

Analysis of the Service Level of the Manaus Moderna Port: The Perception of the Amazon Vessel Commanders

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Abstract— The services that river vessels have provided to Amazonian communities, from the most remote to the great metropolises, are so essential that it is likely that without them the very livelihoods and survival of the peoples of the region would be compromised. Because of their importance, these vessels have become true regional institutions, so it is essential to know their level of service, which corresponds to the satisfaction that their users have in relation to the services available to them. As satisfaction is also due to the services provided by the ports where they dock, it is necessary to investigate the service levels of these ports. This study aimed to evaluate if the service level of the Manaus Moderna port is in accordance with the expectations of the vessels that dock there, according to their commanders. It used the survey method, using a semi-structured interview script focused on evaluating existing services and identifying missing services to test the hypothesis that the services offered are in line with what is expected of them; Data processing was based on simple frequencies and percentages, presented in contingency tables, whose interpretation was centered on the degree of satisfaction of the respondents (port service level) and the clients of the vessels (vessel service level). The results showed that a) only the services provided by the on-site police station cause satisfaction, b) there are numerous infrastructural services that are not available and that are necessary for vessels to operate with the minimum adequacy and c) customer satisfaction of vessels. it concerns only passenger ordering and transport services. The conclusion shows that the level of service offered by the port of Manaus Moderna to the vessels that dock there is below what is expected, according to the perception of its commanders.

Keywords— Amazon Logistics, Amazon Ports, Amazon Transportation, Amazon Vessels, Service Level.

I. INTRODUCTION

Passenger transport logistics in the Amazon region is quite unique: artisanal vessels with local production techniques, based on centuries-old cultural traditions, predominate. It is these vessels that move the waterway modal in the region and, therefore, the main port activities: loading and unloading, warehousing and handling, reception and delivery and interconnection (Monfort et al, 2012; Silva, 2017). Just as the craft that transports passengers is handmade, so are the logistics services provided. And the result is that the level of services provided by both vessels and waterways terminals seems to be very far from what their users want and need, generally belonging to the lower and middle classes of cities in the interior of the Amazon.

Of course, the level of service is poor not because the commanders of these vessels are dishonest or have any intention of harming their users. On the contrary, they do everything within their perceptions and knowledge so that the degree of satisfaction is as much as possible, often limited by cultural imperatives. But it turns out that port infrastructure and services that are available (or missing) are not traditionally provided by them. The strength of tradition, therefore, seems to be still firmly grounded in the strategies for providing these services in the Amazon region. Of course, as users, they can influence the managers of these ports to offer them. Therefore, it is necessary to know what is missing to increase the service levels of these ports, motivation for this study.

Therefore, in the case of this region, the focus of logistic studies must be changed, as recommended by Porto et al (2017) and Vieira and Coutinho (2008). Rather than focusing only on traditional dimensions and variables such as efficiency and economic and cost savings, behavioral factors are also privileged, so that the logistics reality and service levels are more appropriately portrayed. The reason for this is that, in the Amazonian case and perhaps everywhere in the world, behavioral factors influence the service levels, the object of this research. This study aims to evaluate whether the service levels of the Manaus Moderna port are in line with what is expected by the vessel commanders who use the services offered there.

II. THEORETICAL FRAMEWORK

The basic idea underlying the level of service is simple to understand: maximizing the satisfaction of the recipient. Therefore, the level of total logistics service is said to be the result of all the needs-sourcing efforts suppliers provide to their customers (Ballou, 1993). It is obvious that this is not a purely quantitative question. The quality factor is essential (Ballou, 2013), because it indicates how much of what is expected in terms of satisfaction has been achieved. Redone, the bottom line, the logic goes like this: Service levels need to be increased in number of efforts until the quality required by the customer is achieved. And service level quality is more adequately expressed in terms of satisfaction (Costa & Granemann, 2017), so that high service levels lead to maximum satisfaction levels and vice versa, lower service levels generate less satisfaction and even dissatisfaction.

Satisfaction or dissatisfaction results from the performance of the services offered by suppliers (Silva, 2017), the number of things they make available to their customers. Therefore, it is necessary to know how much each service offered contributes to maximize the satisfaction of customers or users. Thus, the challenge of managing logistics service levels is to maximize the performance of each service offered to customers so that they can meet their needs as satisfactorily as possible. Thus, for this study, the level of service corresponds to the quantity and quality of services provided by suppliers available to their customers.

