ANALYSIS OF INTERMODAL PASSENGER TRAVEL in the PHILIPPINES: *The Case of Batangas-Mindoro Route*

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Abstract: This study focuses on the analysis of intermodal passenger travel in the country, citing the case of Batangas-Mindoro route. It is a basic fact that a successful intermodal operations lie on the strategic issues of transfer points and their facilities. The study will be dealing with the seaport of Batangas as the main transfer point and all transportation networks surrounding it for the movement of people in and out of the area. The study will be limited to intermodal connections and passenger behavior along road-sea routes, and will focus mainly on transfer points and intermodal network efficiency based on passengers' point of view.

1. INTRODUCTION

1.1 Background of the Study

"The physical integration of the archipelago is complete, with major north-south and east-west transportation links and all-weather trunk-lines in place. Local networks are linked to the national network. Inter-island travel is facilitated by an all-weather network of roads, bridges, railways, sea and air lanes."

Long term vision of the transport sector, NEDA

The existing situation of the transport sector performance is not that satisfactory, as discussed in the Philippine Transport Strategy Study Vol. 2: Main Text (Halcrow Fox). The government demonstrated a limited ability to execute major improvements, owing to increase number of transport projects regularly while slow in effective action. As presented, the policy involving *more of the same* would unlikely is a justifiable strategy since there will be limited funds due to fiscal constraints and competing demands from other sectors.

Demand in the transportation sector is rather increasing with the advent of globalization, which in turn, put pressures on the providers of services to render improved quality and reliability. This requires the transport system to perform as a *seamless* system, rather than a collection of disparate modes. No longer can the increase in efficiency depend solely upon expansion but a shift towards understanding *intermodal* activity is necessary to improve the system. The lessons of the past had taught us that uncoordinated and isolated

decisions have either resulted in the provisions of excess capacity, or in the non-provision of needed capacity.

Sustainable mobility requires an improved coordination in the planning of investment in transport infrastructure networks and facilities, an improvement of the combination of the different modes and a development of urban transport.

1.2 Scope of the Study

Because of its archipelagic structure, the Philippines has unusual opportunities to develop road-sea routes (see figure 1). The intermodal connections between road and ferry should then be made as smooth and expeditious as possible.

The Study will be limited to intermodal connections and passenger behavior along road-sea routes. The paper will focus mainly on transfer points and intermodal network efficiency based on passengers' point of view.

1.3 Significance of the Study

This particular study explicitly aims to provide pioneering literature on the concept of intermodalism in the country for purposes of research and planning. It exhibits information on the nature of the trip-making characteristics of passengers plying the Batangas-Mindoro route, citing the use of the passenger terminal as the main transfer point. It presents the level of service the terminal provides its users and how particular amenities and improvements is being rank according to personal choice. It is also an initial step in mathematical modeling of the willingness-to-pay behavior of the passengers. Based from this, facilitation of policy recommendations could then be formulated.

Moreover, the study promotes intermodalism rather than the single modal perspective. The hope for intermodal transport is based on a simple yet significant assumption that the existing assets in roads, rail, airports and seaports constitute set of links in the overall network but the overall network is operating sub-optimally because the transfer points which allow coordinated use are insufficient and ineffective.

Furthermore, the study justifies the need for the transport sector *to do more with less* considering the financial status of the country and the effects of the Asian regional crisis on the growth of the South East Asian countries. The study could facilitate researches on the field of intermodalism since investment strategies should be designed to make the most efficient use of existing transport facilities.

2. STUDY AREA

2.1 Batangas and its Port

The Province of Batangas is 110 kilometers south of Manila. It is accessible by land from Manila and neighboring provinces such as Cavite, Laguna, and Quezon. It is being groomed as an alternative to Manila and serves the growing trade region of CALABARZON (Cavite, Laguna, Batangas, Rizal, and Quezon provinces). The proximity of Batangas and the good quality of most of the main roads make the province very accessible thereby fueling the local tourism industry and the provincial economy.

