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## CUSTOMER PROFITABILITY ANALYSIS THROUGH TIME DRIVEN ACTIVITY-BASED COSTING (TDABC) TO INCREASE CUSTOMER PROFITABILITY AT PT.X (HEAVY EQUIPMENT DISTRIBUTOR CASE STUDY)

**Regina Anregia Viola**

Master of Accounting Program, Faculty of Economics and Business, Universitas Indonesia  
[regina.anregia01@ui.ac.id](mailto:regina.anregia01@ui.ac.id)

**Dwi Hartanti**

Master of Accounting Program, Faculty of Economics and Business, Universitas Indonesia  
[hartanti\\_dwi@yahoo.com](mailto:hartanti_dwi@yahoo.com)

# APPLICATION OF VALUE STREAM ANALYSIS IN AN INDONESIAN TRAVEL AGENT: A CASE STUDY

*Regina Anregia Violla\*, Dwi Hartanti*

Master of Accounting Program, Faculty of Economics and Business, Universitas  
Indonesia

## ABSTRACT

The tourism industry is currently facing external challenges such as the emergence of large-scale Online Travel Agents (OTA), dynamic airline ticket prices, and a reduction in sales due to the Covid-19 pandemic. Furthermore, travel agents must overcome these challenges to achieve business efficiency. To address these challenges, this study aimed to examine application of Value Stream Analysis (VSA) at PT XYZ, a Business-to-Business (B2B) travel agent company providing airline ticket sales services. The data obtained through interviews and observations were analyzed to determine focused on the potential of applying VSA to increase profit margins and service delivery effectiveness. A qualitative methodology with a case study approach was used by implementing VSA in PT XYZ's airline ticket sales process. The results showed that VSA could be implemented in PT XYZ to help the company identify waste and eliminate Non-Value-added Activities (NVA).

**Keywords:** *Activity-Based Management, Lean Thinking, Management Accounting, Value Stream Analysis, Waste*

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\* Corresponding Author's Email: [regina.anregia01@ui.ac.id](mailto:regina.anregia01@ui.ac.id)

## 1. INTRODUCTION

The tourism industry has been declining in recent years mainly due to the Covid-19 pandemic. The declining purchase of airline tickets threatens the business continuity of travel agents. Furthermore, travel agents are faced with increasingly fierce competition in the industry due to the emergence of large-scale Online Travel Agents (OTA). The agents also cannot control the dynamic selling price determined by the airline. Therefore, the agents must choose the appropriate strategy such as reducing their overall costs to survive in the competitive industry.

Travel agents are businesses providing ticket booking, accommodation, and other related services. This study was conducted in PT XYZ, a Jakarta-based travel agents company affected by the weakening of the tourism industry. The company provides Business-to-Business (B2B) airline ticket sales service through partnerships with about 7000 firms spread throughout Indonesia. PT XYZ faces problems such as declining revenues and diminishing gross margins. Therefore, the company must apply cost management to achieve business efficiency and improve performance.

Operations in the service sector require continuous improvement by minimizing waste and meeting customer demands with the supply of service providers. The rapid growth in this sector has prompted many service organizations to increase the efficiency and effectiveness of their operations. This requires using a well-known approach such as lean principles to make the services more efficient with fewer resources. Lean principles could enable companies to adapt to rapid changes in the service sector. Furthermore, companies should ensure that the expected products and services meet requirements without wasting customer resources such as time and money. One of lean tools that could support company efficiency is Value Stream Analysis (VSA), which has been widely applied in various service organizations. Stadnicka & Ratnayake (2017) examined application of VSA to a service organization in the telecommunications industry. Furthermore, VSA was also applied in the healthcare industry by Tortorella et al. (2017) and Almusawi et al. (2019).

Based on the problems, this study aimed to show that VSA could help PT XYZ identify and eliminate waste. This company was chosen because it has not applied any concept to achieve cost and time efficiency. The goal was to help PT XYZ apply VSA to identify waste and eliminate Non-Value-added Activities (NVA). Therefore, VSA should be applied by the company to achieve cost efficiency and

increase profit margins. VSA would facilitate delivering the products and services that clients need at the right time and place to meet the right demand.