2.1 Extrinsic Service Level Relationships

Service levels impact both customers and suppliers. This denotes a multitude of relationships, many of them difficult to perceive and gauge. The study by Duarte & Guarnieri (2016) showed that service level is an essential requirement for long-term relationships and, consequently, customer loyalty. When service levels are perceived as

adequate, satisfaction tends to materialize. However, there is a trade-off between service level and logistics costs, which implies an inversely proportional relationship between these two variables. The level of service therefore affects logistics costs (Melo, Moreira & Alencar, 2010). Therefore, Vieira & Coutinho (2008) consider that logistics activities need to be challenged to integrate their key activities to reduce their costs, because only in this way would the maintenance of the desired service levels by customers and their customers be largely guaranteed. may be offered by suppliers. Therefore, the level of service must be part of the logistics planning of organizations (Fernandes, Wrubel & Dallabona, 2015) because costs and level of service is the difficult challenge to balance (Mattos Neto et al., 2017).

Another variable that is related to service levels is the length of service (Silva et al., 2017). This relationship is also inversely proportional: the shorter the time of resupply, the greater will be the level of service provided. This means that in the practice of logistics activities, efforts made, if possible, need to affect the delivery time of customer service. Among the logistics activities, those over which organizations have greater control and which affect service levels, the most important are warehousing activities (Coelho & Marjotta-Maistro, 2017). Between the arrival of the product in the organization and its availability to customers, the lead time needs to be as short as possible. By reducing time, the organization adds time value to its customers.

Often storage is not just about simply stopping products on shelves. It begins, in the case of the use of port infrastructure, in the loading and unloading of ships, continues with the temporary storage of containers in the ports, continues with the reception and delivery of products in the organization and often with the interconnection with other modes (Vieira et al., 2015). And the longer the lapse of these intercourses, the longer the storage time and the higher the costs.

Port logistics activities are almost always based on relatively strict environmental regulations, so that acting in accordance with them can also be configured to increase the level of service provided (Guarnieri, 2016; Silva et al., 2017; Baraúna, 2017). When linked to reverse logistics, the impacts of service levels are even clearer, mainly because they can add environmental, logistical, economic, legal and competitiveness values.

Other types of relationships could be pointed out here, to understand a significant part of the implications of ensuring high service levels in logistics activities. Much of the literature focuses precisely on these factors: costs, customer loyalty, downtime, warehousing, reverse

logistics, and environmental issues. This means that in addressing these six factors, much of the challenge of raising service levels will be overcome.

2.2 Intrinsic Service Level Relationships

We have seen the factors that are related to the service levels. It is also necessary to know what the literature presents as the elements that compose them, that is, their categories, considered here as intrinsic, internal relations. In other words, it is necessary to know what efforts should be made to improve the performance of logistics activities and thus increase customer satisfaction. The first effort is with the delivery time (Duarte & Guarnieri, 2016). Time is as much an external factor, as much of the other logistic activities as the activities of other sectors of the organization and of its clients, as well as intrinsic variable, component of the level of service itself, so that the lesser the time spent by the level effort of service, the greater will tend to be its importance to generate customer satisfaction (Ferreira & Oliveira, 2015).

The second is the differentiation of the services offered. The study by Coelho Júnior et al (2015) showed that differentiated service levels, therefore, for a smaller number of customers, increases customer satisfaction. Differentiation would be a way of grouping customers from similar needs different from the needs of other customer groups. This implies admitting that customers have different needs and that keeping the same efforts for everyone rather than generating superior performance of the efforts can lead to dissatisfaction as an effort may not be desired by multiple customers. In addition, differentiating often means raising the costs of these services.

The third component of service levels found in the literature was the quality of service provided (Monteiro, 2015; Vieira, Gonçalves & Dorion, 2015; Callefi, Barbosa & Ramos, 2017). Service level, in this respect, is a qualitative measure of the efforts made. In the case of port services, for example, the quality would be due to the service provided, safety, reputation for damage, productivity level and efficiency (Vieira, Gonçalves & Dorion, 2015). More broadly, the quality is due to the logistics flow (Callefi, Barbosa & Ramos, 2017).

Ballou (1993) organizes the elements of service levels in three dimensions, structurally related to time. There would be pre-transaction elements, which are efforts made prior to the execution of logistics activities, such as organizational policies and structure, system flexibility, and available technical services; transaction elements, translated into inventory level, ability to handle delays, order cycle, time, transshipment, accuracy, order convenience and product substitutability; and the post-

transaction elements, set up at installation, warranties, repairs, spare parts, order tracking, customer complaints, packaging and temporary product replacement during repairs. Transportation service vessels still lack empirical studies to understand what efforts they need to make to ensure their customers' desired performance and service levels. And this lack is even more felt in relation to passenger transport services by Amazonian vessels.

