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Study of Fishermen's Satisfaction Level With E-Logbook Services at the Ocean Fishing Port (OFP) Bitung, North Sulawesi

Erna[1*], Mukhlisa A Ghaffar[2], Nurfadillah[3]
Politeknik Pertanian Negeri Pangkajene Kepulauan
Corresponding Author: Erna ernafattah0@gmail.com

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A B S T R A C T

Bitung Ocean Fishing Port is one of the type A ports in Indonesia. Some of the services provided are available at the Syahbandar OFP Bitung office. The quality of service should be a reference for other types of fishing ports. The purpose of this study is to analyze the level of fishermen's satisfaction and service attributes that need to be improved in the e-logbook service at the Ocean Fishing Port (OFP) Bitung, North Sulawesi. This research was conducted by taking data through surveys directly with the questionnaire distribution method. The analysis methods used are Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA). The results of the study obtained, for the value of the level of agent satisfaction with fishing e-logbook services include 5 variables, namely reliability 81.32%, responsiveness 84.44%, certainty 83.23%, empathy 89.04%, physical facilities 86.24% with a total overall CSI value of 84.85%. This value shows that fishermen have a perception that the service of the e logbook is very satisfying. Meanwhile, the service attribute a that must be improved in performance is problem responsiveness. Thus, OFP Bitung will be able to provide the best service according to the expectations of users of the e logbook service

INTRODUCTION

In essence, fishing ports are the main base of capture fisheries industry activities that must ensure the success of these activities. Fishing ports act as terminals that connect business activities at sea and on land into a high-efficiency business system (Lubis, 2000). Service quality according to (J. Supranto, 2001) is an obligation that can be given by service providers and done well. Service level is a qualitative measure that describes the operational performance of a port, especially the integrated service office at OFP Bitung which has an important role for the issuance of ship documents before fishing operations, so that the level of service is highly prioritized.

Based on the gap analysis of the application of e-logbook technology in Indonesia, technologically, the e-logbook developed is ready to be used in the field of fish resource management in terms of hardware, software, data communication (satellite and GSM / GPRS), and system integrators. The recommendations for implementing e-logbook strategies are as follows:

(i) The application of the use of e-logbooks is carried out at fishing ports with a high level of compliance and on fishing vessels that already use VMS transmitters
(ii) Socialization and training on the use of e-logbooks to fishermen intensively
(iii) Strict sanctions for violations of implementation

Based on the above, research related to satisfaction with e-logbook services is carried out which is expected to be an evaluation material for future improvements. This study aims to analyze the level of fishermen's satisfaction and service attributes that need to be improved in the e-logbook service at the Ocean Fishing Port (OFP) Bitung, North Sulawesi.

LITERATUR REVIEW

One way to obtain accurate fishing data is to use the fishing logbook (LBPI), which is a written daily report of the ship skipper regarding fishing activities in the State Fisheries Management Area of the Republic of Indonesia (WPPNRI). Logbook is a landing declaration from the Skipper, or a statement letter from the Skipper regarding fishing activities for fish resources (catches) in the lait to be landed at the fishing port. According to the Regulation of the Indonesian Minister of Maritime Affairs and Fisheries Number 48/PERMENKP/2014, that every Indonesian-flagged fishing vessel measuring over 5 GT operating in the State Fisheries Management Area of the Republic of Indonesia (WPPNRI) and every Indonesian-flagged fishing vessel operating on the high seas is required to have a fishing logbook.

Using Logbooks manually faces a number of obstacles. Some of these obstacles include: the amount of data that must be filled in, writing that is difficult to read, paper that is easily wet and torn, and confidentiality problems of the location of the arrest that cause the information in the Logbook not to be filled in correctly. In addition, until now the implementation of the Logbook still does not provide benefits that are directly felt by fishermen, so they do not feel obliged to fill in catch information in the established Logbook (Marzuki 2011; Marzuki and Nugroho 2013). To anticipate these obstacles, in October 2018, the Directorate General of Capture Fisheries (DJPT) has made a breakthrough by

implementing a fishing e-logbook. Fishing E-Logbook, which is then simply called e-Logbook is a hardware device that has the function of inputting fish catch data electronically. The e-Logbook system is divided into three parts, namely data sources, data senders, and data recipients (Nugroho, Sufyan, and Wiadnyana 2017).

