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Perception Of Eliminating Service Waste For Better Efficiency And Towards Lean Management In Vietnamese Smes

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Abstract

The research has been conducted to clarify current waste elimination perceptions among SMEs in Vietnam. Besides, it delivers further suggestions for Vietnamese SMEs' lean management in the near future. The samples of 237 SMEs have been surveyed to collect significant data about the perception of service waste and service efficiency in Vietnam. To examine the relationship between service waste and service efficiency, SPSS 26 software is conducted with two types of analyses, including descriptive analysis and statistical analysis. The main research findings are (1) Service waste and waste elimination has been highly appreciated by medium-sized Vietnamese SMEs rather than micro-sized SMEs; (2) Human- related waste, motion and defects are the most popular waste identifications and (3) Inventory waste has the least effect on service efficiency. The study becomes significant contribution to further papers about elimination awareness among different waste types and lean management considerations for SMEs in Vietnam.

Keywords

Service Waste, Service Efficiency, Service Waste Elimination, Lean Management, Vietnamese SMEs.

Introduction

Business service currently is being surrounded by strategic development problems of improving efficiency and value-added activities continuously (Leite and Vieira, 2015; Welo and Ringen, 2016). Value-added activities concern about financial issues (Mostafa

and Dumrak, 2015), however, the efficiency is a challenging problem which covers several operational aspects.

In effective operational aspects, service waste is significantly correlated to operation, which refers to the unnecessary steps, procedures, resources within the business (Pienkowski, 2014). More precisely, waste is considered to be the issue that produces more costs and time without adding value to the service (Mosfana and Dumrak, 2015). Waste elimination process refers to removing or decreasing the activities which may not add value to the SME products or in other words, wastes create more expense without producing any profit for the SMEs (Pienkowski, 2014). In Japanese, wastes can be called as "Muda" and has been mentioned in seven deadly categories via Lean management. Lean management originates from Toyota production system from 1940s (Spear and Bowen, 1999), referring to the sociotechnical network which concentrates on waste elimination to maximize customer's value and minimizing operating expense (Rotter et al., 2019). To be more specific, waste can be everything that prevents the production or business of a company and hinders the completely efficient stage of the company (Lopez et al., 2015). Lean management considers waste elimination as the most important goal (Jurado and Fuentes, 2014). Without waste, SMEs would stay away from inefficient business and acquire the perfectly-balanced management which produces better output and lower amount of input. Waste can be categorized in 7 groups under lean management, namely: Inventory, defects, waiting, overproduction, motion, transportation over- processing (Warnecke and Huser, 1995). In general, waste elimination has proven the contributing role in motivating SMEs efficiency and implementing waste elimination would be beneficial for SMEs in the emerging market like Vietnam.

It can be inferred that waste elimination has not been appreciated in Vietnam and the domestic SMEs have insufficient knowledge about the method (Pham, 2017). Nevertheless, SMEs category accounts for over 90% of Vietnamese enterprise number so that this category plays an essential part in job creation, income increase and development of the whole country (table 1). Besides, in the context of a developing country, SMEs are considered to be the "engine" for economic growth in two critical issues: (1) GDP contribution and (2) Labor intensity. Statistically, the GDP contribution of SMEs in Vietnam is on the upward trend, in line with the considerable increase in the number of SMEs. In 2019, the proportion of SMEs in total enterprise number of Vietnam accounted to more than 95% (Nguyen et al., 2019). Besides, as the giant quantity of SMEs, the labor requires a large demand of labor. According to Trinh and Dong (2019), there are 5 million jobs created by SMEs in the year 2019 and this figure is continuing the increase recently.

Therefore, enhancing the situation of SME would remarkably influence the national economy. In the current Vietnam context with fluctuating economy, SMEs are facing with challenging issues and even financial crisis. As a consequence, the problem of inefficient management has been identified as the major cause for the slowing-down development (Nguyen et al., 2019). In order to overcome the difficulties, there should be emerging method concerning about enhancing the business efficiency and raising the business quality. Lean management can be a recommended solution to the current problem. The lessons learned from the United States, Western Europe, Japan, Korea and Singapore may be further studied in Vietnam, especially for SMEs (Pham, 2017). Nevertheless, the process of apply lean practice should take time and there should be step-by-step implementation. Waste elimination is the first and foremost consideration before heading for lean management. In the competitive market as Vietnam, optimizing operations by removing unnecessary issues should be the strategic achievement (Nguyen et al., 2019). Conclusively, the research focusses on providing awareness about waste elimination and furthermore, paves the wave for establishing lean management in Vietnam SMEs sector.