2.3 Cargo and Passenger Transportation in the Amazon

The rivers are the Amazonian highways. It is through them that regional wealth is transported, both legally and illegally (Cope & Parks, 2016). Unlike other Brazilian regions, which are characterized by an extensive road matrix and limited systems of river, rail and air modes (Fabiano, 2013), practically everything in the Amazon depends on river transport (Soares & Vidal Filho, 2014; Patrício & Ferreira Filho, 2015; Feitosa, 2016), especially the most hidden and distant cities from the largest regional centers (Belém and Manaus) and the micro-regional hub cities. It is by rivers that small and medium-sized vessels travel every day, every hour of the day. They carry passengers and cargo simultaneously. Regional traders prefer to transport their products in this way because it is cheaper (Matos, 2016; Dray, Muniz & Taveira, 2017), precisely the medium that, on the other hand, is the cause of death in the region (Soares & Vidal Filho, 2014).

Produced by hand (Soares & Vidal Filho, 2014), they are extremely fragile, considering the maintenance services that are hardly done on a regular, scheduled basis. What helps the continuity of these vessels as preferred vehicles of the Amazon is that regional rivers are perennial practically every month of the year (Patrício & Ferreira Filho, 2015) and the absence of other modes (Dray, Muniz & Taveira, 2017). These environmental conditions, together with cultural traditions, help make this mode of transport the preferred one throughout the region, requiring deep thought on any action on it (Vasconcelos et al., 2010).

Vessels are regional integration vehicles (Feitosa, 2016). They are the ones who pull small communities from just a few residents out of isolation into small, medium and large cities. And it was precisely these vessels that allowed the settlement of almost all regional communities to form on the banks of rivers (Calheiros, 2010). While in other regions are the roads that determine the formation of communities, in the Amazon the determining factor is the river.

And there is an organic relationship between cities and communities. Large centers, such as Manaus and Belém, have practically daily exchanges with the polo cities, such

as Santarém, Parintins, Macapá and others, determined by their attraction (or domination) economic-geographic-political-social (Braga de Moraes & Wilson, 2013). Belém is more related to Macapá than Manaus, which is farther away, while Manaus is more related to Porto Velho. But still, despite the vastness of the territory and its worldwide importance, the logistical knowledge there is still quite limited and unsystematic (Figueiredo & Blanco, 2016).

Teixeira et al. (2017) showed that most of these vessels, on the other hand, do not comply with basic safety measures. It is very common to exceed the limit of load and passengers that can carry, there are no safety equipment, no protection of the motor shaft, which can cause scalping (very common), among many other factors that reduce the level of service that pay. Pires (2014) showed that it is necessary to create a system to evaluate the efficiency of Brazilian ports, specifically for cargo transportation in port facilities. In the case of the Amazon, as cargo and passenger transport are done simultaneously, passengers are often accommodated next to the cargo, this assessment needs to include passenger transport. However, for the assessment system to be designed and executed with validity and reliability, it is necessary to know the elements of the service levels that ports need to make available to their users, notably the vessel commanders, subject of this research.

The theoretical framework that led the empirical surveys and guided their findings is as follows, in relation to the service levels of the Manaus Moderna port: 1) service levels can be assessed from the perspective of user satisfaction in relation to what is provided by the service providers; 2) satisfaction is relative to the performance of the services offered and those not offered, so that the services not offered would be the complement of satisfaction to make it maximum; and 3) it is possible to group the groups by similarities and by supplier.

III. METHODOLOGY

The method used was the survey, which is characterized by the collection of information from a sample of a larger population, with the purpose of generating inferences. The unit of analysis was the commanders of vessels that dock at the port of Manaus Moderna, with level of organizational analysis, taking each vessel as an organization, since they are composed of at least two people with at least one common goal. The perspective of analysis was synchronic, also called transversal, which corresponds to the generation of explanation about a certain aspect of reality, such as a photograph.

3.1 Guiding Questions

To reach the objective of this investigation, two guiding questions were formulated:

- a) What are the existing services at the port of Manaus Moderna so that vessels can operate with the minimum of normality?
- b) What are the missing services in the port of Manaus Moderna so that the vessels can operate with the minimum of normality?

With the answers to these two questions, we proceeded to the process of understanding how they contribute to forming the current level of service offered to boat customers. If satisfaction with the services offered is low, the service level will also be low; If there are many missing services in the port, this will also contribute to the low level of service offered.