According to Basri (2011), quadrant analysis or Importance Performance Analysis (IPA) is a descriptive analysis technique, introduced by Martilla and James (1977), to identify what important performance factors must be shown by an organization in meeting the satisfaction of their service users (consumers). Analysis using IPA is carried out with the following stages:

1. Determination of weights (Likert)
2. Determine the degree of suitability; In this study, two (2) variables will be used represented by X as the level of PPS Bitung performance and Y as the level of customer interest, in this case stakeholders. These two variables are used for the formula:

$$TK_i = \frac{X_i}{Y_i} \, x \, 100\%$$

where:

TKI: the degree of conformity of respondents to attributes;
Xi: PPS Bitung performance appraisal score;
Yi: customer importance assessment score.

METHODOLOGY

The method used is a descriptive method with case studies. The descriptive method is used to collect data regarding e-logbook services in the Port environment. Case studies are used to analyze the level of fishermen's satisfaction with e-logbook services. The research was conducted at the Ocean Fishing Port (OFP) Bitung, North Sulawesi Province. Data collection was carried out from January 18 to March 20, 2021.

Fishermen's satisfaction includes efforts to meet consumer expectations. Efforts to improve service quality in order to achieve customer satisfaction are carried out by knowing customer characteristics and service quality attributes that have been carried out by city officials. How to find out the attributes of service quality is carried out by the method of developing dimensions of service quality. According to Rangkuti (2006), basically several types of services that provide customer satisfaction have several attributes, namely Reliability, Responsiviness, Assurance, Empathy and Physical Evidence (Tangible). After the attributes are obtained, then the relationship is sought between the level of customer satisfaction with the service quality attribute with the level of importance of each service quality attribute.

Fishermen responding to the analyzed attributes through a comparison of importance level and performance level will result in a level of satisfaction. Data obtained by conducting interviews and filling out questionnaires, then will be collected and processed with statistical formulas using Microsoft Excel and SPSS programs. The analysis used to determine the overall level of customer satisfaction is used Customer Satisfaction Index (CSI).

a) Mean Importance Score (MIS). This value is derived from the average importance of each attribute, it can be calculated by the formula:

$$MIS = \frac{Amount\ of\ importance\ value}{n}$$

b) Mean Satisfaction Score (MSS). This value is derived from the average performance of each attribute, it can be calculated by the formula:

$$MSS = \frac{Number\ of\ performance\ values}{n}$$

c) Calculating Weight Factors (WF). This value is derived from MIS divided by the overall MIS attribute, calculated as follows:

$$WF = \frac{MIS\ values}{Total\ MIS}\ x\ 100\%$$

d) Weight Score (WS). This value is known from the multiplication between the WF of each attribute and the MSS.

$$WS = WF\ x\ MSS$$

e) Customer Satisfaction Index (CSI)

$$CSI = \frac{Total\ WS}{5}\ x\ 100\%$$

To determine the position of each attribute, the calculation of Important Performance Analysis (IPA) is used is the average value of each attribute with the following formulation:

$$\bar{X} = \frac{\sum x_i}{n} \qquad \text{dan} \qquad \bar{Y} = \frac{\sum y_i}{n}$$

Where:

$\bar{X}$ = Average score of perception
$\bar{Y}$ = Average score of expectations
n = Number of Respondents

RESULTS AND DISCUSSION

Customer Satisfaction Index (CSI) Analysis

To find out the quality of service in the field of e-logbook at OFP Bitung, the author uses the Customer Satisfaction Index (CSI) method. CSI analysis is a method used to determine the level of satisfaction of service users as a whole by considering the level of importance / expectations of attributes that have been set in certain fields such as the field of fishing e-logbooks (Wijaya, 2017). CSI is used in a service analysis as a benchmark for the level of service user satisfaction to find out how much performance is carried out in accordance with the expectations desired by service users, in this case OFP Bitung fishermen. Service must be based on service guidelines that contain service quality attributes that must be met to achieve satisfactory service quality.