Literature Review

Conceptualization

Service waste originates from a component of lean management. Lean management or lean thinking is the philosophy that concentrates on removing unnecessary and no value- added activities in the organizational operations (Shou et al., 2020). Waste elimination and customer value creation are contributing to the success of lean management (Nguyen et al., 2019). Lean management has been successfully utilized in developed countries, such as: Japan, Korea, The United States, Singapore… and proved to be an efficiency- increasing factor (Pham, 2017). As the world economy shifted from manufacturing sector to service sector, lean management should be changed to the updated one with service as the key consideration. Waste elimination process, consequently, refers directly to “service waste” rather than “manufacturing waste” in the past.

Generally, lean management seems to be a long-term goal with sophisticated applicable conditions however, the context of modern business requires cost reduction and budget cuts gradually and this creates problematic issues for organizations (Lopez et al., 2015). In the vision to lean management, businesses should initially start with service waste identification and elimination before implementing the innovative methods. Service waste, separated from lean management, is considered to be a challenging issue. Conceptually, organization encounters waste when the operations have yet been optimal

(Collis, 2016). Service waste refers to the unnecessary steps, procedures, resources within the business (Pienkowski, 2014). In other words, operational efficiency would be largely impacted by service waste (Leitao et al., 2019). The research of waste elimination in the service sector provides better consideration for the topic. Sztorc (2020) in the study for service waste in hotel industry analyzed the concerned factor about hotel performance. The results pointed out that the hotel should pay special attention to the need to eliminate waste, increase efficiency, work standardization, and quality of customer service before aiming at lean implementation. Particularly, the strategic goal of business is to eliminate service waste for efficiency improvement. Reducing wastes in maintenance operation is the main feature that distinguishes the lean maintenance practice from a conventional maintenance management practice (Shou et al., 2020). The methods of clearing the unnecessities can be through re-structuring or organizational re-design (Kadarova and Demecko, 2016). This would result in complex process which concerns about several regulations, such as: Kanban and pull, demand levelling, single-piece flow, 5S, kaizen events.

Inheriting the theory and lessons from developed countries with service waste elimination and lean management, Vietnamese enterprises should follow the same path aiming at better business performance. As the economy is transitioning from industrialization to service sector, there are evidently non-optimal procedures, processes and steps in operations of Vietnamese enterprises, especially in the situation of small and medium enterprises (SMEs) (Liker, 2004). In conclusion, service waste elimination is the first step of lean management implementation. However, different categories of business would concern about different waste identification. In term of Vietnamese business, the Government implemented law and administrative reform to foster the operations of all market components, especially SMEs sectors. As such, this study focuses on service waste and lean management in SMEs enterprises with the classification in table 1.

Table 1 Classification of SMEs

Size / Sector	Micro-sized enterprise	Small-sized Enterprise		Medium-sized enterprise
	Number of employees	Total asset	Number of employees	Total asset
Agriculture, Forestry and Fishery	< 10 people	< VND 20 billion	From 10 to 200 people	From VND 20 billion to VND 100 billion
Industry and Construction	< 10 people	< VND 20 billion	From 10 to 200 people	From VND 20 billion to VND 100 billion
Trading and Services	< 10 people	< VND 20 billion	From 10 to 200 people	From VND 20 billion to VND 100 billion

Sources: Nguyen et al., (2019)

Service Waste Identification

Historically, waste was developed from manufacturing sector. This would present 7 types of manufacturing waste, namely: transportation, inventory, motion, waiting, over-production, over-processing and defects (Warnecke and Huser, 1995). Skills or human factors would be the eighth types mentioned by many scholars (Pham, 2015; Sztorc, 2020).