3.2 Population and Sample

Surveys and contacts made with vessel commanders' weeks before data collection showed that, on average, approximately 90 vessels land in Manaus Moderna on Fridays and Saturdays. The section of the port considered in this study begins under the Educandos bridge and ends at the demarcation of the Manaus Port, known as Rodway, in a waterfront of approximately 800 meters in length. Along this perimeter there are 4 ferries that serve as berths for the vessels.

Thus, the population of this study was composed of all vessels that were docked in the port, on two alternate weekends (Friday and Saturday), in a total of 90 vessels. It was intended to make a census, seeking to contact all vessels. As many refused or could not respond to the interviews, 49 participants were obtained, which is considered a satisfactory sample.

3.3 Research Subjects

It was defined by the study protocol that the answerers to the questions would be the vessel commanders. Often the ship's commanders are the owners themselves. This procedure was necessary to ensure the validity of the information and data obtained, since these two subjects can identify each service offered or missing at the port and its link with the satisfaction of their vessels' customers. However, we do not neglect the search for understanding the satisfaction of commanders and boats with existing services, nor the contribution of these existing services to their satisfaction of their customers. Is that the theoretical framework says that the service level of the vessels is composed of the satisfaction with the services offered by the boats plus the services offered by the port.

3.4 Data Collection Instrument

Data were collected with the help of a semi-structured interview script. The instrument consisted of three blocks

of questions. The first block contained demographic questions of respondents: age, gender, education, place of birth and working time in river transport. The second block contained explanatory questions, composed of three groups, one concerning the services provided by the Port and the other concerning the services provided by the vessels to its customers. The first group concerned the services that commanders would like to be offered at the port of Manaus Moderna, who should provide those services, and why they would like them to be made available; and the second group was in relation to the services that exist and which cause them satisfaction, especially those who provide these services and the reasons for satisfaction. The third set of questions was about the two main customer services of the vessels that caused them satisfaction and the reasons why the customers were satisfied.

3.5 Data Collection Strategy

Data were collected through semi-structured interviews. The researchers knew precisely what they needed to know but did not know the possible answers. This means, for example, that the researchers were looking for a list of services in the port and a list of those not offered but needed. In the first case, for each service identified by the respondents, they were then asked about their degree of satisfaction with each of them.

For each missing port service, all respondents were asked to identify why that service was needed and who should supply it, ie who should materialize it. For example, for the missing service “Orla” the responsible person suggested for its construction was mostly the Government, while for the missing service “training” the majority responsible was the private initiative. There were services in which the suggestion of responsibility for materialization came from both government and private initiative.

Data were collected on March 30 and 31 and April 6 and 7. These days were chosen due to the dynamics of the port. The vessels start to dock on Wednesdays and sail again between Saturday noon and Sunday. On other days there are boats, but their commanders are almost always out of them, seeking to close transportation deals or doing other chores.

3.6 Data Analysis and Interpretation

Once collected, the data were entered and organized using a spreadsheet. Data that showed no answers, which were blank, were discarded and only their No Response frequencies were computed. The organization consisted of the generation of contingency tables, where, in the left column, the analysis category appears, and in the right columns the simple and percentage frequencies. The same

procedure was used for all questions, so that there was a data processing unit and generation of results.

The use of this technique, quite simple, but adequate to achieve the objectives of this investigation, allows to highlight the most salient, evident findings. Thus, for example, it was highlighted that 26 respondents, which is equivalent to 53% of the total, said they had completed high school as their maximum education. These evidences collaborate, therefore, to interpret the obtained results.

Interpretation is nothing more than explaining what that empirical evidence means. In other words, to interpret is to say what logic explains a given observed behavior. Thus, the scheme used in almost every presentation of empirical evidence (tables) was to describe the results on the evidence and, underneath them, to describe the logic that allows us to understand their behavior.

3.7 Study Limitations

Like any scientific study, it also has limitations, which does not mean that its results are invalid. The first limitation concerns the method: sampling surveys, because they do not consult all the elements of the sample, present error margins that need to be adequately managed. Probably the results achieved by this study would be different from those contained herein, but this difference would be minimal. Thus, the study results cannot be generalized to all Manaus ports, much less to Amazonian ports.

The second limitation concerns the data collection strategy. The ideal would also be to collect data and information from vessels that arrive between Sunday and intermediate days until Thursday and return during this period. Despite being quite small, their participation in the study would also lead to differences in the results achieved. Again, it is likely that these differences were also not significant in relation to the objectives intended by the investigation.