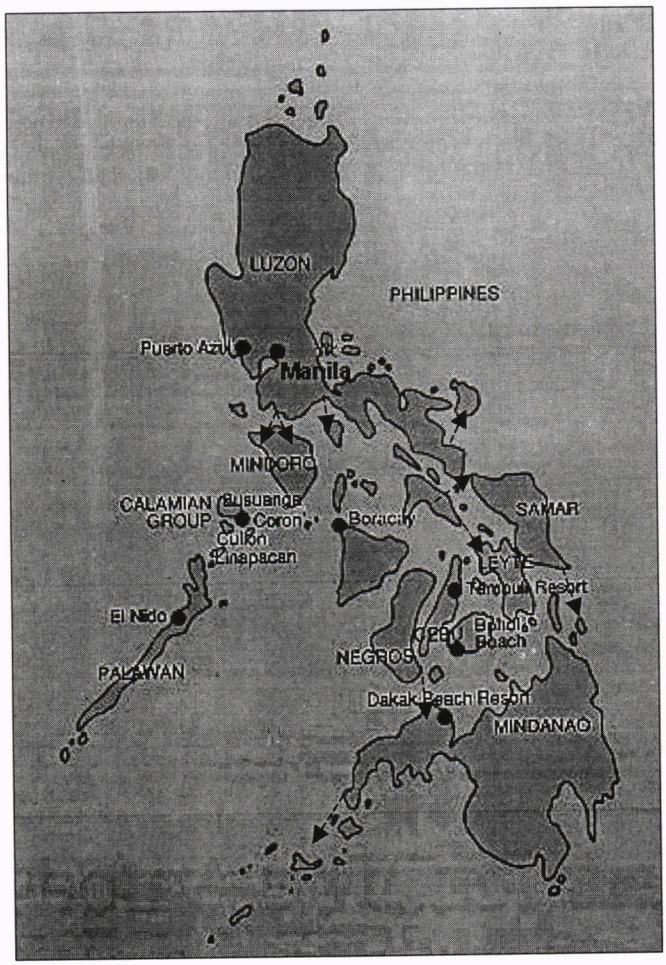


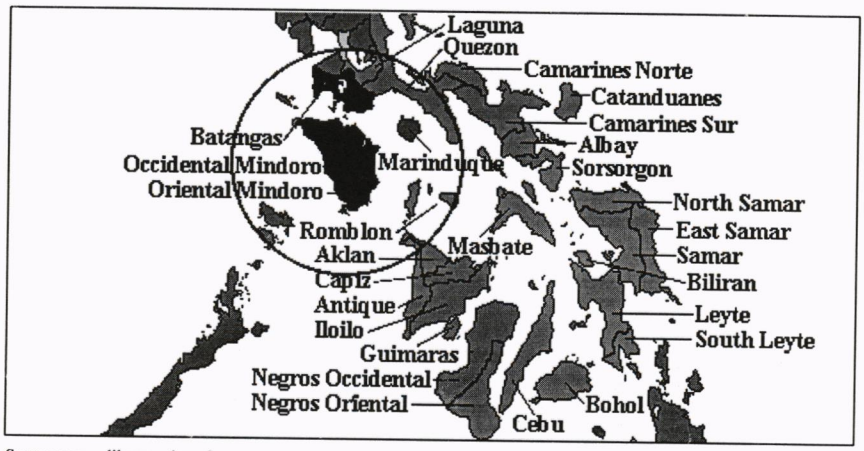
Figure 1. **The Philippine Archipelago**
----▶ Ferry Routes (RO-RO)

The port of Batangas (refer to figure 2), which is blessed with good natural conditions for port development, is located at the northeast section of Batangas Bay along the southwestern part of Luzon. Batangas Bay is a fairly deep bay (over 300 m deep) with mountains on its eastern and western shores. The mouth of the bay is to the south and opens onto Verde Island passage, which is a major shipping lane. Domestic shipcalls range from 7,106 in 1993 to 19,494 in 1997. Average waiting time was 0.05 hours in 1993 to 0.15 hours in 1997. The total port area is 27,265.07 sq. m., 14,660.27 sq. m. of which is the port operation area.

The principal port of Batangas services main and local ports including ports of Calapan and Puerto Galera in Oriental Mindoro, Sta. Cruz (Marinduque), San Jose (Occidental Mindoro), Romblon and Abra de Ilog.

2.2 Mindoro Island

The island is subdivided into two administrative provinces of Oriental Mindoro and Occidental Mindoro. Oriental Mindoro is located 15 kilometers off the southwest coast of Luzon (see figure 2). It lies on the eastern portion of the island, and is bounded on the north by Verde Island and on the south by Semirara Island near Pandarodan Bay.



Source: www.library.wisc.edu

Figure 2. **Study Area**

It has a total land area of 436,470 hectares. The main port of Calapan is located at the northeast coast of the province and has a total area of 12,465.25 sq. m., and plays an important role in the transport of cargoes and passengers.

Occidental Mindoro, which has a land area of 5,879.8 sq. km., is bounded on the west and south by the Mindoro Strait, and Oriental Mindoro on the east. The Port of san Jose is located 132.5 nautical miles from Batangas port. It is the main port servicing occidental Mindoro to the west of the central mountain range having both berthing and anchorage operations. The total port area expands to 12,336.5 sq. m.

3. CONCEPT OF INTERMODALISM

The term *intermodal* as defined by its Latin roots would mean transportation between several ways of transporting goods or persons, taking the meaning *inter* as between and *modus* as way. From this we can easily say that any movement of a person or good using one mode of transportation would suggest an existence of an intermodal operation.