A qualitative methodology with a case study approach was used to conduct a VSA based on the guideline proposed by Stadnicka & Ratnayake (2017). Data were collected through interviews with relevant respondents and observations on ticketing employees. This study contributes to the operational efficiency of PT XYZ in using VSA to identify waste and eliminate NVA. Furthermore, the results could be a consideration for companies to apply cost management methods such as VSA. This study is also expected to help academics and practitioners conduct case study study on cost management in tourism by applying VSA to the airline ticket sales process at travel agents in Indonesia.

## **2. LITERATURE REVIEW**

### **2.1. LEAN SERVICE**

The rapid growth in the service sector has encouraged many organizations to increase efficiency and effectiveness in their business operations. In this regard, lean principles help organizations improve their productivity and competitiveness in the industry (Stadnicka & Ratnayake, 2017). Lean system focuses on providing value to customers, improving the flow of products or services, and eliminating waste while respecting people. Therefore, this system is about utilizing excess or wasted capacity.

The service industry has its characteristics, where value of a service offered depends on customer satisfaction and expectations. This is contrary to the manufacturing industry, which measures value using certain indicators. Therefore, these principles require adjustments to be implemented in the service industry. Bowen & Youngdahl (1998) adapted lean principles to the service sector and proposed the term lean service with a focus on the customers and employees delivering the service. Subsequently, lean principles are increasingly being applied to service companies to improve customer service waste elimination (Bowen & Youngdahl, 1998).

Piercy & Rich (2009) found a significant increase in service quality and operational costs through application of lean tools in the service sector. According to Radnor (2010), lean principles encourage companies to strive for services that focus on continuous improvement from a customer perspective. Leite & Vieira (2015) also stated that standards and methodologies for lean used in the service

sector are lacking. However, the principles inherited from the manufacturing sector could generate large financial returns and improve worker behavior when applied to the service sector. Service-sector companies heavily focus on optimizing processes and services in implementing lean principles (Stadnicka & Ratnayake, 2017). The concept of lean thinking initiated by Womack & Jones (1997) could help companies determine value, arrange activities, and perform them more effectively without interruption. Lean thinking philosophy is based on the following five principles:

1. **Specify value:** Value is determined by the end customer and expressed as a good or service that satisfies the customer's need at a particular price.
2. **Identify Value Stream:** Identify and map all the activities in value stream into three categories. These categories are Value-added Activities (VA), Non-value-added Activities (NVA), and Necessary-Non-Value-added Activities (NNVA). The mapping helps eliminate wasteful activities.
3. **Flow:** Make the remaining value creation activities flow to the customer.
4. **Pull:** Let customers pull products from the company as needed, rather than pushing unwanted products to customers.
5. **Perfection:** After value specification, value stream is identified, wasteful activities are eliminated, and flow and pull are introduced. The process is repeated and continued until perfection is reached. At the perfection stage, value flows faster and the waste hidden in value stream is found.

## 2.2. VSA

VSA is one of lean tools comprising all value-added and NVA required to bring a product or service group to the customer (Hansen & Mowen, 2018). This lean tool is a methodology for identifying and eliminating NVA (Blocher et al., 2019). Therefore, much waste in lean systems is eliminated using VSA, including the time lost waiting when performing NVA. Time is an important element in all phases of value chain (Hansen & Mowen, 2018). VSA eliminates wasted activities by identifying their root causes. Therefore, value stream guides the structure of lean organizations (DeBusk, 2015). Business process activities are categorized into the following three groups (Maleyeff, 2006; Sarkar, 2007):

### 1. VA

Maleyeff (2006) stated that VA are activities customers are willing to pay for when they have limited time. These activities are necessary for business because they contribute to customer value and help meet organizational

needs (Hansen & Mowen, 2018). According to Sarkar (2007), VA help improve the products or services provided by the organization and add features that customers value and are willing to pay for. A value-added activity must meet the following criteria:

- a. Must change the form, feature, feel or experience, or function wanted by the customer.
- b. Must be performed right the first time.
- c. The customer must be willing to pay for the activity.

## 2. NVA

Maleyeff (2006) stated that NVA is an unnecessary activity and a waste in the current system. Sarkar (2007) defined NVA as an activity that customers do not want to pay for, meaning it should be avoided and eliminated by the company. NVA are not required or valued by internal or external customers because they fail to produce a state change. Furthermore, the company has to redo these activities because they were not performed correctly for the first time (Hansen & Mowen, 2018).