Similarly, service waste identification follows the same theory. Womack and Jones (1996) stated that waste elimination should begin with the analysis of value chain in operational activities and the customer is considered to be the center part. In other words, any operations which provide no added-value for customers can be identified as "waste". Specifically, valueless operations consist of two categories: (1) Unnecessary activities and
(2) Necessary activities without added-value for customers (Pham, 2017). For the first one, service waste should be recorded and elimination phase should be implemented, and this category is the typical service waste. Welo and Ringen (2016) also sorted wastes in type 1 "enabling activities" and type 2 "pure waste". The pure waste refers to 7 or 8 sub-categories, including defects, over-production, transportation, waiting, inventory, motion and processing (and underutilization of people). Value stream mapping (VSM) is a technique used as an initial step in the process of change to get a firm condition of lean production process and VSM is also established via 8 types of waste as abovementioned (Paramawardhani and Amar, 2020). However, the nature of service concerns about the intangible products and processes, so that makes it difficult to detect waste in due time through 'quality control' and complete 'rework' or 'sorting' before the 'part' goes to the next 'operation', and ultimately to the end customer (Welo and Ringen, 2016). In order to identify the service waste, it is important to consider the differences. Womack and Jones (1996) considered the "customer effect" as the most crucial in-service enhancement and the employee contributing to the service delivery should be second place of necessity. Leite and Vieira (2015) presented that the service waste has been focusing on human factor and the mistakes from company staff would be major causes in service operations.

According to the related studies, the authors would implement a major framework of 8 service waste to be considered in this research based on the framework established in several important researches. Liker and Meier (2006) provided a field-book about waste reduction with 8 types: overproduction, time on hand, transportation, over-process, inventory, motion, defects and unused employee productivity. Overproduction should be considered as the critical waste in manufacturing, however, in service sector, human-related one may be highly emphasized (Fokali and Siagian, 2021). Schoroeder (2003)

considered the inventory issue to be seriously-affected to the general performance because it would result in extra process and over-occupied the warehouse. Liker and Meier (2006) drew attention to the motion and underutilization of people as the major service waste due to the fact that employee efficiency would contribute significantly to the success of the business. Therefore, there may be waste reduction procedures implemented on employee activities in order to achieve better results. Generally, the research framework consisting of 8 service waste categories can be specified as follows.

Table 2 Proposed 8 service waste categories

No	Category of Service Waste	Definition	Consequences	Sources
1	Overproduction	Non-stopping manufacturing however the excession	Large inventory, redundancy	Liker and Meier (2006); Qu, Ma and Zhang (2011)
2	Waiting	Queuing or un-united internal processes	Time, lower product counts	Papadopoulos (2011)
3	Transport	Unnecessary motion or movement of materials	Time, product damage	Liker and Meier (2006); Nguyen, Su and Sharma (2019)
4	Extra-processing	rework, reprocessing, handling or storage	Large inventory, quality down	Qu, Ma and Zhang (2011); Douglas, Antony and Douglas (2015)
5	Inventory	Inventory stored larger than transported to customers	Extra process, space taking up	Schoroeder (2003); Fokali and Siagian (2021)
6	Motion	Extra steps unneeded to implement the works	Time, lower product counts	Papadopoulos (2011); Mamatov (2021)
7	Defects	Finished goods quality less than customer expectation	Rework, time	Klein et al. (2020)
8	Underutilization of people	Redundant of human resources	Un-needed staff	Liker and Meier (2006); Klein et al. (2020)

Service Efficiency

Service efficiency provides major insights about the organizational performance (Heshmati, 2003). The definition of service efficiency is related to the ability to convert resources into profits for the business. More importantly, service efficiency can be the reflection of service quality, better efficiency would result in higher quality in service delivered to customers. Efficiency is considered to be a complex definition. There are two components of efficiency, namely: (1) technical efficiency: the maximum conversion of inputs into outputs (Benazic, 2012) and (2) allocative efficiency: the ability to equate marginal value products

with marginal costs (Heshmati, 2003). In this research, the first component has been considered. The popular simple efficiency equation can be as follows:

Efficiency = Output level/ Input level

There are numerous ways to define outputs and inputs side of the efficiency equation. Depending on the research purpose, scholars can include the involved variables.