CSI analysis has 5 variables consisting of 20 attribute points. These variables include Reliability, Responsiviness, Assurance, Empathy, and Physical Facilities.

The results of the CSI analysis in the table below show that the higher the value obtained, this illustrates the level of performance or expectations in accordance with what is carried out in the field and its implementation. After analyzing the total CSI calculation, it was found that the CSI value resulting from this study was 84.85%. This shows that the agent's satisfaction with services in the field of Fishing e-logbook is categorized as Very Good.

Table 1. CSI Analysis Results in the Field of Fishing e-logbook

Variable	Attribute Statement	Performance Level Number MSS of Value		Expectancy Level Number MIS of Value	WF	WS
Reliability A	1. Friendly and helpful service 2. Working hours on time 3. Undifferentiated agents 4. Fast and precise service	125 98 134 127	4.17 3.27 4.47 4.23	134 4.47 130 4.33 144 4.80 132 4.40	4.99 4.84 5.36 4.91	20.78 15.80 23.94 20.80
Response B	1. Respond to problems 2. Respond to complaints 3. Quick response 4. Easy to understand information	125 111 133 132	4.17 3.70 4.43 4.40	142 4.73 131 4.37 134 4.47 136 4.53	5.28 4.88 4.99 5.06	22.02 18.04 22.11 22.27
Certainty C	1. Trust in agents 2. Answer questions 3. Knowledge and proficiency 4. Effective communication	124 127 125 131	4.13 4.23 4.17 4.37	129 4.30 125 4.17 134 4.47 141 4.70	4.80 4.65 4.99 5.25	19.84 19.69 20.78 22.91
Empathy D	1. Understand needs 2. Pay attention 3. Prioritizing common interests 4. Responsible for safety and comfort	123 134 136 141	4.10 4.47 4.53 4.70	132 4.40 129 4.30 133 4.43 143 4.77	4.91 4.80 4.95 5.32	20.14 21.44 22.44 25.01
Physical Facilities E	1. Neat and professional 2. Modern equipment 3. Environmental cleanliness 4. Good facilities	129 117 132 138	4.30 4.90 4.40 4.60	130 4.33 130 4.33 138 4.60 140 4.67	4.84 4.84 5.14 5.21	20.80 18.87 22.60 23.97
Total Nilai WT						424.26
Nilai CSI						84.85 %

Source: Primary Data After Processing 2021.

Based on CSI analysis data from the Reliability variable, a value of 81.32% (Very Good) was obtained. This variable has a significant effect on customer satisfaction. The variable Responsiviness obtained a value of 84.44% (Very

Good). This variable is a willingness to help and provide fast and appropriate service to customers with clear information delivery. The variable Certainty / Assurance (Assurance) obtained a value of 83.23% (Very Good). This variable is the knowledge possessed by the service provider, politeness during service, skills in providing information, skills in providing security and the ability to instill trust in service users. The Empathy variable obtained a value of 89.04% (Very Good). This variable is the ability / advantage of the agency carried out by the service provider including sensitivity and needs to service users and understanding specific needs. The Physical Facility (Tangible) variable obtained a value of 84.85% (Very Good). This variable can only be measured physically, so the physical aspect becomes important as a measure of service. Good physical evidence will affect the perception of service users.

