

Determinant Factors Affecting the Baggage Claim Systems in Suvarnabhumi Airport

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Abstract

The purpose of this research was to study and analyze important factors affecting the efficiency of passengers' baggage transport system management in Suvarnabhumi airport of the BFS (Bangkok Flight Service) company's employees [1] to determine the approach to development of the passengers' baggage transport system management in Suvarnabhumi airport. The tools used in the research included the constructed questionnaires for collecting the data of the passengers' baggage transport system management in Suvarnabhumi airport.

One of major problems that we detected was that a lot of passengers had to wait for their baggage for a long time. This was owing to the delayed passengers' baggage transport system management due to different steps of operation. The researcher had studied and analyzed factors and then developed the operation steps within related sectors. Finally, time efficiency of the passengers' baggage transport system management as well as overall time spent in the whole operation were evaluated to lessen the problem of waiting for the baggage.

The result of the research revealed that when the waiting queue theory was implemented used in the operation system, the efficiency for the passengers' baggage transport system management was increased. The time spent in each step of operation was reduced because the inefficient factors affecting the passengers' baggage transport system management was decreased. This also reduced the waiting time for the passengers' baggage in an efficient way.

Keywords—*baggage transport, passengers' baggage, baggage*

I. Introduction

Currently, travelling by planes is getting increasingly popular among the general people. According to the annual report of 2014 made by the Airports of Thailand Public Company Limited [2], there are now 107 airlines which operate in a daily basis in Suvarnabhumi airport. A growing number of international flights had been observed to increase during 2010 to 2014. Such information revealed by the Airports of Thailand Public Company Limited clearly suggested the tendency of increasing number of tourists who have been using the airport services as well as the number of arriving and departing flights at the airport. As a result, Suvarnabhumi airport needed to improve its management systems in various

departments for the best effectiveness in its performance.

Based on the reported data on the number of flights and passengers, the author observed certain problem in the passengers' baggage transportation management system. This system clearly shows the logistics management system, starting from the plane arriving, then the baggage taken out of the plane, until being transferred to the baggage claim to be handed over to the passengers. Each operation system requires effective management and systematic performance in order to transfer the given tasks from one point to another point within a short period, and also to get the passengers the most satisfied with waiting for their own baggage.

Therefore, in order to develop the efficiency in the baggage claim system, the author had studied through various factors affecting the efficiency of baggage transportation system and introduced the logistics principle to develop the operation stages for the best effectiveness. This was intended to reduce the waiting time for the baggage so as to make the passengers using the airport services got substantial satisfaction.

A. Objectives of the research

1. To study and analyze determinant factors affecting the baggage claim system in Suvarnabhumi airport.
2. To develop the efficiency of the passengers' baggage transportation management system in Suvarnabhumi airport.

II. Literature Review

Asian Development Bank (2012) [3] Logistics performance should be assessed from the point of view of users and society. The micro view focuses on the level of satisfaction of individual users, including manufacturers, traders, and other commercial enterprises. The macro view focuses on the contribution to a country's economic and social development, and the satisfaction of public needs.

Individual logistics users are concerned about cost, efficiency, and service quality (including safety, transit time, and reliability), and demand that logistics enterprises reduce cost and improve speed and service quality. From the macroeconomic and social perspectives, however, logistics is concerned with more than just achieving economic efficiency. It should also reduce external costs (e.g., safety hazards and pollution), conserve energy, and optimally utilize the country's resources.

Harrington Emerson (2015) [4] had described about how to work efficiently in his written book called 'The Twelve

Principles of Efficiency' which has been largely acclaimed and cited about the twelve principles of working efficiently. The following are those twelve principles :

1. Get an understanding and determine a clear, definite concept in doing a task.
2. Use principle of generality to consider the plausibility of such task.
3. Advice or suggestions should be complete and accurate. justice
4. Justice must be always maintained.
5. Treat the others with justice.
6. Working is reliable, rapid and potential. Recording is done as evidence.
7. Progression of working should be notified comprehensively.
8. Task is completed within the given time.
9. Task is standardized.
10. The operation can be benchmarked.
11. The determined standard can be implemented.
12. Rewards should be conferred to those who work well and efficiently.