Intermodalism (PTSS) is commonly interchange with *multimodalism* to mean the use of two or more principal modes (not feeder modes) during one journey, where the different modes complement each other with each mode performing a part of the journey where it has technical or economic advantages. The Washington State Department of Transportation in its 1995 Report to the Legislature differentiated the two, by defining the latter as systems oriented and is the availability of transportation mode choices for people and goods, while the former is operationally based and is the ability to make convenient connections between transportation modes. *Intermodal* is defined as the *transfer point* of people and goods from one point to the next while multimodal is the option in modes that are available to the user to move people or goods from one point to the next (Siaurusaitis, 1993).

Moreover, according to the Office of Intermodalism (US DOT) *intermodalism* covers all issues and activities which may affect or involve more than one mode of transportation. The key issue here is the *connection*. Intermodal connections are essential for easy transfer of people and products in the transportation system. These *connections* are the links where different modes of transportation meet and where passengers and freight change to different forms of travel. The links are most effective when they appear to be *seamless*, i.e., facilitating travel with minimum interruption, inconvenience and wasted time.

4. SCOPE OF ANALYSIS

The key issues for intermodal operations would *be connectivity, choices, coordination and cooperation*. According to US DOT Office of Intermodalism *connections* would mean the convenient, efficient and safe transfer of people or goods from one mode to another during a single journey. *Choices* are the provisions of transportation options while *coordination* and *cooperation* are the collaboration of organizations for the purpose of improving the services.

Taking these into account, the main idea for intermodalism would be to analyze the links that make up the system. This would be determining the different factors that would affect the mode of travel of a passenger, then defining the characteristic of the link/s (terminal) that would be used during the journey. To visualize a *seamless* operation this would mean an efficient and rapid transfer of passengers in all links. The level of service should then be analyzed to determine effectivity and efficiency of the whole trip.

Intermodal system would be analyzed through the point of view of the passenger (stakeholder). The system then would be analyzed through the result of passenger interview survey conducted at the terminal link between road and sea (specifically identifying port as transfer point). The analysis would be two-fold: descriptive and quantitative.

The focus of intermodal system will be on the efficiency of the transfer point, identifying the level of service it provides the users as well as the determining the added-value and improvements that should be provided the passengers. Efforts will be geared towards the willingness-to-pay attitude of the respondents. Initial output will determine social aspects, economic aspects, and trip-patterns of passengers plying the route of Batangas port.

Furthermore, the study was limited to intermodal connections and passenger behavior along road-sea routes, and focused mainly on transfer points and intermodal network efficiency based on passengers' point of view.

Focusing on passengers using the Batangas terminal as the base port, users of roll-on roll-off (Ro-Ro) vessels were also included in the survey. The study attempted to capture these users, especially those car owners who availed of the service for their journey, on the assumption that they used the waiting area for embarking passengers where the survey was conducted. The focal point was passenger use, that is, excluding cargo being handled by these vessels. The survey was limited to embarking passengers on a specific time period of 8:00 a.m. to 5:00 p.m.

5. SURVEY DESIGN

5.1 Questionnaire Design

The survey questionnaire was designed comprising the following sections:

(1) Socio-economic profile of respondents – includes household information such as their home address, number of household members, number of working adults in the family, combined household monthly income, number of years at residence, and car ownership. Personal profiles include gender, age, educational attainment, personal monthly income, and occupation.
(2) Trip Information – includes travel patterns such as passengers' origin, destination, and purpose. Mode choice was also determined by asking their access mode, main mode (land-based), and type of ferry service used (name of company/service provider). It also includes travel time specifically terminal's access time, travel time on-board ferry and to final destination. Waiting time inside terminal was also included.
(3) Services needed at the terminal – this section includes services that should be offered at the terminal, e.g. travel information, hotel booking, information on delays, place reservation, schedule of trips, telephone booth, shower rooms, porters, and restaurants or canteens.
(4) Willingness-to-pay given such services, answerable by yes or no. If yes, to include allowable amount.
(5) Improvements to be made – determination of other amenities, existing or not, that should be given considerable attention.
(6) Finally, their comments and suggestions regarding intermodal operations, and the terminal itself.

Pre-testing was done to facilitate identification of flaws and be properly corrected. Afterwhich, all the questionnaires were checked for consistency in answers, and suggestions and comments of the respondents were taken into consideration. As observed, majority of the passengers using the terminal was locals with only a handful of foreigners. The use of graphical presentation to add in understanding the questions was also raised. Taking these commentaries into helpful hints, the questionnaire was finally designed to meet the output from the pre-testing.