## 3. NNVA

Maleyeff (2006) defined NNVA as an activity that exists because of the current system's structure. According to Sarkar (2007), customers are unwilling to pay for but cannot avoid these activities. NNVA activities are required in the process and are usually carried out for regulators or organizational policies.

Waste is anything that consumes resources without adding (Hansen & Mowen, 2018). In this case, unnecessary and unproductive activities are eliminated to enhance organizational performance (Stadnicka & Ratnayake, 2017). The eight wastes in the service sector that add cost to business but are not valuable to customers include (Sarkar, 2007):

1. **Overproduction:** Processing more or faster than needed.
2. **Motion:** Individual movements are not required to complete the work in a process.
3. **Inventory:** Waste that occurs when there is more inventory or goods than needed.
4. **Transportation:** More movement of materials than processing time.
5. **Waiting:** Idle individuals and items between operations.
6. **Underutilized people:** Waste of underutilized human resources.
7. **Defects:** Waste due to errors and not getting the item or product right the first time.

8. **Over-processing:** Efforts with no value to the customer.

Managing by value stream rather than allocations and product costs enables organizations to simplify their costing systems and eliminate wasteful transactions (DeBusk, 2015).

### **3. METHODS**

#### **3.1. APPROACH**

This study used a literature review to compile a theoretical basis and analysis. A field study was also used to ascertain the actual activities of the company. The approach used is a case study, which focuses on gathering information about an event, activity, or object such as a business unit or organization (Sekaran & Bougie, 2016). A case is an individual, group, organization, event, or situation that attracts attention. Therefore, a case study aims to describe a problem in real-life situations from various perspectives using data collection methods. Case studies involve empirical investigation of certain contemporary phenomena in real-life contexts using several data collection methods (Yin, 2009). These studies provide qualitative and quantitative data for analysis and interpretation.

The validity and reliability of case studies are key for both practitioners and academics. Riege (2003) proposed several techniques that enhance the validity and reliability of case studies. Subsequently, this case study has attempted to achieve validity and reliability by using verbatim interview transcripts and observation notes during data collection. The goal was to enhance the quality, validity, and reliability of the case study.

#### **3.2. METHOD**

This study developed a framework that focuses on identifying waste in service processes in travel agent companies using lean concepts. Lean concepts were supported by a VSA approach. VSA was used to investigate the current state of processes and potential future performance improvements. Furthermore, the study created a current value stream map and explained the VSA methodology. The sample comprised service families where the same activities must be performed using VSA.

The service processes were assessed based on information gathered from actual processes. The respondents were involved in data collection through observations

of the activities performed, their duration, and problems arising in the process. Current state value stream mapping was developed using the collected information.

Stadnicka & Ratnayake (2017) proposed the following guideline for implementing VSA in the service sector:

1. Identifying service families and selecting their representatives
2. Identifying activities' sequence performed during a service delivery for the representative of the chosen product family
3. Assessing the activities as VA, NVA, NNVA
4. Identifying used documents and databases
5. Measuring activities' duration time
6. Identifying problems and analyzing their causes
7. Developing solutions to problems
8. Planning to implement the solutions
9. Future state map development
10. Future state assessment
11. Generalizing the findings

The following four criteria are used to assess activities as VA (Womack & Jones, 1997; Sarkar, 2007):

- a. **Change:** Activities undertaken must change the form, feature, feel or experience, or function wanted by the customer.
- b. **Correct:** The activity must be performed correctly the first time to avoid rework.
- c. **Customer:** Customers must be willing to pay for the activity.
- d. **Time:** The activity must be performed at the right time

### 3.3. RESEARCH INSTRUMENT

This single case study collected quantitative and qualitative data through semi-structured interviews, nonparticipant observations, and from archival materials (Jick, 1979). A literature review was also conducted to obtain data from books, journals, articles, and scientific works regarding VSA.

Most business studies collect data by interviewing respondents to obtain information about the problem of interest. An interview is a direct conversation between two or more people (Sekaran & Bougie, 2016). In this study, semi-structured interviews were conducted to extract new ideas from the informants. The interviews aimed to obtain primary data regarding the company's overview, current condition, business processes, operating activities, and other information. Table 1



shows the interviewees, their positions, as well as the interview duration and purpose.

