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The Needs Analysis of Luggage Handling System for Passenger Ferries at Jetty Kuala Perlis and Pulau Langkawi

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***Abstract*— This study analyses the needs of luggage handling system for passenger ferries at both Kuala Perlis and Pulau Langkawi jetty. Both Kuala Perlis and Pulau Langkawi jetties currently adopt a conventional luggage handling system where passengers have to carry their own luggage or rent trolley to convey their possession from jetty to ferry checkpoint. The current practice is less reliable, time consuming and seems to burden ferry passengers. This study aims to identify a need, from customers' view, to implement a new luggage handling system at the respective jetties. The new system would consist of the conveyor layout (from jetty to ferry), conveyor types and system, techno-economic aspects which will benefit both the passengers and ferry operators. A set of questionnaires was developed based on American Customer Satisfaction Index (ACSI) model which comprises Customer Expectation (CE), Perceived Quality (PQ) and Perceived Value (PV) as drivers of Customer Satisfaction (CS). The survey is distributed to a total number of 150 respondents who patronise the Kuah (Pulau Langkawi) and Kuala Perlis jetty. The data is analysed by using Statistical Package for Social Sciences (SPSS). The results indicate that there is a need for a new luggage handling system at the jetty.**

***Keywords*—** *ACSI model, customer satisfaction, conventional luggage handling practice*

1. Introduction

Baggage handling is one of services available at a jetty. It is corresponding to baggage handling on board ferry vessel. A systematic baggage handling management is very important as it give major impact on customer satisfaction. Baggage handling services at jetty involve loading and unloading of passengers' luggage into and out of the vessel. Baggage handling system can be categorized into two, namely conventional and automated baggage handling system. Conventional involves a lot of labour works while an automated baggage handling system mostly uses conveyor belt to move passengers' luggage while loading and unloading processes.

A modern automated baggage handling system is proven to be more effective in managing passengers' luggage. It is dominantly used at airports for its accurate and efficient services and reduces baggage lost and damage. However, based on on-site observations and survey, this system is not very popular at sea jetty and terminal. Furthermore, Ferry and jetty operators prefer to implement conventional baggage handling system for its cheaper cost. Some expressed concerns that conveyor belt system might be inflexible and non-user friendly.

In addressing the above issues, the research was carried out with the following objectives:

I. To examine the relationship between luggage handling practice in jetty and customer satisfaction.

II. To prove whether there is a need to implement a new luggage handling system at Kuala Kuah and Kuala Perlis Jetty.

III. To propose a luggage handling system (conveyor system) inclusive of its techno-economic aspects that can benefit both passengers and ferry operators.

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Thus, this paper will investigate customer satisfaction towards current baggage handling practices at the specific jetty and propose whether there is a need to implement a new modern baggage handling system at the respective jetties.

2. Literature Review

Customer satisfaction and customer loyalty

In business practice nowadays, customer satisfaction is considered as one of the key elements to nurture customer loyalty to a product/service and/or a provider, which in turn affects a firm's profitability and economic performance [1]. It is agreed by both management practitioners and academics that customer satisfaction is the backbone of the success of an organization. Conducting a research on customer satisfaction, while consuming monies and lot of effort is very important to retain existing customers in an organization. It is widely understood that it is far less costly to keep existing customers than it is to wind up new ones [2].

In general, customer satisfaction depends on the product's perceived performance relative to a buyer's expectations. If the performance falls short, the customers will probably feel dissatisfied with the products or services. On the other hand, if the product or service performance matches or exceeds the customer's expectation, customers will be satisfied or maybe delighted with what they had received [3].

Satisfied customers can bring lot of other advantages for the services providers as a ripple effect including loyalty to service provider, engagement in positive word-of-mouth promotion and paying premium prices [4].

Customer satisfaction and service quality

Customer satisfaction and service quality is closely related with each other. A gradual improvement of quality in service is proven succeeded to satisfy consumers. Eboli and Mazulla (2007) make a clear presentation on how an improvement of the supplied service quality can satisfy the consumer and attract further user in public transportation [5].

Customer satisfaction in public transportation

Public transportation is an option provided by the government or public authorities as an alternative to reduce traffic congestion. It is also a mean to reduce the threat of high consumption of non-renewable resource by private motorization towards the quality of environment. Sometimes, public transportation system like ferry is provided to help the citizens crossing an area that cannot be done by using normal means of transportation. However, public transportations are often associated with passengers' or travellers' dissatisfaction. It is said that customers evaluate public transport based on certain aspects such as reliability, frequency, travel time and fare level, comfort and cleanliness, network coverage/ distance to stop and safety [6] and these aspects seldom fulfil the user's requirements.

3. Methodology

ACSI Model

This study adopts American Customer Satisfaction Index (ACSI) model to measure customers' satisfaction with service quality of baggage handling practices at Kuala Kuah Jetty. This model was first used as an alternative to indicate the satisfaction of consumer across United States economy. It was later then adopted by researchers as a mean to measure customers' satisfaction on various field including in service providing sector. Angelova and Zekiri(2011) developed a structured questionnaire based on ACSI model to determine customers' satisfaction with service quality delivery in the Macedonian mobile telecommunication market [7].