Service Waste and Service Efficiency in Vietnamese SMEs

Although SMEs in Vietnam are critical component of the national economy, this sector encountered several serious problems. The SMEs are facing with low capital, low level of management, use of manual laborer, outdated production technology lines and or lack of competitiveness (Vuong, 2020). The mentioned limitations would result in negative impacts for SME efficiency. Particularly, the return on business capital (ROI) of private enterprises is very low, only one fifth of FDI enterprises and nearly one quarter of SOEs. The return on equity (ROE) of private enterprises is only 4% compared to 16.3% of FDI enterprises and 11% of state-owned enterprises in 2015 (Trinh and Dong, 2019). This represents a downward movement in efficiency or financial results of Vietnam SMEs. Pham (2015) pointed out that there are significant reasons for the reality, in which service waste would be recommended as one major source.

SMEs in Vietnam has yet had sufficient knowledge about lean management, therefore, the service waste or unnecessary procedures which add no value to customers are still existing and leads to lower efficiency. Nguyen et al. (2019) presented the problem of waste management in SMEs as a reason for decreasing efficiency and considered “human factor” as the major waste in management. Conclusively, there are problematic issues in Vietnam SMEs development. Service waste elimination would be a typical suggestion for handling the situation.

Hypotheses and Proposed Theoretical Framework

From above literature reviews, main hypotheses about the relationship between eight types of service waste and service efficiency are proposed as below:

Hypothesis 1: Inventory has negative impact on service efficiency of Vietnamese SMEs.
Hypothesis 2: Defects has negative impact on service efficiency of Vietnamese SMEs.
Hypothesis 3: Waiting has negative impact on service efficiency of Vietnamese SMEs.

Hypothesis 4: Overproduction has negative impact on service efficiency of Vietnamese SMEs.
Hypothesis 5: Motion has negative impact on service efficiency of Vietnamese SMEs.
Hypothesis 6: Transport has negative impact on service efficiency of Vietnamese SMEs.
Hypothesis 7: Extra-Processing has negative impact on service efficiency of Vietnamese SMEs.
Hypothesis 8: Human has negative impact on service efficiency of Vietnamese SMEs.

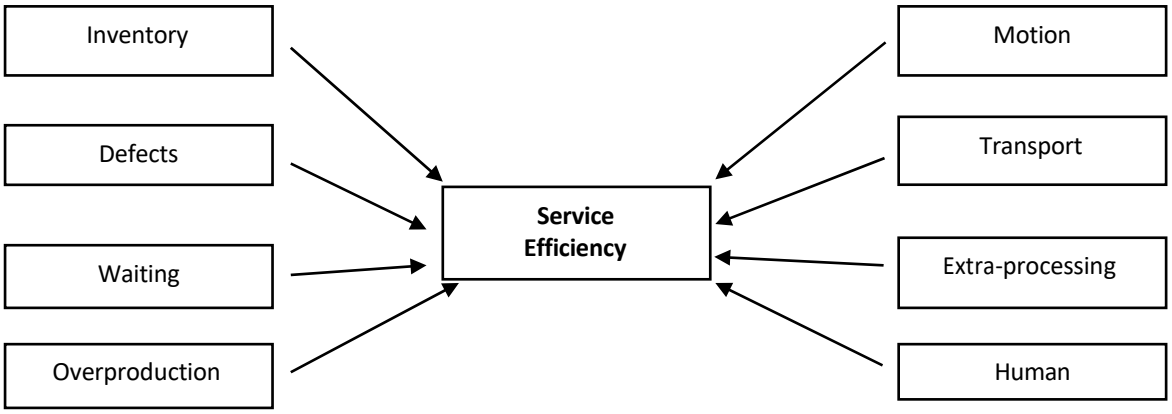

Figure 1 Analysis Proposed Framework

Methodology

Research Method

In this study, quantitative method is employed in order to define the effect of different types of service waste on service efficiency; whereby, a questionnaire is proposed basing on prior literatures about service waste and service efficiency to collect data from a large number of target respondents in this context. Due to the impact of COVID-19 pandemic, researchers utilize online questionnaire survey, which is launched from April 2021 to May 2021 on popular social media platforms. A 5-point Likert scale (from "1-strongly disagree" to "5 – strongly agree) is used to collect respondent's opinions towards each item in questionnaire survey.