5.2 Survey Methodology

A survey was undertaken at the Batangas port terminal from *November 13 to November 14, 1998*. The proponent assumed that these days were not particular on seasonal traffic since no events occurred on the said dates. The survey also limited itself to these weekend trips excluding the aspect of daily traffic at the port facility. A survey questionnaire was given to passengers at the departure area inside the terminal. Interviews were also conducted for respondents choosing this option instead of simply answering the information sheets. In this survey, the respondents were asked to give information on household and personal characteristics. Trip information was also included to determine origin-destination, as well as trip characteristics.

The respondents were picked at random during the survey proper. The survey was conducted from *8:00 a.m. to 5:00 p.m.* A target of at least 20-25 passengers every hour was established to produce the required number of samples. The surveyors were assigned into each section of the terminal (the facility was divided into six quadrants) to conform to the idea of randomness.

6. RESULTS AND DISCUSSION

6.1 Socio-economic Profile of Respondents

Household Information. The number of household members ranged from those living alone to 24 members with an average of 5.20 persons per household. Majority of the respondents belongs to the middle and lower income groups with 77.60 percent having a combined household monthly income of P30,000 and below (figure 3). Distribution showed a decreasing trend from a high of 22 percent for those income group of P6,000

and below to a low of nine (9) percent to P60,000 and above, with a resulting mean income range of P15,000 - P29,999. The available car in the household varied from none to three cars, with only 39 percent having a car or more (figure 4).

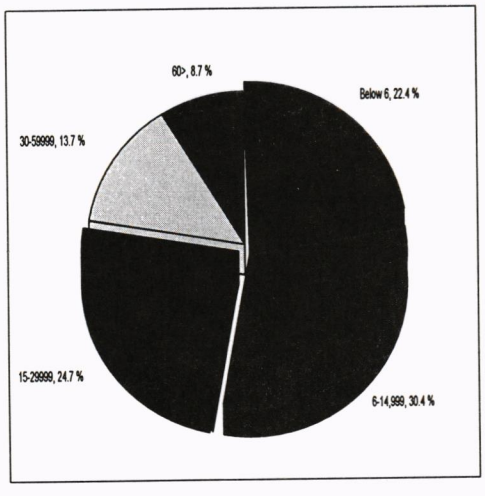


Figure 3. **Combined HH Monthly Income**

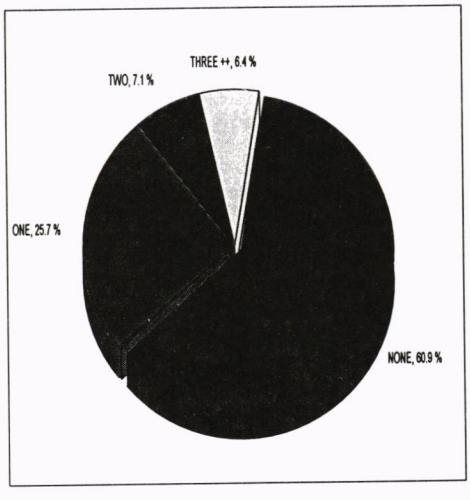


Figure 4. **Car Ownership**

Personal Information. Figures 5 to 6 show the distribution of respondents according to individual information gathered. Most of the respondents were male (54.8 %) and majority are young adults, with 20-29 age group acquiring the largest share at 39 percent. With respect to monthly income, the distribution pattern exhibited a decreasing trend with a mean in the range of P 6,000 – P 14,999. Occupational aspects vary with the majority (70 %) in the level of supervisory, rank and file and a significant number of students.