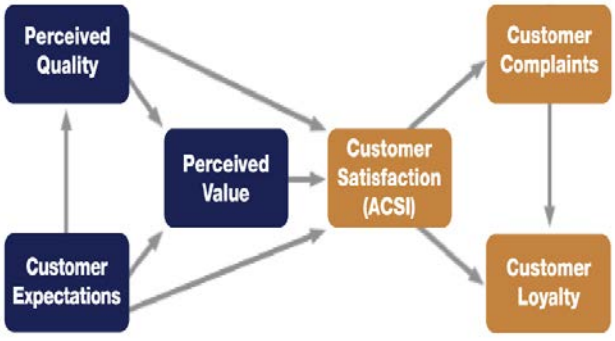

Table-1. ACSI model developed by Angelova and Zekiri (2011)

Spearman Rank Correlation Analysis

In order to identify the relationship of customer satisfaction and service quality which represents baggage handling system, the study uses Spearman rank correlation. It is a non-parametric test which is used to measure the degree of association between two variables. The computations for the rank correlation coefficient are simpler than those for the Pearson coefficient and involve ranking each set of data. The difference in ranks is found, and p is computed by using these differences. If both sets of data have the same ranks, p will be +1. If the sets of data are ranked in exactly the opposite way, p will be -1. If there is no relationship between the rankings, p will be near 0 (Bluman, 2004).

$$\rho = 1 - \frac{6\sum d_i^2}{n(n^2-1)}$$

Figure 1. Formula for computing the Spearman rank correlation coefficient

4. Data Collection

Data and information were collected via distribution of questionnaire, personal interview and observation. A set of questionnaire was developed based on ACSI model. A total number of 150 respondents were randomly chosen in the survey conducted in Kuah and Kuala Perlis Jetty.

Analysis of Service Quality

In order to have a better picture of the data collected, a set of table which consists of mean and standard deviation for every question in service quality section has been constructed. Mean value from the table above shows the average level of passengers' evaluation. The average mean value for Customer Expectation indicates that passengers' have a high expectation towards the luggage handling service at the jetty; they expect smooth procedures, effective luggage handling service and kind staff (see Table 2 below).

Table-2. Analysis of service quality

		Mean Value	Average Mean Value	Standard Deviation
Customer Expecta-tion	SC1	6.84	6.8267	2.75799
	SC2	6.88		2.83304
	SC3	6.76		2.59953
Perceived Quality	SC4	6.24	6.24	2.77423
	SC5	6.46		2.52506
	SC6	6.02		2.86777
Perceived Value	SC7	5.9	6.04	2.82301
	SC8	6.18		2.84059
Customer Satisfac-tion	SC9	6.12	6.19	2.78216
	SC10	6.26		2.81258

The jetty operator was successful in pleasing their customers in term of quality as the average mean value for Perceived Quality indicates that the passengers were pleased with the services provided by the jetty operator. The same goes to the Perceived Value as the average mean also shows that most passengers felt that they had received services commensurate to price that they had paid. However, the mean value of SC7 (5.9) reveals that the passengers were not sure if they were comfortable of the current luggage handling system.

The average mean value of Customer Satisfaction demonstrates that most passengers were satisfied with the current luggage handling system. The standard deviation in the table above measures the dispersion of the data set collected. A small standard deviation means that the values in statistical data set are close to the mean of the data set, while an average or large standard deviation shows that the values in the data set are farther away from the mean or average value.

5. Analysis of Customers' Satisfaction and Needs for New Luggage Handling System

The analysis found that 35% of the passengers were satisfied with the current luggage handling practices by the operator. This in fact is different from what has been expected by the researcher. From researcher's observation this might happen due to the fact that the survey was conducted on a low season where the number of tourist was not at its peak level and the jetty was not crowded as it is

on a peak season. However, the findings from the service quality section previously reveal that the passengers were not sure if they were comfortable with the current luggage handling system. As a result, in this section, even though the majority were satisfied with current luggage handling system, the survey suggested a need to implement new luggage handling system at Kuala Kuah jetty. As anticipated from the survey, majority of passengers looked forward to the implementation of a new luggage handling system. About 88% of the passengers suggested that the operator should transform their luggage handling practices due to various reasons. The 150 respondents who participated in the study were asked on the idea of baggage handling system.

Table 3: Total Cost for the system

Description	Calculation
A) Approximate no of passengers yearly according to Jabatan Laut Malaysia.	700,000 person.
B) Total additional cost incurred to ticket fee.	700,000 x RM 3.00 = RM 2,100,000.00 X 50% (margin) = RM 1,050,000.00
C) Costing for conveyor belt system	RM 413,122.50 (Both Jetty)
D) Renovation Cost for both Jetty	RM 219,000.00
E) Wages for additional worker	RM1500.00 x 7 persons x 12 moths = RM 126,000.00 (Both Jetty)
F) Others: cctv, box, trolley, luggage's sticker	Estimate: RM 20,000.00
G) Yearly profit/Breakeven = B – (C+D+E+F)	RM 1,050,000.00 – (RM 413,122.50+ RM219,000.00 + RM 126,000.00+ RM 20,000.00) **= RM 217,877.50**

and its proposed additional costs at the jetties. 61% of them agreed with the idea. Furthermore, 44% of them also agreed with the additional cost of RM 3.00 per person.