**Table 1. Summary of interviewees**

No.	Interviewee	Position	Duration	Purpose
1	Mr. NP	Director	Wednesday, 19 October 2022 15.00 – 16.00	Obtain information on the general description of PT XYZ, its business processes, and the possibility of implementing VSA.
2	Mrs. ES	Financial staff	Tuesday, 18 October 2022 15.00 – 15.30	Obtaining information on costs incurred by PT XYZ and knowing the potential for waste
3	Mrs. SP	Ticketing staff	Tuesday, 18 October 2022 14.00 – 15.00	Obtain the detailed information on airline ticket sales activities at PT XYZ and group them into the VA, NVA, and NVAR categories

Observation is one way to obtain data by experience and review of study subjects. This method involves the planned observation, recording, analysis, and interpretation of behavior, actions, or events. Non-participant observation does not entail direct involvement in the perpetrator's actions. This approach only involves observing phenomena from outside the perpetrator's visual horizon (Sekaran & Bougie, 2016). Therefore, non-participant observation was conducted to support the data obtained about the state of the company. Direct observation was performed using the time and motion study method to describe the activities conducted by PT XYZ. The time and motion study was conducted on a ticketing staff for eight working hours. The goal was to calculate the duration of each activity in airline ticket sales using a timer.

### 3.4. ANALYSIS METHODS

Data were analyzed using content analysis which systematically evaluates the symbolic content of all recorded communication (Kolbe & Burnett, 1991). This method was used to analyze the data obtained by interview, observation, and from archive materials. Furthermore, a content analysis could be used to analyze newspapers, websites, advertisements, and recorded interviews. The method facilitates analyzing textual information and identifying its characteristics, such as words, concepts, characters, themes, or sentences (Sekaran & Bougie, 2016).

#### **4. ORGANIZATION PROFILE**

This case study was conducted by PT XYZ, a service company operating in Indonesia's tourism industry by providing airline ticket sales. The company was established in 2006 and initially provided Business-to-Consumer (B2C) airline ticket sales services. Since 2013, PT XYZ has begun seeing opportunities to develop B2B models. This company has created a travel booking system to be by its partners as a way of supporting business processes. B2B sales contributed the largest revenue for PT XYZ. Moreover, the company has partnered with more than seven thousand agents spread throughout Indonesia. The partnerships have made PT XYZ manage small, corporation, and government travel agents.

In the last five years, PT XYZ has experienced a decline in revenue caused by increased aviation fuel costs, which triggered the soaring price of airline tickets. This caused a decrease in the number of airline ticket buyers. Furthermore, the increasingly fierce competition also encourages PT XYZ to find ways to compete and make its business more profitable through cost efficiency.

The problems experienced by PT XYZ make it impossible for the company to manage its non-increasing income. This is because income is largely influenced by external factors, such as government, social, environmental, and economic policies. Additionally, PT XYZ cannot freely control the tickets' selling price because it has been determined by the airlines.

PT XYZ needs to increase its performance through cost management to realize business efficiency. Therefore, this study recommended that PT XYZ perform a VSA.

PT XYZ is a service company that offers various ticketing services through simultaneous business activities. The eight activities in the company's business processes are (1) B2C Reservation, (2) Partner's Balance Deposit Monitoring, (3) Go Show Reservations (B2B), (4) XYZ Reservation System Control, (5) Ticket Rescheduling, (6) Ticket Refund, (7) Extra Baggage, and (8) Passenger Seat Selection.

#### **5. RESULTS AND DISCUSSION**

Based on the literature review, this section presents the result of VSA application and waste identification at PT XYZ. The wasteful activities were subsequently eliminated.

### 5.1. APPLICATION OF VSA IN PT XYZ

VSA application in PT XYZ was based on guidelines proposed by Stadnicka & Ratnayake (2017). The first step was identifying service families and selecting their representatives. The ticket sales service was chosen for further analysis because it is a frequently provided service at PT XYZ. VSA began with identifying airline ticket sales activities. The eight activities in the company’s business processes are (1) B2C Reservation, (2) Partner’s Balance Deposit Monitoring, (3) Go Show Reservations (B2B), (4) XYZ Reservation System Control, (5) Ticket Rescheduling, (6) Ticket Refund, (7) Extra Baggage, and (8) Passenger Seat Selection.