Data Collection and Sample

The study sample should comprise of small and medium enterprises (SME) working in service industry in Vietnam. Due to intensive nature and limited time, volunteer sampling techniques can be considered to be the most appropriate to maximize the number of participants. However, it should be balance in term of company size and sector in order to ensure the reliability of data collection. Moreover, the sample size is required to be at least

5 time higher than the number of items in questionnaires (Hair et al., 2013). Because the number of items is 31, this study should reach the minimum of 155 respondents. In fact, 300 surveys are distributed and 237 surveys are useful to retain, which means that the number of data sample is valid enough for quantitative analysis.

Data Measurement

SPSS software 26 is carried out to investigate the relationship between 8 independent factors of service waste (namely: Inventory, defects, waiting, overproduction, motion, transport, extra-processing, human) and dependent factor (service efficiency). Two types of analyses are calculated including descriptive analysis and statistical analysis. Descriptive analysis concerns mean value, standard deviation and frequencies. Statistical analysis comprises of reliability, exploratory factor, an independent-sample t-test and regression analysis. Particularly, due to the limited number of medium sized enterprise in this survey, an independent-sample t-test is conducted to present the difference between micro-sized and small sized enterprises in term of service waste and service efficiency.

Research Results

Descriptive Analysis

In regards to respondents, 59.54% of them are male, belong to the group of 30-39 years old and work as team leader and manager, which is understandable in the context of Vietnamese SMEs. In fact, male in the age of 30 – 39 is likely to be an organizational manager or team leader in SME. However, not only manager, this survey also asks for opinions of senior staffs and team leaders because these people have enough knowledge, skill as well as working time to understand company situation.

In term of company, nearly the third of companies belongs to manufacturing sector (34.2%), followed by consultant (17.7%) and then communications (15.6%). Other popular types of services are event/entertainment (12.2%), education (8.9%) and transportation (7.6%). Under the circumstances of research context, most of Vietnamese SMEs being approached by researchers are small-size (66.7%), while the amount of micro-sized enterprise is around 30.4%. Particularly, only 7 medium-sized company take part in this survey. Consequently, the number of medium-sized company cannot represent or be valid for research outcomes.

Furthermore, most of SMEs in research have perception of waste reduction method (89% of total), however, the number of enterprises that have ever carried out these methods is

around 81%. This mean that in spite of perspective, some of them still do not utilize waste reduction method. Indeed, half of these method are not effective enough to solve all service waste, while 29.2% of waste reduction method are event ineffective.

Reliability Test

According to the result of reliability test, it is recognized that the mean for most constructs of framework is from 3 to 4, which shows the medium compliance of SMEs with these statements. In general, factors Waiting (WA), Motion (MO) and Human (HU) have mean value of 4.12, 4.36 and 4.17 respectively, which means that Vietnamese SMEs agrees with the influence of proposed Waiting, Motion and Human waste items on service efficiency. Besides, almost items have high Cronbach's alpha (over 0.7) and high coefficient of item-to-total correlation (0.5 – 0.8), which suggest the high correlating of these items and confirm the consistency of the measurement variables. However, item OP3 and IV2 have low Cronbach's alpha value (0.579, 0.571) and low coefficient of item- to-total correlation (around 0.5-0.6). As such, these two items should be removed from the scale. After removing two items, all 29 items in the construct are significant enough to predict the outcome.

Exploratory Factor Analysis

Table 3 KMO and Bartlett's Test Result

Kaiser-Meyer-Olkin Measure of Sampling		0.803
Bartlett's Test of Sphericity	Approx. Chi-square	4807.771
	Df	252
	Sig.	0.000

In general, the KMO measure of 0.803 is considered as marvellous statistics. Moreover, the significance of Bartlett's test of Sphericity is 0.000. As a result, the dataset is appropriate for factor analysis.

In term of exploratory factor analysis, the ideal factor loading is 0.4 because this test has 237 samples (Hair et al., 2013). After running initial step of factor analysis with the use of varimax rotation, 29 items are summarized to nine underlying factors. However, item EP1 and EP2 had a cross loading and the difference between two factor loading is not 0.10 greater; which proves that these variables need to be removed from the scale (Tabachnick and Fidell, 2013). When running final factor analysis, 27 items are stayed in 9 underlying factors and all items are strongly loaded in particular factors, meeting the requirements of convergent and discriminant validity (Cohen et al., 1992) (table 5).