Sanya Sanyawiat (2006) [5] described that efficiency meant that the measurement of working by an organization to see how much it can be done. How is the quality of work being done? How much money and time as well as labor are spent in working? How effective is it towards the service users? In general, efficiency meant that to work for the most capacity and effectiveness under the harmony and concord within an organization. Freedom and happiness are shared together which are favorable for the common people and those who use the service with little labor and budget being spent.

Khinchin, A. Y., and Andrews, D. M., (2013) [6] stated that Queuing theory is the study of waiting lines. Four characteristics of a queuing system are shown in Figure 1 such as

1. The manner in which customers arrive
2. The time required for service
3. The priority determining the order of service
4. The number and configuration of servers in the system

Williams A.S. (2003) [7] illustrated the waiting line models consists of mathematical formulas and relations used to determine the operating characteristics of these lines. Among these features we mention

1. The probability that there is no item in the system;
2. The average of the items in the waiting line
3. The average of the existent items in the system (the items in the waiting line and the items being served)
4. The average time an item spends in the waiting line
5. The average time an item spends in the system (consists of the waiting time besides the service time)
6. The probability that an item has to wait for the service.

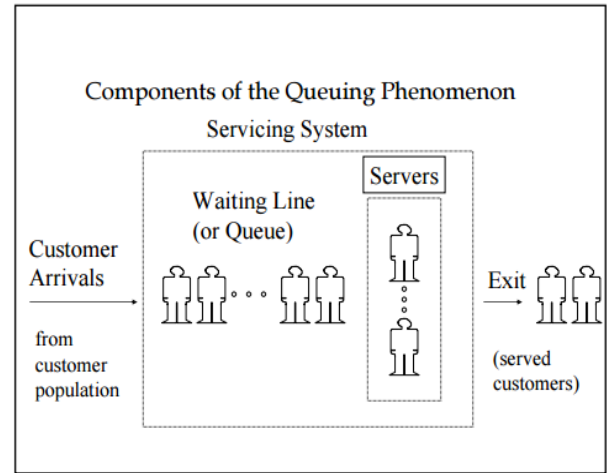


Fig. 1. Components of the Queuing Phenomenon Servicing System

Benderschi O. (2009) [8] stated that when talking about waiting systems and lines, it is necessary to specify the way the elements are arranged for serving, in other words it has to specify the waiting line discipline. In case of fast-food restaurant, as in other many cases, the queue discipline is the FIFO type (First In First Out). In other words, the customers are served in order of their arrival in the waiting line. There are situations when the waiting line discipline is type of LIFO (Last In First Out). Such an example is given by persons who are going to use an elevator. Thus, the last person entered the elevator will be the first person to leave it. There are real systems in which the requests need to be served before other based on some priorities.

M. Sreenivas (2008) [9] studied the operation of transportation determines the efficiency of moving products. The progress in techniques and management principles improves the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving. Transportation takes a crucial part in the manipulation of logistic. Reviewing the current condition, a strong system needs a clear frame of logistics and a proper transport implements and techniques to link the producing procedures. The objective of the paper is to define the role of transportation in logistics for the reference of further improvement. The research was undertaken to define and comprehend the basic views of logistics and its various applications and the relationships between logistics and transportation

Peeranat Trakunwongngarm (2008) [10] studied the approach to reduction of operation duration to enhance the animal feed transportation efficiency and applied it with real operation. Major problems were the documents job was complex and took a long time to do. Trucks for carrying the animal feed had to wait for too long. Such problems were then solved by adjusting in the operation procedure by related sectors. The waiting line theory was also brought in to help analyzing the waiting line system by using the trucks waiting for

the animal feeds to be simulated in a virtualized situation. This was done to be an approach for reducing the waiting time of the trucks. From the study results, it revealed that with adding in one channel of animal feeds loading, the duration of waiting was reduced which accelerated the transportation of the animal feed.

Ekkachai Juengtrakul (2012) [11] studied about enhancing the efficiency of mail transporting service : a case study of the transportation company limited. This study had to do with the approach to enhancing the mail transportation service efficiency which was done through using the interview forms as the tools for collecting data. This enabled us to know about seven problems with which the organization was encountering, namely 1) personnel 2) cooperation between sectors 3) buildings and place 4) working apparatus 5) mail dispatching trucks 6) en-route bus and 7) information and technology. This research proposes methodological strategy and approach to the solutions as well as approach to efficiency enhancement, and also the SWOT analysis has been made.