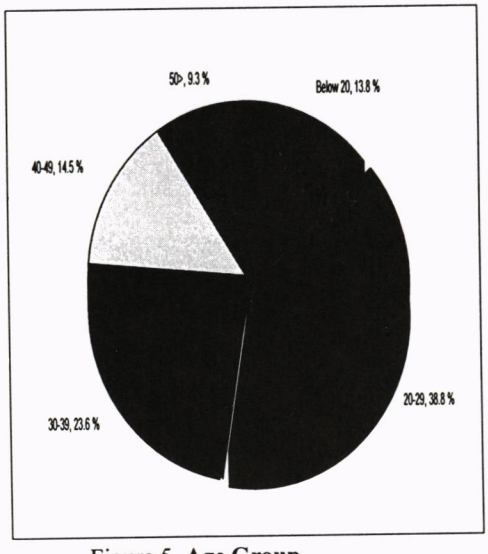


Figure 5. **Age Group**

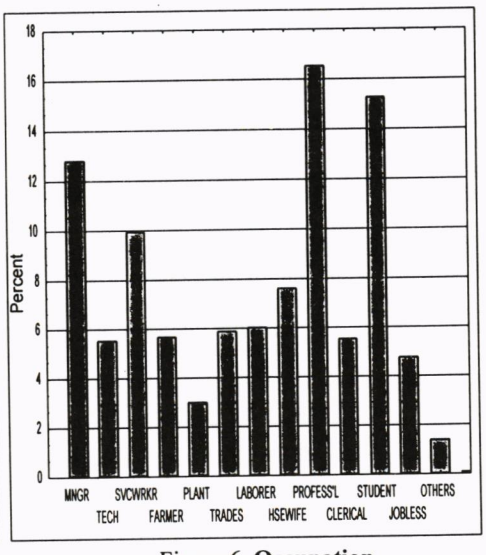


Figure 6. **Occupation**

6.2 Trip Information

Origin-Destination Pattern. Of the total respondents of 598, about 41 percent came from Metro Manila, 44 percent from the province of Batangas and the rest were from outlying regions to as far as the province of Antique in the Visayas region (figure 7). Most of which, around 85 percent, will be using the Port of Calapan to reach their final destination in the province of Oriental Mindoro District 1 (see figure 8). Mostly were *'to-home'* trips comprising 51 percent of the total population, followed by business trips at 14 percent, work and other personal activities at 11 percent each, leisure trips at 6 percent and social activities at 6 percent.

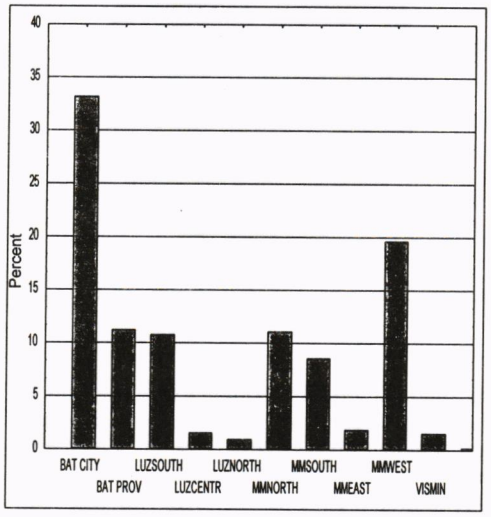


Figure 7. **Origin**

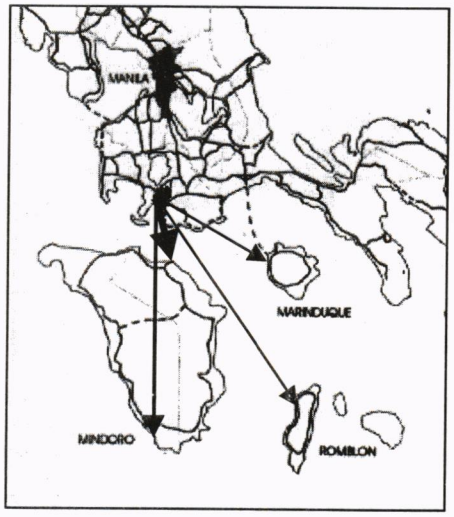


Figure 8. **Destination**

Modal Split. In analyzing mode choice behavior of respondents traveling from origin to their final destination using the port of Batangas as the main 'transfer point', survey results show that majority used walking (66 %) as the main access mode from their point of origin. This was mainly due to the fact that majority is within the vicinity and main mode is quite accessible from their homes and/or workplace. Results also show that the first mode choice for travel was the bus at 57 percent followed by the jeepney at 29 percent going to the Batangas port terminal. Most of the respondents were from Metro Manila and the Batangas City proper where the port is located.

The second mode for intermodal passenger travel was the use of a ferry with Supercat topping the list at 74.50 percent. This was mainly due to its faster travel time and availability within an hour period at the terminal. Upon reaching their destination port, mode choice varied from jeepney, tricycle and Tamaraw FX with percentage share of 31.30, 23.40 and 22.20 respectively. Then majority opted to walk to their final destination than ride a tricycle, which was very much evident in the provinces.

Level of Service. Survey results showed that total fare from origin to final destination ranges from P 38 to P 1,050 and has a mean P 213.93. The lowest amount was probably due to the presence of a discounted ferry rate and use walking to reach terminal and final destination. Travel time averages at 4 to 6 hours as observed, with a maximum travel of a little over than ten hours. Waiting time averages at a range of 31 to 60 minutes inside the passenger terminal, with 34% of the respondents waited for range of less than 30 minutes.

6.3. Services and Improvements

This section provides for the needed services and/or improvements for immediate action and consideration by the officials of the port facility. The passengers were asked to determine their different choices of services (amenities) and improvements to be undertaken in whole or in part at the particular facility. The results were then ranked using frequency distribution.

Services. It was observed that almost 50 percent of the respondents considered provision of restaurants or canteens to be the number one priority to be present at the Batangas port passenger terminal, followed by telephone booth and travel information respectively. This is mainly due to the fact that food establishments offer wide variety of meals from a lengthy travel aside from giving sustenance to weary travelers. Table 1 summarizes the results.