Table 4 Rotated Component Matrix for final step

	Component								
	1	2	3	4	5	6	7	8	9
OP1						0.719			
OP2						0.802			
OP5						0.408			
OP5						0.559			
WA1	0.885								
WA2	0.650								
WA3	0.648								
WA4	0.811								
TR1			0.688						
TR2			0.438						
TR3			0.719						
EP3				0.464					
EP4				0.814					
IV1					0.746				
IV3					0.908				
MO1							0.758		
MO2							0.692		
MO3							0.665		
DE1		0.615							
DE2		0.734							
DE3		0.807							
HU1									0.710
HU2									0.747
HU3									0.723
SE1								0.813	
SE2								0.802	
SE3								0.796	

Independent Sample t-test

The independent samples support to produce the means of two unrelated groups (Hinton, 2014). In this study, it provides a correlation coefficient between micro-sized enterprises and small-sized enterprises towards service waste perception. The independent samples correlations present the Pearson correlation coefficient and its significance value, which is conducted to examine whether this result is consistent or not (Hinton, 2014). The research questions predict that there is a difference in perception of micro-sized and small-sized companies about service waste and service efficiency. From the below table, in the Levene's test for equality of variances, p value equal to 0.03 (below 0.05); which means that the result of Equal variances not assumed is chosen for next analysis. Moreover, in t- test for equality

of means, the value of Sig. (2-tailed) is smaller than 0.001 with p = 0.000. As such, there is a significant difference between perception of micro-sized and small- sized Vietnamese enterprises towards service waste and service efficiency.

Table 5 Group statistics and independent samples test

	N	**Mean**
Micro-sized	72	3.61
Small-sized	158	3.94
	Levene's test for equality of variances	t-test for equality of means
	Sig.	Sig. (2-tailed)
Equal variances assumed	0.03	0.00
Equal variances not assumed		0.00

Regression Analysis

Table 6 Regression model result

	Standardized Coefficients Beta	Sig.	VIF
Overproduction - OP	0.127	0.000	1.729
Waiting - WA	0.137	0.001	2.316
Transport - TR	0.016	0.053	3.821
Extra-processing - EP	0.273	0.004	2.372
Inventory - IV	0.018	0.003	2.901
Motion – MO	0.329	0.001	1.208
Defects – DE	0.295	0.000	1.756
Human - HU	0.337	0.000	1.628
R	0.793		
R Square	0.659		
Adjusted R square	0.607		
Model Significance	0.000		

Overall, the R value is 0.793 revealing a high degree of correlation. The value of adjusted R square is 0.607, hence, it can be concluded that Service efficiency in Vietnamese SMEs can be explained by 60,7% of service waste. In addition, with the significant value is 0.000 (lower than 0.05), this model is meaningful enough in predicting the outcome variables.

Regards to independent factors, the coefficient of Overproduction, Waiting, Extra-processing, Motion, Human, Defects and Inventory are significant at p-values lower than 0.05, at 0.000, 0.001, 0.004, 0.001, 0.000, 0.000 and 0.003 respectively. By contrast, the p-value of transport is over than 0.05, meaning that this factor has no significant impact on service efficiency in Vietnamese SMEs.

As discussed above, it can be concluded that, except for Hypothesis 6, all other hypotheses (**H1, H2, H3, H4, H5, H7, H8)** are **supported.** In other words**, H6** is **rejected**. Consequently, the findings confirm the literature that, too many waste types (Overproduction, Waiting, Extra-processing, Motion, Human, Defects and Inventory) can bring negative influence on service efficiency in Vietnam SMEs, especially in the COVID-19 pandemic.

Research Findings, Implications and Limitations

Research Findings and Managerial Implications

From the research results, it would be inferred that the majority of SMEs in Vietnam has perceptions about service waste and also prepare plans for eliminating the waste, which would pave the way for lean management adoption in the future. More particular, Vietnamese small enterprises have more potential awareness of this issue than micro one through the independent sample t-test. This is explainable as the small enterprises contain more employees; therefore, they would seriously encounter the optimal operation problem and need strategies to overcome the challenges. Oppositely, the activities of micro enterprises may not include large number of people so that service waste can be handled only the skills of the owners. In general, service waste elimination would be considered as the initial step towards lean management which is capable of facilitating the achievement of environmental goals and improvements in environmental results (Jurado and Fuentes, 2014). It is positive signal that there are perceptions for service waste elimination from SMEs in Vietnam. Further development into lean service or lean enterprise would be clearly considered for the better-performed organizations.