Based on table 3, ferry operators are able to generate as much as RM 217,877.50 per year after the application of the new conveyor system on top of the additional RM 3.00 to the passengers ticket price. This shows that the proposed conveyor system is relevant to both passengers and jetty operators. Furthermore, this new system is able to provide better care and management of passengers' luggage, thus improving passengers' satisfaction and travel experience.

6. Conclusion

Even though at the moment it seems like the operator has been successful at satisfying their customers, the company has to strive for better service. This study has proven that there is actually a need to transform the existing luggage handling practice to a more reliable and effective system. Though at first it might cost the operators, they should consider the profit and the priceless word-of-mouth marketing to be gained from the satisfied customers.

It has already been proven by previous businesses and studies that customer satisfaction and loyalty play crucial roles in today's competitive market. For that, ferry and jetty operators should cooperate and work with each other to compete with their rival especially airlines services providers. For the record, ferry service providers have already won in terms of the lower cost charged for the service provided, but looking to nowadays economic trend it should not be long until the airlines service providers can compete in this price competition. In order to stay in the game, the operators need to offer more than just a lower price since nowadays customers are no longer price sensitive as long as they can get a better service.

7. Recommendations

For jetty operator

It is recommended that both Kuala Perlis and Kuala Kuah Jetty operators to consider conveyor system to replace their current conventional practice as in figure 2. Based on the proposed layout and techno-economics, this system provides additional profits in a long run. Moreover, the efficiency that comes together with the system will surely be appreciated.

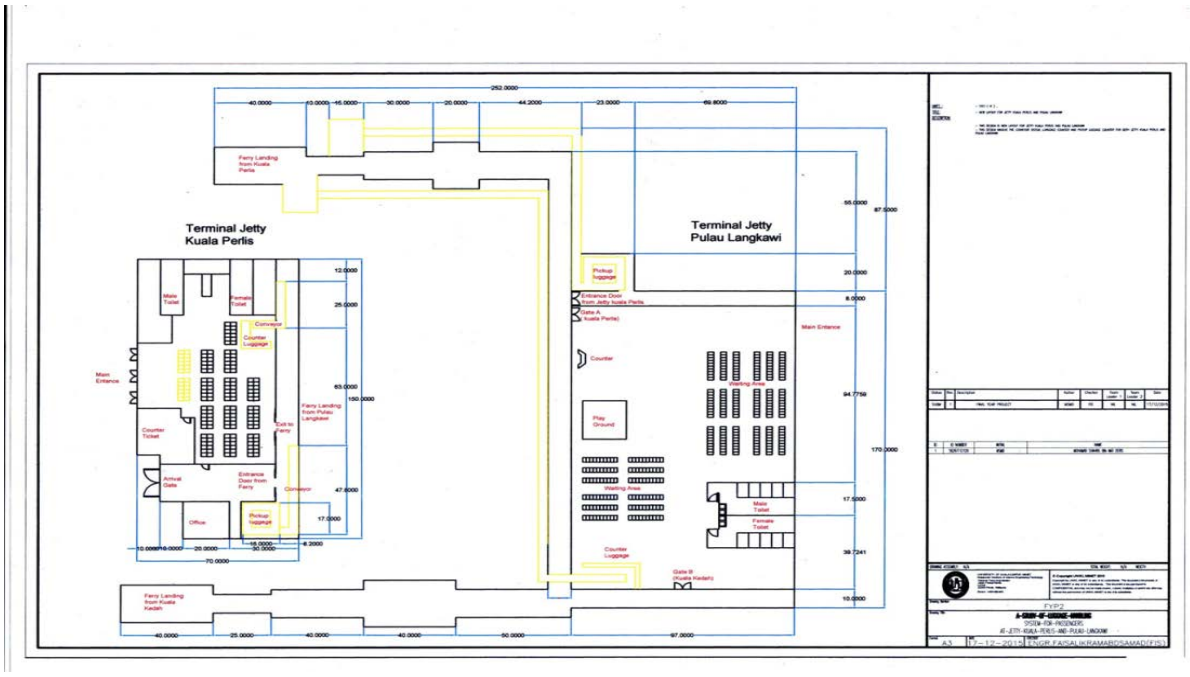

Figure 2: New Layout for Jetty Kuala Perlis and Pulau Langkawi

For future research

In the future, it is reckoned by the researcher for the next research to conduct study based on operators view. The operators, ferry and jetty, might have they own reasons for not yet implementing this automated system for their jetty and ferry. By study the reasons the next researcher can learn more about the problems faced by the operators and find any possible solution to ensure that this system can be adopted for both jetty and ferry.

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