Table 1. **Responses for Priority Services**

SERVICES NEEDED INSIDE TERMINAL					
CODE	PARTICULARS	VALID N	COUNT	%	RANKING
RESTAUR	**Restaurants/Canteen**	596	292	48.99	**1**
TELEPHON	**Telephone Booth**	596	269	45.13	**2**
TRAVEL - I	**Travel Information**	596	156	26.17	**3**
SKEDS	Schedule of Trips	596	154	25.84	4
DELAYS	Information on Delays	596	116	19.46	5
PORTERS	Porters	596	69	11.58	6
H-BOOKIN	Hotel Booking	596	68	11.41	7
OTHERS	Others	596	58	9.73	8
PLCE-RSV	Place Reservation	596	54	9.06	9
SHOWER-R	Shower Rooms	596	46	7.72	10

Improvements. There is still need for improvement with regards to provision of additional restaurants and/or canteen presently at the terminal, owing to the fact that it ranked number one with a percentage share of 27.85. Table 2 summarizes the results of the survey.

Table 2. **Responses for Improvements**

IMPROVEMENTS NEEDED AT THE TERMINAL					
CODE	PARTICULARS	VALID N	COUNT	%	RANKING
ADDREST	**Addt'l Restaurants**	596	166	27.85	**1**
SECURITY	**Security**	596	136	22.82	**2**
CR	**Comfort Rooms**	596	120	20.13	**3**
VIS-SIGN	Visible Signs	596	114	19.13	4
OTHERS	Others	596	44	7.38	5
ADDSEAT	Additional Seats	596	37	6.21	6

7. CROSS CLASSIFICATION OF WILLINGNESS-TO-PAY AND SOCIO-ECONOMIC CHARACTERISTICS AND TRIP PURPOSE

Willingness-to-pay (WTP) responses are binary in nature with only a *yes* and a *no* response. The survey conducted at the Batangas Passenger Port Terminal resulted to a 12 % no response rate with *yes* and *no* having equal share at 44 % each. This is probably due to passengers' *unreadiness* in exchanging service to a particular amount of money. This, aside from the fact that the concept is too foreign for the terminal's target market. Implementation of a *terminal fee* of P10.00, without due notice to the public, during the survey was also a big factor on the response behavior of the individuals. This made some travelers in a furious condition, probably affecting their answers on the questionnaire.

7.1 Willingness-to-Pay by Age

Respondents aged 20-29 years old are more willing to pay as shown in the data set, 64 out of 520 valid responses or 12.31 %. Results also show that middle-aged individuals, ranging from 30-44 years old, were willing to pay an additional amount (a terminal fee for instance) for services rendered at the terminal. This is mostly due to their present status (with jobs) and ability to pay. Yet you could observe a decreasing trend as age group increases. Refer to figure 9.

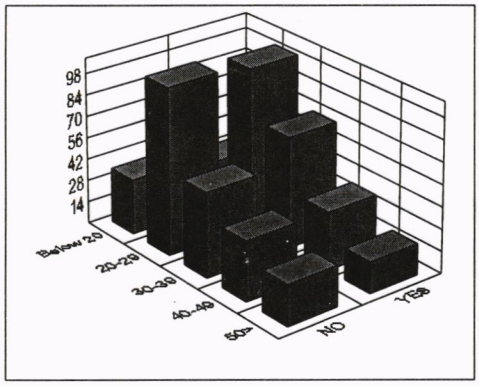


Figure 9. **WTP by Age**

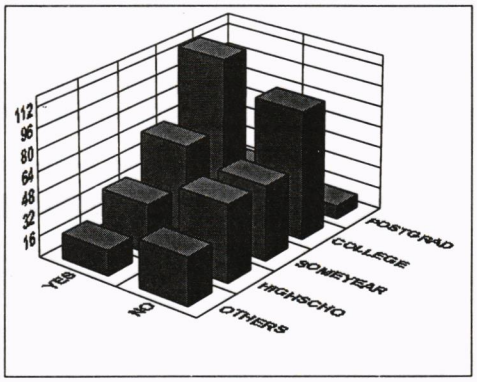


Figure 10. **WTP by Educational Attainment**

7.2 Willingness-to-Pay by Educational Attainment

Willingness-to-Pay by educational attainment shows an increasing trend in the data set. College graduates top the list at 119 out of 516 or 23.06 %. Refer to figure 10.

7.3 Willingness-to-Pay by Household Monthly Income

Data shows income range of P15 - P29,000 having the highest outcome of willingness-to-pay at 72 counts out of 493 valid responses or 14.66 %. An increasing trend can be observed but diminishes as it reaches the P30,000 income range mark. Refer to figure 11.