Performance Level Analysis of Service Satisfaction and Interest Expectations

Table 2. Results of Performance Level Analysis and Service Expectation Level in the Field of Fishing E-Logbook

Variabee	Statement Attributes	Compatibility Level (TKI) (%)	Satisfaction Value (Xi)	Value of Importance (Yi)
Reliability A	1. Friendly and helpful service	93.28	4.17	4.47
	2. Working hours on time	75.38	3.27	4.33
	3. Undifferentiated agents	93.05	4.47	4.80
	4. Fast and precise service	96.21	4.23	4.40
Response B	1. Respond to problems	88.02	4.17	4.73
	2. Respond to complaints	84.73	3.70	4.37
	3. Quick response	99.25	4.43	4.47
	4. Easy to understand information	97.05	4.40	4.53
Certainty C	1. Trust in agents	96.12	4.13	4.30
	2. Answer questions	101.60	4.23	4.17
	3. Knowledge and proficiency	93.28	4.17	4.47
	4. Effective communication	92.90	4.37	4.70
Empathy D	1. Understand needs	93.18	4.10	4.40
	2. Pay attention	103.87	4.47	4.30
	3. Prioritizing common interests	102.25	4.53	4.43
	4. Responsible for safety and comfort	98.60	4.70	4.77
Physical Facilities E	1. Neat and professional	99.23	4.30	4.33
	2. Modern equipment	90.00	3.90	4.33
	3. Environmental cleanliness	95.65	4.40	4.60
	4. Good facilities	98.57	4.60	4.67
	Average	94.61	4.24	4.48

Source: Primary Data After Processing 2021.

Fishing using Importance Performance Analysis (IPA) analysis. The Importance Performance Analysis (IPA) value is the total performance level score and importance of 5 variables, where the level of suitability of each variable can be found. The level of conformity is obtained from the results of a comparison between the total score of each performance level statement indicator and the level of importance.

In the following table, you can see the resulting TKI number, which is 94.61 which explains that the relationship between the level of performance and the level of expectation has a very high suitability. Conformity levels are used to

determine Point X (Performance Level) and Point Y (Expectation Level) on a Cartesian Diagram. Based on the Table shows the X value is 4.24 and and the Y value is 4.48 for the Fishing e-logbook field service.

Cartesian Diagram Service E-Logbook

Cartesian diagram is a coordinate system used to put points on the depiction of objects based on the entry of the value of the X-axis segment and the value of the Y-axis segment where this meeting point of the X-axis value and the Y-axis coordinate point is formed.

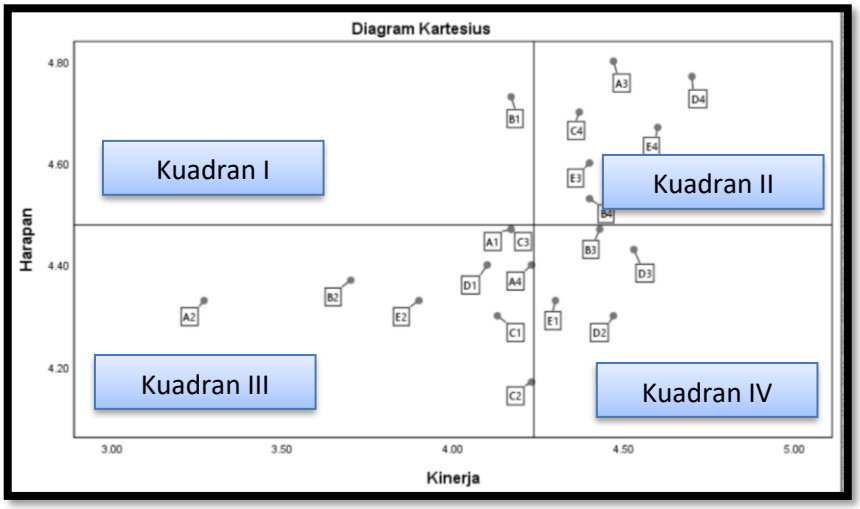

Figure 1 Cartesian Diagram (Primary Data That Has Been Processed E-Logbook Field Using SPSS, 2021)

Presentation of attributes in quadrants based on the level of conformity of the highest-lowest value so as to facilitate development priorities.