The next step was identifying the activities' sequence performed during a service delivery for the chosen product family representative. Each of the main activities mentioned earlier comprised 51 detailed processes, as shown in Table 2.

The activities were assessed as VA, NVA, and NNVA based on criteria proposed by Sarkar (2007). VA activities change the form or function wanted by the customer, are performed correctly the first time, and customers are willing to pay for them. These activities also satisfy a customer's need at a certain time (Womack & Jones, 1997). Therefore, activities are identified as VA when four criteria are fulfilled, otherwise, they are considered NVA or NNVA. An activity is NNVA when it is necessary for the business and cannot be eliminated.

The activities’ duration time was measured by time and motion study. The observation was conducted on one ticketing staff for eight working hours to identify waste. Each business activity at PT XYZ was categorized based on its contribution to adding value to the services. The wasteful activities that added no value were identified according to the waste grouping proposed by Sarkar (2007).

**Table 2. VSA in PT XYZ**

No.	Activity	Category	Duration (minutes)	Waste
<b>A</b>	<b>B2C reservation</b>			
<b>A1</b>	Accepting passenger reservation requests	VA	2	-
<b>A2</b>	Checking flight schedule	VA	2	-
<b>A3</b>	Entering passenger reservation data	VA	4	-
<b>A4</b>	Processing ticket booking	VA	1	-
<b>A5</b>	Receiving ticket payment	VA	4	-

No.	Activity	Category	Duration (minutes)	Waste
A6	Checking transaction history	VA	3	-
A7	Issuing ticket	VA	1	-
A8	Printing ticket	NVA	1	Motion, overproduction
A9	Printing invoice	VA	1	-
A10	Delivering tickets to passengers	VA	1	-
<b>B</b>	<b>Partner's deposit monitoring</b>			
B1	Receiving Partner's top-up deposit notification	VA	1	-
B2	Checking PT XYZ's transaction history	NVA	3	Over-processing, waiting
B3	Approving Partner's top-up deposit request	NVA	1	Over-processing, waiting
B4	Correcting of Partner's top-up deposit nominal	VA	2	-
B5	Checking Partner deposit balance	VA	2	-
B6	Adding Partner's deposit manually	VA	2	-
B7	Reducing Partner's deposit manually	NVA	2	Over-processing, waiting, and defects
<b>C</b>	<b>Go Show Reservations (B2B)</b>			
C1	Accepting Go Show reservation requests	NVA	2	Waiting
C2	Sending Go Show reservation form	NVA	1	Over-processing, waiting
C3	Receiving Go Show passenger reservation data	NVA	5	Over-processing, waiting
C4	Checking the availability of Go Show schedules and Go Show ticket prices	NVA	3	Over-processing, waiting
B5	Checking Partner deposit balance	NVA	2	Over-processing, waiting
B1, B2, B3	Checking Partner top-up deposit	NVA	5	Over-processing, waiting
C5	Entering Go Show passenger reservation data	NVA	6	Over-processing, waiting, and defects
C6	Issuing Go Show ticket	NVA	1	Over-processing, waiting
C7	Sending Go Show tickets to Partners	NVA	1	Over-processing, waiting
<b>D</b>	<b>XYZ Reservation System Control</b>			