7.4 Willingness-to-Pay by Purpose

To home trips show significant number of willingness-to-pay at 134 counts out of 521 valid responses or 25.72 %. This is followed by business trips at 42 counts or 8.06 % of the total valid samples. Refer to figure 12.

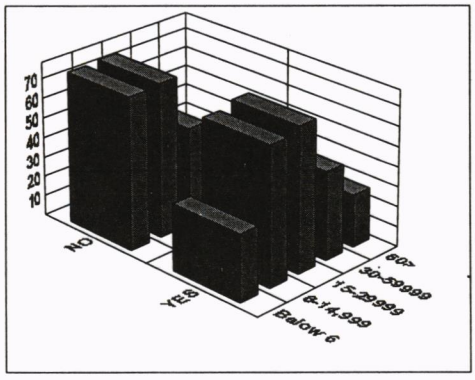


Figure 11. **WTP by HH Monthly Income**

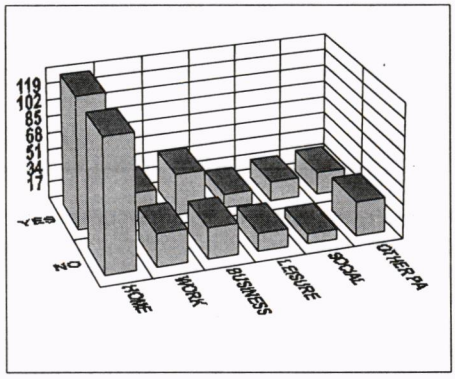


Figure 12. **WTP by Purpose**

7.5 Cross-Classification Summary

Initial results showed equal responses for a *yes* and *no* answer for payment for additional services and improvements. Using STATISTICA software to analyze and cross-tabulate responses of willingness-to-pay against the socio-economic profile of the respondents, figures indicate only a slightly higher percentage positive outcome for some variables. Respondents who attended some years in college to a master's degree and who are managers and professionals in their own rights were quite keen on paying for such services. Educational attainment showed an increasing trend with regards to respondent's ability to pay for services. Household monthly income is a significant factor revealing those income range from P 6,000 and above may willingly comply to pay for services such as restaurants, travel information and adequate telephone booths in the terminal area. Mixed reactions of respondents are not unusual since they are adjusting to the new setup in the new port facility of Batangas. The terminal is being groomed to be an alternative to the port of Manila. The new port facility just recently opened at the time of the survey. It is therefore understandable that many low-income travelers, who are used to the old facility, were mounting complaints against some officials of the private facility. Most complaints stem from the fact that terminal fee is being charged to all users although there is yet to provide adequate facilities inside the area. The provincial council of Batangas has a pending compromise agreement with the Philippine Ports Authority regarding provision of air-conditioning units, TV sets and clocks, clean rest rooms with water, drinking water, security, and first aid kits and trained paramedics inside the terminal. This may encourage travelers to pay the terminal fee (P10.00) willingly.

8. CONCLUSION AND RECOMMENDATIONS

8.1 Summary and Conclusions

Globalization has definitely put pressures for the Philippines to deliver world class goods and services to be at par with other competing nations. One such area would be the transport sector, where the trend is to serve the total trip concept from origin to final destination taking into consideration the main transfer points for smooth and efficient flow of passengers and goods in the system. With this, the need for more research in the field of *intermodalism* is therefore inevitable for the Philippines to deliver the best services and facilities in a competitive global economy. The study could then facilitate discussions on this issue for the country to face the challenges of the future.

The study analyzed the system of intermodality in the country focusing on road-sea network with emphasis on transfer point- the Batangas Port Passenger Terminal. Determination of the actors involved was facilitated through the mode choices of the passengers. Requirements for an efficient travel was known with the application of user-oriented viewpoint, identifying specific needs in terms of the level of service the terminal provides its users. The study also provided value-added services that are important to the passengers based on their ranking on a set of presented amenities. The study provided detailed statistics on the analysis of intermodal operations in the area.

The study on the intermodal passenger travel analyzing the case of Batangas-Mindoro route revealed significant data on the implementation and provision of an efficient and effective transfer point or terminal. The terminal users' interview survey at the Batangas port terminal divulged information on the socio-economic and trip characteristics of passengers traveling this route using cross-section analysis.

The study showed majority of respondents to be young adults less than 35 years old with a monthly household income of P 30,000 and below and mostly males. A high percentage of professionals and managers (proprietors) can be observed but a significant number of students used the terminal at that time. Majority was rank and file employees, and some

farmers and jobless passengers. Owing to this fact, majority then was low-income travelers and dependent individuals such as housewives, students, etc.