IV. RESULTS AND DISCUSSION

Here are presented the research results, in the following order: first the main characteristics of the sample used to generate the results, their demographic aspects will be described. Following are the missing primary services at the port, which are those that first came to the respondents' minds; then the missing secondary services there, those that came in second position pointed out by the participants. The section concludes by identifying the service items that vessel customers are most satisfied with, from the point of view of vessel commanders.

4.1 Sample Features

The results of this study show that waterway transport practiced in the port of Manaus is the domain of men with

great life experience, which implies admitting considerable knowledge of the challenges and adversities of regional logistics. However, despite great experience of life and regional reality, these commanders and owners have a level of education. Although 53% have completed high school, 39% have only elementary school and 8% have not completed any formal education. These results indicate a serious problem that needs to be addressed that may be one of the contributing factors to aggravate the logistical problems of the region, not to mention accidents that often result in deaths.

It is likely that this same scenario will reproduce itself in the reality of other similar Amazonian localities and become even more cruel in the medium and small cities. In terms of technology and its handling, low education prevents its adoption, either in terms of equipment acquisition and handling, or in terms of social and managerial technologies, as both require some cognitive development and intellectual maturity before they can be properly applied on vessels, taken as organizations.

Negative schooling outcomes are somewhat offset by the great experience that masters and owners have in water transport. Almost two thirds (60%) of respondents have at least 25 years of experience, while 40% of them said they have worked with this logistics mode for over 25 years. Again, the experience of these individuals seems to come into play here, notably the cultural knowledge of the regional river reality, used to carry out the challenge of making the connections between the Amazonian communities as adequately as possible.

The strength of regional knowledge is deepened by the place of birth of respondents: two thirds come from the state of Amazonas, compared to 33% born in other states. Of that 33%, more than half were born somewhere in the Amazon. Because adversities and challenges are very similar within the region, caboclos born in one place do not find it very difficult to adapt in another, so the transfer of knowledge and experience from their place of origin to another is almost imperceptible.

4.2 Missing Primary Services at Port

In accordance with the theoretical framework of this research, it was sought to know which services the port does not currently offer, but which are considered important to increase the satisfaction of the vessel commanders, who are its users. This question has been divided into two possible answers. The services considered primary were those that first came to the respondents' minds and are contained in table 1.

Table 1. Missing primary services at port

What is missing	Freq.	Freq. %	Category
Orla	11	22	Infrastructure
Ticket Sales Venue	8	17	Infrastructure
Parking	8	17	Infrastructure
Expand the port	6	12	Infrastructure
Digital contacts (website and app)	6	12	Infrastructure
Shopping center	5	10	Infrastructure
Health Center	1	2	Infrastructure
Safety	1	2	Infrastructure
Better access to boats	1	2	Infrastructure
Inspection	1	2	Infrastructure
Time disclosure	1	2	Infrastructure
Total	49	100	-

These results are all likely to fall into the infrastructure category. Infrastructure is all physical and administrative support that allows users of a given service to have their satisfaction levels assured or, if they are assured, high. This infrastructure can be subdivided into physical infrastructure (Farias & Brito, 2016; Castro, 2014), which allows logistical operations for respondents of this investigation, and support services (SAFI, 2017), such as security, digital means so that tickets can be traded and also information about the arrival and departure of each vessel and so on.

These needs (considered in this study as first because they were the first to be identified by the respondents), as can be seen from the data contained in table 2, are almost all aimed at vessel customers, except for the “attractive location” purpose. It means making the port of Manaus a tourist spot, therefore not exclusive to the users of the transportation services provided by the respondents of this survey, and “avoiding accidents”, which likewise encompasses the protection of both customers and all those circulating in that area.

Table 2. Purpose of primary needs

Purposes	Freq.	Freq. %	Purposes
Improve service	16	33	Improve service
Attract customers	15	31	Attract customers
Customer Support	8	16	Customer Support
Site attractive	7	14	Site attractive
Customer Safety	2	4	Customer Safety
Avoid accidents	1	2	Avoid accidents
Total	49	100	Total

What these results clearly indicate is the concern with otherness, which involves ethical aspects (Estevam, 2008; Silva, Silva & Gomes, 2014; Bavaresco & Costa, 2011) of ship's commanders. And alterity concerns concern with others, so that when the commanders point out the need for infrastructure in the ports of Manaus City, they have in mind exactly the comfort of their customers so that their satisfaction is raised. These intended satisfactions, therefore, despite coming from what they are lacking today, are complementary to the services provided by vessels.

The data contained in table 3 show who should meet these first needs pointed out by the commanders of vessels using the Manaus Moderna port. It is noteworthy that 45% of the responses focused on partnership between the government, understood as all spheres of public administration, which involves the Navy, for example, and private entrepreneurs.