No.	Activity	Category	Duration (minutes)	Waste
<b>D1</b>	Checking the balance of PT XYZ's deposit in the airline system periodically	NVA	3	Over-processing
<b>D2</b>	Adding PT XYZ deposit balance on the airline system	VA	3	-
<b>D3</b>	Periodically checking transaction reports	VA	5	-
<b>D4</b>	Supervising single login on the Airline Web Portal	NVA	2	Waiting
<b>E</b>	<b>Ticket Rescheduling</b>			
<b>E1</b>	Accepting ticket rescheduling requests	NVA	2	Waiting
<b>E2</b>	Checking to reschedule the schedule in the Airline system	NVA	3	Over-processing, waiting
<b>E3</b>	Informing rescheduling fees to Partners	NVA	1	Over-processing, waiting
<b>B5</b>	Checking Partner deposit balance	NVA	2	Over-processing, waiting
<b>B1, B2, B3</b>	Checking Partner top-up deposit	NVA	5	Over-processing, waiting
<b>E4</b>	Deducting Partner deposit balance	NVA	3	Over-processing, waiting
<b>E5</b>	Processing reschedules in the Airline system	NVA	3	Over-processing, waiting, and defects
<b>E6</b>	Sending rescheduled tickets to Partners	NVA	1	Over-processing, waiting
<b>F</b>	<b>Ticket Refund</b>			
<b>F1</b>	Receiving refund request	VA	2	-
<b>F3</b>	Processing refund on the airline system	VA	3	-
<b>F2</b>	Requesting refund via airline call center	NNVA	20	Waiting
<b>F4</b>	Sending a request refund via e-mail to the airline	NNVA	20	Waiting
<b>F5</b>	Reconciling of refund nominal	NNVA	60	Defects, waiting
<b>F6</b>	Returning the refund in the form of a deposit balance	VA	60	-
<b>G</b>	<b>Extra Baggage</b>			
<b>G1</b>	Accepting requests for additional baggage	NVA	2	Waiting
<b>G2</b>	Checking additional baggage fees in the Airline system	NVA	3	Over-processing, waiting
<b>G3</b>	Informing additional baggage fees to Partners	NVA	1	Over-processing, waiting

No.	Activity	Category	Duration (minutes)	Waste
B5	Checking Partner deposit balance	NVA	2	Over-processing, waiting
B1, B2, B3	Checking Partner top-up deposit	NVA	5	Over-processing, waiting
G4	Processing baggage addition	NVA	3	Over-processing, waiting, and defects
B7	Manually deducting Partner's deposit	NVA	3	Over-processing, waiting
G5	Sending tickets with extra baggage to Partners	NVA	1	Over-processing, waiting
<b>H</b>	<b>Passenger Seat Selection</b>			
H1	Accepting seat selection requests	NVA	2	Waiting
H2	Checking the seat map and the cost of selecting a seat on the Airline system	NVA	3	Over-processing, waiting
H3	Sending seat map and seat selection fee to Partners	NVA	1	Over-processing, waiting
H4	Accepting seat number requests	NVA	3	Over-processing, waiting
B5	Checking Partner's deposit balance	NVA	1	Over-processing, waiting
B1, B2, B3	Checking Partner's top-up deposit	NVA	3	Over-processing, waiting
H5	Processing seat blocking on the Airline system	NVA	3	Over-processing, waiting, and defects
B7	Manually deducting Partner's deposit	NVA	3	Over-processing, waiting
H6	Sending tickets with selected seats to Partners	NVA	1	Over-processing, waiting

The VSA application helped identify NVA that produce waste in PT XYZ. From 51 activities, 32 do not add value and lead to various wastes. The most frequent waste in the airline ticket sales process is waiting, which occurs in 31 activities. It is followed by over-processing which occurred in 24 activities. Moreover, defects occurred in five activities, while motion waste and overproduction were identified in one activity each.

## **5.2. IDENTIFICATION OF PROBLEMS AND DEVELOPMENT OF SOLUTIONS**

Over-processing occurs due to the use of inappropriate technology or poor product design (Sarkar, 2007). In PT XYZ, over-processing was caused by an inadequate reservation system that forced the staff to manage reservations manually. Waiting was also caused by an inadequate reservation system. Manual service work by the staff makes customers wait to receive the service they want. According to Hansen & Mowen (2018), time is important in all phases of value chain. The imbalance between the limited number of staff and the many customers creates queues in services.

Defects caused by data entry errors necessitate redoing certain activities and cause losses for PT XYZ. Most companies in the service sector also require employees to move or change places to provide services to customers. PT XYZ staff made movements to provide flight ticket reservation services, including printing tickets and preparing reservations. Furthermore, overproduction is caused by more processing on B2C reservations. Passenger requests for ticket printouts also contribute to waste.

The observations showed that the waste in PT XYZ was caused by the less sophisticated reservation system. The reservation feature in the system is incomplete, forcing the staff to work manually. The manual operation forces the customers to wait, while the service organization has the potential for human error.