It will be noticeable that majority of these travelers used non-motorized form of transportation as access mode from origin and before reaching final destination. Bus and jeepney were the two most important mode-choices to reach the port facility in Batangas. Upon arrival, passengers used fast craft ferries such as Supercat to transfer them to the next pier in Mindoro. Majority was traveling to their homes in the province of Oriental Mindoro using the port of Calapan as entry point. The transfer port provided travelers with varied forms of motorized transport among which are jeepneys, Tamaraw FX, tricycle and others.

The study, as well, revealed information on the type of services and improvements that a terminal should provide to their users to be an efficient and effective transfer point or intermodal connector. The top three services most needed by the travelers were restaurants, telephone booths and travel information. According to the passengers these three should be given attention by port officials for their convenience and comfort. This was seconded on the survey on needed improvements including a more secure terminal. But their willingness to pay for such additional services was faced with mixed reactions. This was mainly due to the fact that a terminal fee in the area is quite a new concept to them aside from the fact that adequate facilities are still yet to materialize. Although majority of middle to high-income travelers opted to pay, their numbers were quite few compared to those low-income travelers of which majority was still yet to decide on their willingness to pay. Average waiting time was quite impressive at a range of 31–60 minutes, with 43% of the respondents waited at less than 30 minutes. This was mainly due to the presence of modern fast craft ferries being provided such as the Supercat.

The study showed perception of passengers on the ability of terminal or intermodal connector to provide adequate facility and services. In due time, increase number of travelers willing to pay will be observed if the intermodal connections are effective. Effective in the sense that it appears to be 'seamless' such as facilitating travel with minimum interruption and inconvenience. *Seamlessness* refers to waiting time inside terminal, conditions such as seating capacity, predictability and efficiency of travel information including departure and arrival times, and similar features of linkages between modes. Based from this, the term *intermodal transport* is then the coordinated passage of people by way of two or more of the primary modes of transportation (sea, air, road) from origin to final destination as defined by the passenger.

The study could then provide transportation planners initial research on the intermodal travel of passengers in the Southern Luzon part of the Philippines.

8.2 Policy Recommendations

The study recommends policies to be set-up covering issues and activities taking into consideration the three main aspects of intermodalism: *connections, choices, coordination and cooperation.*

It should be noted that intermodalism does not replace or compete with modal transportation. The private and public sector should coordinate to improve efficiencies of individual modes and using intermodal connections as system integration tool. The government should then set policies that would encourage the private sector in participating for the future of intermodal transport in the country.

Connections. The study recommends the assessment of the Batangas Port facility in terms of *user-oriented performance measures* as observed and indicated in this particular research. Since the new passenger terminal is already in place, port officials should try to look into possible value-added services and improvements that may serve the passengers'

need for convenience. Waiting time should be considered in the coordination of travel schedules of ferries, at the same time providing information on schedules and delays for passengers to avoid either arriving early or late at the terminal. This would develop efficiency in the rapid transfer of passengers from the terminal to the ferry. Security should not be overlook since this would assure safety of passengers inside the terminal.

Choices. The study recommends the provision of ferry options at the port facility, through encouragement of other players to provide service, which will eventually lead to fair and healthy competition amongst them with passengers receiving the benefits of the situation. It should also be taken into consideration that provision of additional Ro-Ro ferries plying the route of Batangas-Calapan would not only benefit the passengers but would open doors for economic development for Mindoro in the near future. A study on Ro-Ro demand for the particular area should be closely examined.

Coordination and Cooperation. The study recommends close coordination among service providers, including port officials and ferry companies, to reduce waiting time at the terminal and provide efficient transfer of people. Bus companies, being the top mode choice going to the port facility, should provide relevant travel information and cooperate with port officials in the rapid transfer of passengers from the point of origin to the terminal. Collaboration among service providers will ensure the rapid, efficient and safe transfer of people from one mode to another during a single journey.

Finally, the study agrees and encourages the recommendation of the Philippine Transport Strategy Study that the government should provide the policy framework to encourage intermodal developments and remove critical bottlenecks. The study recommends the integration of the concept of intermodalism in all transportation issues and activities that the government undertakes. At the same time, promoting intermodal transportation systems through legislation.

8.3 Recommendations for Further Studies

Another interview survey after a year of port facility operation using stated and revealed preference experiments taking into consideration present and possible increase in terminal fees. This could then facilitate information on their willingness to pay for existing and additional services and improvements.

Also, other networks such as the Visayas-Mindanao route could be compared with the study area for differences in passenger characteristics and behavior.

Considering the rapidly increasing use of Ro-Ro vessels, studies on this should be pursued. Ro-Ro capabilities include cargo handling and passenger ferry. Further studies could then be focused on the use of such ferry by private car owners (no modal transfers), by type of cargo handled, or both. Demand will necessitate the possible construction or rehabilitation of port facilities for such vessel type.

Finally, the use of other primary modes aside from road to sea network for intermodal operations should be further investigated.

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