Table 3. Primary needs supplier

Supplier	Freq.	Freq. %
Government and businessman	22	45
Government	16	33
Businessman	10	20
Navy	1	2
Total	49	100

Although a relevant quantity (35%, considering the 2% of the Navy, which is also a government) suggested only the government and 22% only businessmen, what is noteworthy is the awareness that this large enterprise requires the participation of the spheres. public and private. These results are significant because they show a tendency not only to consider the government as a builder of infrastructure that will be used largely by private initiative, such as the exploitation of cargo and passenger transport services.

4.2 Missing Secondary Services at Port

The needs considered secondary in this investigation were those identified second by the respondents. In psychological terms, they are those that appeared after the first ones, which denotes secondary importance, and are listed in table 4. Again, here, the first infrastructural needs appear, followed by those aimed at improving the operations of vessels, as is the case. the case of training of port personnel and the need to make financial resources available for investments in vessel operations. Some needs appear to be duplicated relative to primary needs because what was a priority for some respondents was secondary for others. Since they needed to identify two needs, it was natural for repetition to happen.

Table 4. Missing secondary port services

What is missing	Freq.	Freq. %	Category
Mall	8	16	Infrastructure
Health Center	6	12	Infrastructure
Ticket Sales Venue	6	12	Infrastructure
Parking	5	10	Infrastructure
Border	4	8	Infrastructure
Website Information	4	8	Infrastructure
Attendant Training	4	8	Operations
River Surveillance	3	6	Infrastructure
Financial incentive	3	6	Investments
Customer servisse	3	6	Operations
Ticket Sales App	2	4	Infrastructure
Banks	1	2	Infrastructure
Total	49	100	-

However, these results indicate several needs for what indirectly seems to be flawed: infrastructure. This varied range of needs ultimately represents the remodeling of the port itself. If almost everything is lacking, it is likely that the degree of satisfaction of ship's commanders with what is offered to them is extremely low, so that they only use such services because no others are available.

Regarding the question that sought to know the purpose of supplying these secondary needs, the results are shown in table 5. It is noted that 82% of the answers are directed to a single target, which are the clients of the vessels. So, what ship masters want, by supplying these secondary needs, is to increase their customers' satisfaction, thereby increasing the level of service their vessels offer them. These improvements would bring customer ease, customer support, attract more customers, and improve customer service.

Table 5. Purpose of secondary needs

Purposes	Freq.	Freq. %
Make it easy for customers	14	28
Customer Support	13	26
Attract customers	12	24
Avoid accidents	3	6
Help in health	3	6
Opportunity to expand business	2	4
Improve service	2	4
Total	49	100

What can be concluded from these results is that respondents are interested in raising the level of service provided, but through investments and improvements in the port of Manaus Moderna, which is the responsibility of the municipal government. However, as many ferries,

which serve as berths, are public concessions, there is also a need for private investment to meet these needs.

Table 6 shows the results regarding the question that sought to know who should meet the needs listed by the respondents. The results further accentuate the perception of primary needs. Here, for secondary needs, 76% consider that investments should be made by the government and only 8% by the private sector. Also noteworthy is the importance of appointing a government-private partnership partner, with only 16% of reference.

Table 6. Secondary needs supplier

Supplier	Freq.	Freq. %
Government	35	72
Government and businessman	8	16
Businessman	4	8
Navy	2	4
Total	49	100

What this research has shown so far is that there is a need, yes, for improvements in the port researched. But these improvements are all made by third parties. Although the interest of the respondents is to raise the level of service they offer their clients, they seem to shirk responsibility for investments, which generates a paradox: while indicating a concern with the other, with otherness, with the client, this concern has as its own benefit the ship's commanders themselves.

4.3 Satisfaction with Existing Port Services

When we tried to find out which services at the port were the most satisfying, the answers obtained for those considered the most important were only one: police station. No other answers were cited. The issue of violence, not only in the area of this research, but throughout the city, although it does not scare the Manaus inhabitants, who seems to have gotten used to it, is noteworthy. Official figures appear to cover only a third of actual occurrences, which are already very high (Alves, 2017).

Table 7 details the reasons for respondents' satisfaction with the deployment of a police station in the port area. The data show that 43% thought the police station had prevented theft, 31% said the bandits were evacuated and 26% said they won safely. The supplier of this service, of course, was the government of the State of Amazonas, through the Secretariat of Public Security.