III. Methodology

This research was an analytical study of certain determinant factors which affect the baggage claims system efficiency in Suvarnabhumi airport. The purpose of the research was to study about operation procedure of the passengers' baggage transportation management system in the airport. When the operation procedure is realized, those factors affecting the baggage claims system would be then determined which would enable us to solve the problem of the baggage transportation management more efficiently.

The research framework provided four aspects of independent variables of the baggage claim management system affecting its efficiency of baggage transportation. The four aspects of independent variables included the baggage claim management system, policy and regulations, personnel skills, and technology and apparatus.

Questionnaires for measuring the efficiency of the baggage claim management system in Suvarnabhumi airport were used as tool for collecting data. Sixty authorities of the BFS (Bangkok Flight Service) company were the studied population who were chosen from the four departments of the company, namely :

1. Ten male Flight Masters who supervise the whole procedure of the baggage claim system in the airport.
2. Ten male electric mini truck drivers who maneuver the truck to move the containers for loading the passengers' baggage.
3. Ten male Sorting Area officers who transfer the baggage out of the containers loaded with the baggage to the conveyor.
4. Thirty Lost and Found officers who contact with the passengers in case their baggage are damaged, broken or lost.

Regarding the data collection, the author divided the data into two parts, i.e. primary data obtained from the questionnaires and secondary data obtained from academic literature and related theory and concepts. The data collected from the sample

group were then analyzed for statistical values using the computer ready-made program and certain statistical calculation for the research which were as follows :

1. Frequency and percentage were used to analyze the data on personal characteristics.
2. Means and standard deviations (S.D.) were used to analyze data on the baggage claim system.
3. Interrelation between independent and dependent variables were analyzed by Correlation of Coefficient to see how they were interrelated and if they were consistent in the same way. Pearson's Product Moment Correlation Coefficient was also applied to analyze the above data.

IV. Research Results

Most of the questionnaires respondents were during 21 to 25 years of age which accounted for 53.3 %. Their educational level was bachelor degree which accounted for 90.0 % with the average income of 10,000-19,999 baht, accounting for 50%. Their working interval was during 3 p.m. to 1 a.m. with the average income of 20,000-29,999 baht. The working interval in the morning was during 6 a.m. to 4 p.m. and in the afternoon was during 11 a.m. to 9 p.m. which accounted for 26.7 %. Their working span was during 1 to 5 years, accounting for 91.7%.

In general, the BFS (Bangkok Flight Service) company's officers working in all the four departments had the opinion level towards the efficiency of the baggage claim system as follows :

1. The opinion towards the aspect of the baggage claim management in terms of the preparedness in performing task, rapidity, accuracy and completeness was in the highest efficiency level. The opinion towards the caring for the baggage not to be damaged was in the moderate efficiency level, respectively.
2. The opinion towards the aspect of policy and regulations in terms of suitability for working regulations, follow-up of jobs, and regulations identification was in the highest efficiency level, respectively.
3. The opinion towards the aspect of personnel skills or potential in terms of the officers' sufficiency was in the lowest efficiency level. The opinion towards the aspect of number of working hours was in the moderate efficiency level. The opinion towards the aspect of the officers' preparedness and their expertise in performing task was in the highest efficiency level, respectively.
4. The opinion towards the aspect of technology and apparatus in terms of the technology and apparatus sufficiency and modernization was in the moderate efficiency level. The opinion towards the aspect of technological apparatus's suitability and safety was in the highest efficiency level, respectively.
5. The opinion towards the aspect of the baggage claim management system efficiency in terms of maintaining

standard, operation planning, co-workers' cooperation and rapid service was in the highest efficiency level, respectively.

