correlated to the status of queuing operation, while queuing sanitation and safety is fairly correlated to the status of queuing operation.

CONCLUSIONS

In totality, they believed that the services rendered in the queuing facilities are not enough to satisfy their needs in times of travel.

In terms of queuing discipline, queuing facilities and queuing sanitation and safety services as perceived by the drivers, operators and passengers are fair and good enough. This means that among the people travelling the town of Ajuy are satisfied with the practices such as passengers were queued accordingly, proper time of dispatching the vehicles were followed. Only for the few that respond in that the driver's license, franchise sticker and protective gear of the driver were not even visible.

There were some that appear to be odd in the services and facilities like the provision of breastfeeding room, prayer room and toilet that needs to be improved and even provided.

As it revealed in the study, there is poor sanitation and safety is observed. Thus, in the queuing stations and in travel, safety is everyone's business. For the passengers and driver's safety, precautions, reminders, personnel, and amenities are must in the post.

Moreover, the queuing discipline has moderately high correlation correlated to the status of queuing operation, facilities and services is fairly correlated to the status of queuing operation, while queuing sanitation and safety is fairly correlated to the status of queuing operation.

The status of queuing operation really relies on the three (3) basic components. These basic components should be given attention and consideration. As far as the passenger and driver safety is concerned and the need of queuing facilities and services arise, the LGU shall now move to give solution to the on the post

delinquencies our town specifically in the small chunk of transportation system. If these small operators had been facing difficulties in the maintaining their PUVs to serve travelling people, a parallel program should be provided for them. The LGU should join hand with the operator and drivers to straighten the system of transportation and specially queuing in the town.

RECOMMENDATIONS

For the drivers, the result of this study recommends that the drivers should follow the proper procedures in the operation and proper manner and the positive values to impose in the queuing station.

For Barangay/Municipal Local Government Unit, the result of this study suggests to recommends that, this is the high time to ensure in the formulation and enhancement of the transportations policy of the TODA in locality. The

Municipal DoTr Engineers, the result of this study may help determine the problems, issues and concerns of the drivers, operators, and passengers in the queuing operation system in the town, thus they must organize a policy-making body to formulate or enhance the existing transportation policy of the town. Moreover, the DoTr shall plan an effective queuing design to address the problems, issues and concerns related to queuing. Indeed, collaboration with the researcher of this study is encouraged.

To the TODA Operators, the result of this study may give the knowledge to the TODA operators the proper operation problems in transportation queuing system in town, thus cooperation with the municipal DoTr is encouraged to help solve issues, problems to improve the transportation queuing services in town.

Future Researchers, the result and findings of this study may be a springboard for the future study and this may also be used as research reference. Furthermore, the result of the study helps them realize the real scenario of the status of the transportation queuing operation system in town, hence collaboration with the drivers, TODA operators, Municipal DoTr, and other stakeholders in the formulate policy is encouraged.



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