In addition, there are different impacts of service waste categories on the efficiency, among those: human, motion and defects are the leading perceived service waste. Firstly, waste related to human has the most significant impact on service efficiency. It is proven that service is a labor-intensive sector (Brown and Dev, 2000). Human factor contributes a great deal to the success of a business. However, the opposite meaning is also supported: human-related mistakes would remarkably reduce service efficiency. Generally, efficient human resource management may provide better performance, however, weak management costs the business considerably (Krishnan and Parveen, 2013). Waste related to human can be represented by the actions of not leveraging the talent of the labor, underestimating the potential, lack of utilization for employees' skills, knowledge and creativity and misplacing the right abilities to the right position (Lopez et al., 2015). Therefore, the service efficiency would clearly decrease and in the long term, it may result in lower productivity. Human capital is considered to the most valuable asset

of the firms, nevertheless, the waste problems occur and would be seriously downward due to the inappropriate appreciation for human factor (Delery and Roumpi, 2017). In conclusion, the waste managers should be considerable for the human factor mistakes and raising quality of the labor would be the efficient method to the problem.

Beside waste related to human, motion is considered to be one important waste category. This service waste relates closely to the working procedures and layout in business firms (Wahab et al., 2013). Unnecessary steps in business process would be wasteful because it takes away extra time for handling and produces no more value to customers, to employers and to the enterprise. Sundar, Balaji and Kumar (2014) perceived the meaningless motion as a small part of the line balancing expressing that the service productivity would decrease sharply with the excessive level of pointless motions. Therefore, the time for completion becomes larger and creating major waste in operations and efficiency for firms. Moreover, motion waste occurs when an operator walks between workstations, which is measured as a percentage of time spent in motion by the operator (Gopinath and Freiheit, 2012). The layout problem may result in micro waste movement which is a medical cause for human health disease (Sundar et al., 2014). Similar to the waste identification in manufacturing, defects would be an essential category. Defect waste relates to the level of scrap, rework and delay service products which force the firms to repair, refund or replace (Wahab et al., 2013). Therefore, additional cost of warranty would be recorded by the business accountants. Moreover, defects waste would be dependent by customer expectations (Gopinath and Freiheit, 2012). In service sector, customer appreciation should be placed as priority, nevertheless, customer expectations cannot be easily forecasted. There would be striking gap between the service delivered by business and the customer prior perceptions for what they are going to purchase so that, defects would be happening and creates another service waste.

On the other hand, inventory is considered to be the least affected factor. Service sector products would be intangible and demand small scale of inventory as the majority of inventory needed belongs to the level of work in process (Gopinath and Freiheit, 2012). Moreover, the inventory waste would be quickly eliminated by reducing set-up times, preventive maintenance or layout changing; so that, this type of waste has minor influence on service efficiency.

Limitations

Despite the authors' efforts, there are several striking limitations in the research. Firstly, SMEs contain 3 categories of enterprises: Small, Micro and Medium, however the numbers are not evenly distributed with only 2.9% enterprise quantity belongs to the

medium category. And this number would not assure the representative attribute. Consequently, the research mainly focuses on analyzing service waste from the other 2 categories: small and micro-sized enterprises. Besides, the sample includes SMEs in big cities of Vietnam, namely: Hanoi, Ho Chi Minh city and Da Nang and would ignore the effects of other places. Moreover, with the effect of COVID-19 pandemic, there are social lockdowns and isolations in Vietnam so that the survey was only delivered online via Google Docs at the period of research conducting. This may bring about possible differences in survey results.

Conclusion

The research was conducted with the purpose of investigating the perceptions of Vietnam SMEs about service waste elimination. This is considered to be the initial step for obtaining lean thinking and lean management for better organizational operations. The findings indicate that the majority of Vietnam SMEs have clear awareness of the service waste and have been promoting the elimination procedures with positive results. Therefore, it would be the solid foundation for lean thinking to be adopted in the near future. Overall, this is the basic understanding that service waste elimination is on the process of being implemented in SMEs sector and lean management should be more applicable within the context.

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