Efficiency of the baggage claim management system was shown in Table I as below :

Table I. The efficiency of baggage management systems

Efficiency of baggage management system	Average	Standard Deviation	Performance Level
1. Management of passenger transport baggage.			
1.1 Passenger baggage handling system is ready to perform the mission	3.7833	0.55515	High
1.2 Speed and accuracy in the baggage of passengers are carried to the steps of the action plan defined .	3.7000	0.56148	High
1.3 Neatness of packing or storage of passenger baggage . During transport , according to the action plan defined .	3.5500	0.53441	High
1.4 passenger baggage prevent breakage step action plan defined	3.2000	0.68396	Moderate
2. Policies and Regulations			
2.1 regulatory and policy management systems, baggage , passengers have the right to work .	3.8167	0.62414	High
2.2 A mechanism to monitor implementation of the laws, regulations and policy .	3.6500	0.57711	Highest
2.3 Is specified rules Regulations and policies that are important and necessary for the job adequately .	4.2333	0.62073	High
2.4 Has clarified rules Regulations and policies that focus on job responsibilities fully before starting work .	4.3667	0.63691	High
3. Skilled personnel or potential			
3.1 Number of staff in the operational management of passenger transport bag is sufficient for the operation.	2.4667	0.50310	Low
3.2 The number of hours of staff performance with the operating hours are suitable.	3.4000	0.76358	Moderate
3.3 Staff are ready to perform the transport baggage handling system.	3.8167	0.65073	High
3.4 Knowledgeable staff expertise in the field of transportation, baggage handling systems are appropriate.	3.7500	0.79458	High
4. Technology and Equipment			
4.1 Transport equipment and technology in baggage handling systems are adequate for the operation.	3.1333	.50310	Moderate
4.2 Equipment and technology used to transport baggage handling system in line with modern practice.	3.3500	.57711	Moderate
4.3 Equipment and technology used to transport baggage handling systems are appropriate to the operation.	3.6000	.55845	High

Efficiency of baggage management system	Average	Standard Deviation	Performance Level
4.4 Equipment and technology used in the management of passenger transport bag can be easy to use and secure.	3.8000	.51420	High
5. Performance management systems, baggage transport			
5.1 Standard treatment practice regularly.	4.0833	.46182	High .
5.2 Planning practices in each function. To act smoothly and achieve the aim of providing baggage handling, passenger transport.	4.0500	.46669	High
5.3 Collaboration of colleagues in the organization and coordination as well as the sequence of operations.	4.6167	.49030	High
5.4 Transport baggage handling system offers fast and convenient.	3.9167	.61868	High

Various factors in the baggage claim management system were determinant factor which affected the efficiency of the baggage claim management system. The statistical values were as follows :

1. As for the aspect of baggage claim management system, the overall average of efficiency level was at 3.5583 with the highest level of opinion towards the efficiency level.

2. As for the aspect of policy and regulations, the overall average of efficiency level was at 4.0167 with the highest level of opinion towards the efficiency level.

3. As for the aspect of personnel skills or potential, the overall average of efficiency level was at 3.3583 with the moderate level of opinion towards the efficiency level.

4. As for the aspect of technology and apparatus policy and regulations, the overall average of efficiency level was at 3.4708 with the moderate level of opinion towards the efficiency level.

5. As for the aspect of efficiency of the baggage claim management system, the overall average of efficiency level was at 4.1667 with the highest level of opinion towards the efficiency level. Table II shows the overall average in efficiency of the baggage management system.

Table II. The Overall average in the efficiency of baggage management system

Efficiency of baggage management system	The Overall average	Performance Level
1. Management of passenger transport baggage.	3.5583	High
2. Policies and Regulations	4.0167	High
3. Skilled personnel or potential.	3.3583	Moderate

V. Conclusions

From the study results of determinant factors affecting the baggage claim management system in Suvarnabhumi airport, it was found that sixty officers of Bangkok Flight Service

company had different opinions towards various aspects of efficiency of the baggage claim system. It was discovered that there were five aspects which were provided the highest and moderate level of efficiency. Three aspects were at the highest level included 1. The baggage claim management 2. policy and regulations and 3. the efficiency of the baggage claim management system and two aspects were at the moderate level included 1. the personnel skills or potential and 2. technology and apparatus, respectively. Regarding the aspect of the baggage claim management system, the respondents had opinions that the performance of this aspect was highly efficient.