1. Quadrant I (Top Priority)
   a. Problem Response (B1)
      Judging from the cartesian diagram, there is 1 attribute in this quadrant, namely Problem Response (B1). This attribute is a top priority for the e-logbook service and agents consider this attribute important but not what the agent expects. The attributes in this quadrant are positions that have high importance and low performance. Attributes in this quadrant have a high level of importance but respondents rated their performance as still low. Thus causing dissatisfaction of service users, in this case OFP Bitung fishermen. The factor causing this to happen is because service personnel still do not prioritize this so that it is not in accordance with the desired expectations.
      Therefore, the port must immediately make performance improvements related to these attributes so that performance on these attributes can provide satisfaction to service users in accordance with expectations.
2. Quadrant II (Maintain Achievement)
   a. Responsible for Safety and Comfort (D4)
   b. Good Facility Arrangement (E4)
   c. Easy to Understand Information (B4)
   d. Environmental Cleanliness (E3)

e. Undifferentiated Agent (A3)
f. Effective Communication (C4)

The cartesian diagram shows that there are 5 attributes located in the square II. The attributes located in this quadrant are important attributes and it is expected that their performance will be satisfactory. This shows the quality or performance of the e-logbook service in accordance with the level of expectations that service users want. However, this attribute must be maintained and slowly improved to match the expectations of service users and the assessment of service interests. To realize this, the port is obliged to ensure that the performance of the agency can continue to maintain the achievements that have been achieved. The attributes in this quadrant are an advantage possessed by OFP Bitung.

3. Quadrant III (Low Priority)
   a. Able to Answer Questions (C2)
   b. Fast and Precise Service (A4)
   c. Trust in Agent (C1)
   d. Knowledge and Skills (C3)
   e. Friendly and Helpful Service (A1)
   f. Understanding Agent Needs (D1)
   g. Modern Equipment (E2)
   h. Complaint Response (B2)
   i. On Time Working Hours (A2)

   The cartesian diagram shows that the 9 Attributes located in quadrant III therefore have a low level of actual performance, while being considered unnecessary to prioritize or pay too much attention to these factors. Attributes in this quadrant have a low level of importance according to respondents but their performance is rated very good. This quadrant is an attribute position that has low performance fan low importance.

   Attributes in this quadrant are considered ordinary so it does not matter if the performance in this quadrant is not improved because this has very little effect on the benefits felt by service users is considered ordinary.

4. Quadrant IV (Excessive)
   a. Paying Attention (D2)
   b. Prioritizing Common Interests (D3)
   c. Quick Response (B3)
   d. Neat and Professional (E1)

   The attributes located in this quadrant are considered satisfactory performance but are not very important. Attributes in this quadrant are considered by service users to have a relatively low level of importance but provide satisfactory performance provided by the port. Attributes located in this quadrant can cover the shortcomings in quadrants whose performance has not been good. Management needs to allocate resources related to these attributes to other attributes that have higher priority and need improvement. Attributes that are in this quadrant have a low level of importance so they are considered excessive.

CONCLUSION

The level of fishermen's satisfaction with e-logbook services at PPS Bitung based on the Customer Satisfaction Index (CSI) Method obtained a satisfaction assessment of the Reliability Variable of 81.32% (Very Good), Responsiviness Variable of 84.44% (Very Good), Certainty / Assurance Variable (Assurance) of 83.23%, (Very Good), Empathy Variable (Empathy) of 89.04% (Very Good), Physical Facility Variable (Tangible) of 86.24% (Very Good). The satisfaction assessment of all variables obtained a value of 84.85% shows that this service is (Very Good) on the quality of performance and as expected.

Service attributes that must be improved in the field of e-logbook based on the results of the Importance Performance Analysis (IPA) analysis are in quadrant I, namely problem response to understand and meet the needs of service users.

REFERENCES

Aryani D, Rosinta F. 2010. Pengaruh Kualitas Layanan terhadap Kepuasan Pelanggan dalam Membentuk Loyalitas Pelanggan. Jurnal Administrasi dan Organisasi. 17(2): 114-126.

Diniah, Sobari MP, Seftian D. 2012. Pelayanan Pelabuhan Perikanan Nusantara (PPN) terhadap Kebutuhan Operasi Penangkapan Ikan. Jurnal Kebijakan Sosial Ekonomi Kelautan dan Perikanan. 2(1): 41- 49.