Table 7. Satisfaction reason

Reasons	Freq.	Freq. %
Prevents theft	21	43
Removed bandits	15	31
Brings security	13	26
Total	49	100

We sought to identify which secondary services were of importance to vessel commanders. The answers obtained are contained in table 8. Many respondents, even though they had been searching for some time, were unable to answer, which explains the high rate of non-response to this question, corresponding to 80% of them. Extracting Navy oversight, the other two are focused on the problems that parking attendants cause. Parking attendants is what the individuals who are willing to store their cars parked in the harbor area are called.

Table 8. Second existing service that causes satisfaction

Satisfying services	Freq.	Freq. %
Registration of parking attendants	2	4
Navy surveillance	2	4
Parking attendant's organization	6	12
No Answer	39	80
Total	49	100

These results clearly indicate that, in practice, there are no services provided to it, either by the public authorities, except for the security provided by the police station and the Navy, nor by the owners of the berths, regarding the second existing services that cause them satisfaction. . This seems to lead to the conclusion that you are not satisfied with existing services, which implies admitting that your services have at least dubious if not low service levels.

Table 9 confirms the irrelevance of these satisfaction with the level of service: not having fights between the flannel and avoiding traffic accidents. Let this be properly understood: since there is nothing to be satisfied with, the least amount of action that seeks to reduce the number of unpleasant things already sounds like satisfaction. And this is what we detected in relation to the respondents' satisfaction with the second supposedly existing second block of services.

Table 9. Reasons for satisfaction

Reasons	Freq.	Freq. %
Avoid fights	8	16
Avoid accidents	2	4
No Answer	39	80
Total	49	100

Table 10 shows that it was the government that, according to the respondents, organized the flannel and thus greatly reduced the problems it caused not only to boat users, but to all those traveling around the harbor area, whether drivers or pedestrians. The fact, as these results show, is that the disciplinary public sector initiative of these people caused respondents satisfaction for lack of other reasons to compare.

Table 10. Needs Suppliers

Suppliers	Freq.	Freq. %
Government	8	16
Navy	2	4
No answer	39	80
Total	49	100

From this point of view, this aspect of port service level, relative to existing services that cause satisfaction, points to the difficulty of finding something there that can be considered satisfactory. The exception, as noted, was the establishment of a nearby police station, which helped solve several problems that had negative impacts on port operations and vessel services. As is an exceptional case given the difficulty of finding a service provided by the port, the result was the unanimity that this is the only service available to it.

4.4 Vessel User Satisfaction

We sought to know the perception of the commanders about the satisfaction of boat users, to know, according to their views, which would be the central points of the level of service they offer their customers. They were also asked to tell us which two services most satisfied their customers with two response options. The answers, considered first, are contained in table 11. The results show parcel delivery services, with 48% of responses, followed by people transport (22%) and sightseeing (20%) as the most satisfying.

Parcel services are the transportation of small size materials such as letters, mail of all kinds, one or two sacks of grain, frozen packets of fish and meat packaged in refrigerators and so on. Because they take up little space and quantity is high, price x quantity leads to an interesting revenue, often much more economically attractive than the transportation of cargo and passengers, as these results indicate here.

Table 11. Services that cause primary satisfaction

Services	Freq.	Freq. %
Orders	22	48
People transport	11	22
Sightseeing	10	20
Fishing boat	4	8
Freight Transport	1	2
Total	49	100

Fishing (8%) and freight (2%) transport services, surprisingly, appear in the last places, especially freight transport, which was thought to be the main reason for satisfaction. Vessels represent the major means of transportation between the Amazonian cities, especially between the big cities for the medium and the smaller

ones, where they work as a socioeconomic hub. These cities are supplied with the services provided by these vessels, since rivers are the roads of the region. Thus, it is surprising that freight is a source of less satisfaction than other services provided.

Table 12 indicates the main reasons that led respondents to point out those services as the most cause of satisfaction. Among these, price comes first, with 54% of the answers obtained, followed by the quality of the service provided, with 28% of the answers, and the service offered to customers, with 18%. These results indicate that the price - quality - service trilogy accounts for 100% of ship customers' satisfaction from the point of view of their commanders.

Table 12. Primary satisfaction reason

Reasons	Freq.	Freq. %
Price	26	54
Quality	14	28
Attendance	9	18
Total	49	100

These results seem to be in tune with the regional socioeconomic reality. Higher-income individuals, when commuting between major cities in the region served by regular air transportation, generally do not use vessels as a regular means of transportation. The same is not true of those who live in smaller cities and where there is no affordable regular air transport, which forces both the largest and the lowest income individuals to use the boats. In addition, as there is relative competition between vessels, price becomes a competitive differential, so it greatly interferes with customer satisfaction at such high intensity.