As for the officers' preparedness, it was found that the task was performed rapidly, completely and accurately and that the baggage were not damaged and were transferred safely, rapidly to the passengers in time. Regarding the aspect of policy and regulations, the sample group of respondents had the opinion that the performance of this aspect was highly efficient in terms of the suitability of regulations, follow-up of jobs and informing of regulations for the operating officers. As for the personnel's skills or potential, the respondents had the opinion that the performance of this aspect was moderately efficient in terms of insufficient number of working officers that did not suit with workloads. Improper number of working hours which were too high affected the performance of the officers, their preparedness and expertise. As for technology and apparatus, the respondents had the opinion that the performance of this aspect was moderately efficient. Technological apparatus were insufficient for workloads. Low modernization of technology and apparatus could affect the efficiency of performance.

In addition, the standard of operation which provided step-by-step procedures allowed the jobs being done smoothly and uniformly. In addition, good cooperation among co-workers who had good relationship and mutual understanding resulted in even quicker completed jobs.

VI. Suggestions

1. Regarding the aspect of the baggage claim management system, it could be seen that the sample group had the opinion in general towards the efficiency at the highest level. They opined that the operation of job was rapidly done with accuracy and completeness, adding that good operation system affected greatly on the efficiency. As a result, an organization should develop its operation procedure in every department to be more consistent and uniformed. When the operation system was even more consistent, there would be no waiting for tasks in each department which made operation faster with accuracy and completeness. The operation which was accomplished before the due time resulted in an improved performance of the jobs and efficiency of the organization as a whole.

2. Regarding the aspect of policy and regulations, it could be seen that the sample group of respondents had the opinion in general towards the efficiency at the highest level. The respondents agreed that the policy and regulations of the organization was clearly defined. Various rules were considered of their suitability which would be applied with the officers.

Then the rules were specified before the officers operated so when they performed their duty more efficiency would be acquired. This was because they solemnly followed with those rules and regulations specified by the organization. As a result, the organization became more organized with more harmony occurred among the co-workers. In addition, officers should be well taken care of by the organization and that only selected necessary rules and regulations were applied with the officers so that they would feel that such rules were stipulated in favor of their utmost benefits and for the sake of the overall benefits of the organization.

3. As for the personnel skills or potential, it could be seen that the sample group had the opinion in general towards the efficiency at the moderate level. They opined that the number of operating officers was not sufficient. One officer had to operate invariably and those officers who performed little tasks within a short time would switch to help in a point where a lot of workloads were to be done. Therefore, when a lot of workloads came to a point of the waiting line with an insufficient number of officers operate, then a large workloads were accumulated at this bottleneck. It was recommended that the Line Balancing approach should help balance the number of officers and number of workloads. The idling conditions would then be reduced and a number of workloads waiting for the officers to operate would also be reduced. In addition, too high number of working hours for each officer made them tired of too much work which resulted in the sluggishness of operating and lack of enthusiasm to work. Therefore, suitable amount of job should be arranged to suit with working time of each officer so that the operating interval would be varied and could be alternated. When the number of working hours was suitable, then the officers would be even more prepared to operate which would enhance the efficiency of work. As for the officers' skills and expertise, there should be more training course on operating procedure for them to enhance their skills and proficiency.

4. Concerning the aspect of technology and apparatus, it could be seen that the sample group of respondents had the opinion in general towards the efficiency at the moderate level. They agreed that the number of technological apparatus was not sufficient to use. As a result, the operation was delayed which affected on the overall efficiency of the whole system. To solve this problem four components of transporting approach according to logistics principle must be considered. The four components included motion, time, quantity and space. In each operation, the officers should know of workloads quantity to be transported in any round, length of time to spend and the route for transporting from one to another point and they would then be able to selectively consider suitable apparatus to use in each round of transportation. Preparation of suitable apparatus for transporting to suit with the operation during that time would provide sufficient apparatus to be used without waiting for and this resulted in more efficient performance.

5. Regarding the efficiency of the baggage claim management system, it could be seen that the sample group had the opinion in general towards the efficiency at the highest level. This was because they opined that the organization had the operation planning as well as the good relationship among co-

workers resulted in the operation had been well accomplished as expected in the working plan. In addition, it was recommended that the organization should promote good relationship and harmony among its workers by organizing activities for them to spend time together in getting to know each other to be familiar with others in every department. This would help make working continue smoothly and the workers would be happy when they had a good relationship with good co-workers.

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