Direktorat Jenderal Perikanan. 1994. Petunjuk Teknis Pengelolaan Pelabuhan Perikanan. Jakarta: Direktorat Bina Prasarana.

Guswanto B, Gumilar I, Hamdani H. 2012. Analisis Indeks Kinerja Pengelola dan Indeks Kepuasan Pengguna di Pelabuhan Perikanan Samudera Nizam Zachman Jakarta. Jurnal Perikanan dan Kelautan. 3(4): 151-163.

Hadiyati E. 2010. Analisis Kualitas Pelayanan dan Pengaruhnya terhadap Loyalitas Pelanggan. Jurnal Manajemen Fakultas Ekonomi Universitas Jambi. 2(2): 81-90.

Handajani M, Janto Y. 2015. Tingkat Kepuasan Konsumen terhadap Pelayanan Bongkar Muat Barang pada Terminal Peti Kemas Semarang. Jurnal Transportasi. 15(1): 21-30.

KKP. 2018. *From Sosialisasi E-logbook di PPN Ternate*: Berita Negara Republik Indonesia tahun 2018. Direktorat Jenderal Perikanan Tangkap. Jakarta.

KKP. 2012. *Peraturan Menteri Kelautan dan Perikanan Republik Indonesia. No. PER.08/MEN/2012. Tentang Kepelabuhanan Perikanan*. Berita Negara Republik Indonesia Tahun 2012. Kementrian Kelautan dan Perikanan Indonesia. Jakarta.

Lubis E, Pane AB, Muninggar R, Hamzah A. 2012. Besaran Kerugian Nelayan dalam Pemasaran Hasil Tangkapan: Kasus Perikanan Nusantara Pelabuhanratu. Maspari Juornal. 1(2): 159-167.

Lubis E. 2011. Kajian Peran Strategis Pelabuhan Perikanan terhadap Pengembangan Perikanan Laut. Akuatik Jurnal Sumberdaya Perairan. 5(2): 1-7.

Lubis, 2000. *Pengantar Pelabuhan Perikanan.* Fakultas Perikanan dan ilmu Kelautan. Institut Pertanian Negeri Bogor. Bogor.

Martilla JA, James JC. 1977. Importance Performance Analysis. Journal of Marketing. 41:77-79.

Nasir H, Rosyid A, Wijayanto D. 2012. Analisis Kinerja Pengelola Pelabuhan Perikanan Nusantara Pekalongan, Jawa Tengah. Journal of Fisheries Resources Utilization Management and Technology. 1(1): 32- 45.

Ngamel YA, Lubis E, Pane AB, Solihin I. 2013. Kinerja Operasional Pelabuhan Perikanan Nusantara Tual. Jurnal Teknologi Perikanan dan Kelautan. 4(2): 155-172.

Parasuraman A, Zeithaml VA, Berry LL. 1985. A Conceptual Model of Service Quality and its Implications for Future Research. Journal of Marketing. 49(4): 41-50.

Pohandry A, Sidarto, Winarni. 2013. Analisis Tingkat Kepuasan Pelanggan dengan Menggunakan Metode Customer Satisfaction Index dan Importance Performance Analysis Serta Service Quality. Jurnal Rekavasi. 1(1): 21-29.

Rangkuti, 2006. *Teknik Mengukur dan Strategi Meningkatkan Kepuasan Pelanggan.* Jakarta : PT. Gramedia Pustaka Utama.

Soamole B, Bendiktus S. 2013. Analisis Presepsi Penumpang Terhadap Kualitas Pelayanan Angkutan Laut di Pelabuhan Regional Sanana Kab. Kepulauan Sula, Prop. Maluku Utara. Jurnal Teknik Sipil. 12(3): 201-209.

Supranto, J. 2001. *Pengukuran Tingkat Kepuasan Pelanggan Untuk Menaikkan Pangsa Pasar*. Jakarta: Rineka Cipta.

Suwardi. 2011. Menuju Kepuasan Pelanggan Melalui Penciptaan Kualitas Pelayanan. Ragam Jurnal Pengembangan Humaniora. 11(1): 51-58.