Table 13 presents the results related to the services considered to be the second with the highest level of satisfaction, also from the perspective of the commanders of river vessels operating in the port. Here again the same system has been repeated: the transport of people is, in fact, the main factor of customer satisfaction of vessels. In second place are parcel services, with 12%, reversing the positions achieved in relation to primary services.

Table 13. Satisfactory secondary services

Services	Freq.	Freq. %
People transport	21	43
Orders	6	12
Food transportation	1	2
Vehicle Transport	1	2
No answer	20	41
Total	49	100

Together, the primary and secondary satisfactions of people transport reach 65% of all responses, while the sum of orders reaches 60%. Moreover, when these two services are added together, they represent 68% of the total satisfaction of the study. It is interesting to note, too, that there are few services offered by vessels, which also explains the high degree of non-response (41%) to this question. What would be happening, therefore, with the material transportation services, the cargoes that supply the Amazonian municipalities that are not served by other modes of transportation?

The answer is that these services, because they are of such low quality, are a reason for constant complaints from customers and cause a lot of conflicts between customer and carrier. This partly explains their low consideration in this study. Another explanation is the appearance of large carriers, such as ferries and larger vessels, that do not dock in the port surveyed.

Table 14. Reasons for secondary satisfactions

Reasons	Freq.	Freq. %
Attendance	14	29
Price	12	24
Quality	3	6
No answer	20	41
Total	49	100

Table 14 presents the reasons for secondary satisfaction. Note again the presence of the price - quality - service trilogy, which represented 59% of the answers obtained, against 41% of non-answers. These results indicate that there is no other reason, from the perspective of the respondents, that explains the satisfaction of their customers. The level of service that the port presents is still unsatisfactory. This conclusion is because the vessel commanders, who are their main users, pointed out a series of missing primary services, all an infrastructural order. This means that the port does not have the necessary supports for vessels to operate normally, which implies admitting that their operations today are poorly performed. Indeed, it seems that this precariousness has been going on for several decades.

There is a lack of parking, shopping center, health center, security, better access to boats, supervision of the competent agencies and many more modern ones, such as information on the operations of vessels, such as arrivals and departures, and acquisition. of tickets and demand for parcel services and cargo transportation.

These necessary improvements, according to what could be deduced from the answers presented by the study participants, aim to provide the minimum amenities for the vessel's clients. Without these minimum conditions, these

customers are unlikely to be fully satisfied. As a result, these customers will find the services provided by the vessels to be inadequate as the port infrastructure is poor. And as the level of service is comprised of port services plus ship services, even if ship commanders raise the level of internal service, maximum satisfaction is still not guaranteed due to the port's infrastructure deficiencies.

To give you an idea, the only service that the port presents and gives you satisfaction, and that was remembered by all survey participants, is the police station. Asked about other services provided, they could only remember the organization of the local parking attendants, which kept bothering the customers and passers-by of the place, which generated constant conflicts there. The numerous missing services, according to the ship's commanders, should be supplied with funding and joint investment from the government and private entrepreneurs, which is already an advance on the perception that the government should provide all these services.

Finally, the services that the customers of the boats demand and that gives them the most satisfaction are the ordering and transportation of passengers. Contrary to what one might imagine, these services are the ones that bring the most financial benefits to vessels, rather than the transportation of cargo, even though it is known that these inland waterways are responsible for supplying inland cities, as well as for distribution. of your products. From the results of this study, the transportation of cargo on these vessels seems to have felt the impact of competition from vessels specializing in cargo transportation, such as ferry ferries.

V. CONCLUSION

This article showed that the level of logistic service presented by the port of Manaus Moderna cannot be considered satisfactory, according to the view of the vessel commanders who dock there. According to them, several essential infrastructure services are missing, ranging from the physical security of customers to a safer way to access vessels. The port also lacks banking, commercial, health, information, digital and numerous other services, considered by the research participants as fundamental for the high level of service of its operations. Therefore, the study showed that the service level of Amazonian river vessels is composed of the services rendered internally by the vessels, such as the transportation of parcels, cargo and people, plus the services provided by the ports. The total service level would be the sum of these two levels, internal and external to vessels.

These finds indicate the need for vessel owners and commanders, as well as their customers, to require investments from governments and river transport entrepreneurs in the acquisition of the basic infrastructure necessary for the proper operations of this logistics mode. Without these investments, the level of service is likely to continue to be postponed, as seems to have been done for a few decades.

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