The identification of the source of waste was followed by eliminating NVA and replacing them with those that minimize waste. Interviews with the director and several staff revealed solutions to eliminate NVA. PT XYZ could eliminate manual activities by integrating its travel booking and airline systems. Additionally, the company could add more value-added rescheduling and refund features to the reservation system.

## **5.3. FUTURE STATE ASSESSMENT**

The elimination of wastes enables PT XYZ to get potential time savings. Before VSA was applied, 198 minutes were not value added. Potential time savings was 67% of the total 297 minutes after eliminating wasteful activities. According to Hansen & Mowen (2018), time is important in all phases of value chain. Companies could reduce time to customers by redesigning processes as well

as eliminating waste and NVA. This is in line with Hansen & Mowen (2018) that the correlation between cost and time is part of the cost management system.

The potential for saving activity processing time after eliminating waste also saves employee work time. In this case, PT XYZ could reduce employee working time to save on salary costs. Employee salary costs are a large component because the company operates in the service sector. Therefore, eliminating waste and decreasing non-value-added time increases service quality (Hansen & Mowen, 2018). This reduces the time to produce services, indicating that applying VSA at PT XYZ leads to effective business processes and efficient cost expenditures.

#### **5.4. FINDINGS**

The findings support previous studies on service organizations (Stadnicka & Ratnayake, 2017). Lean principle is applicable in PT XYZ as one of the service-sector companies. PT XYZ applies lean principles to improve productivity and competitiveness in the industry (Stadnicka & Ratnayake, 2017).

This study examined the efficiency of VSA. Prior studies showed that value stream guide the structure of lean organizations (DeBusk, 2015). Therefore, PT XYZ could transform into a lean organization using VSA.

The findings also support a previous study that eliminating unnecessary and unproductive activities could enhance organizational performance (Stadnicka & Ratnayake, 2017). PT XYZ could use VSA to eliminate NVA and reduce waste to achieve cost and time efficiency. Furthermore, analysis reduces the processing time by 67%, leading to time and cost efficiency.

This study found that application of VSA increased efficiency at PT XYZ. Automation of transaction activities by integrating the ticketing and airline systems could make the business process more efficient.

#### **6. CONCLUSION AND RECOMMENDATION**

This study examined application of a VSA in PT XYZ, a travel agent. The aim was to determine the potential impact of using lean principles to improve the organization's efficiency and reduce waste. The findings complement Tortorella et al. (2017) and Almusawi et al. (2019), which applied VSA in healthcare organizations, and Stadnicka & Ratnayake (2017) in the telecommunication industry.



The findings showed that VSA could be applied to PT XYZ, though there are some obstacles. First, there was a different understanding of waste classification between the respondents and the author. This problem was caused by the unavailability of objective criteria for waste classification. Second, there were challenges in developing and implementing solutions to problems.

Application of VSA could help PT XYZ identify wastes in selling airline tickets. These wastes include waiting, over-processing, defects, motion, and overproduction. Elimination of waste associated with NVA could save 67% of processing time for airline ticket sales.

Recommendations for PT XYZ to support the implementation of VSA and overcome challenges include:

- Request feedback on value through periodic surveys regarding customer satisfaction with the services offered. This would help the company avoid unnecessary activities and focus on adding value to customers.
- Conduct regular focus group discussions on the activities in the airline ticket sales process. This would facilitate detecting and eliminating NVA.
- Hold regular discussions with staff to identify and eliminate waste in the airline ticket sales process.
- Evaluate the effectiveness of the airline ticket sales process and offer services that satisfy customers. The company should reduce effort, time, costs, and errors in selling airline tickets. For this reason, employee involvement is needed in identifying and eliminating all forms of waste.

This study set subjective criteria for waste classification based on the author's judgment only. The methodology used did not involve data triangulation and validation of results to informants. Observations were also conducted on one ticketing staff for eight working hours. Therefore, the results do not represent all employees at PT XYZ. There was also a limited number of interview respondents to obtain data.

VSA is usually used in manufacturing companies. Therefore, future studies could apply VSA in service-sector companies using more than one sample to obtain more general results. The studies could also develop objective criteria for waste classifying and add validation or triangulation by checking secondary data and reconfirming the results to informants.

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