No	TAHAPAN	TANGGAL	BUKTI FISIK
1	Submit	21 November 2020	Bukti 1
2	Decision Letter 1	16 Maret 2021	Bukti 2
3	Revisi 1	22 Mei 2021	Bukti 3
4	Decision Letter 1	6 Juli 2021	Bukti 4
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BUKTI 3

From: hmhanqin@polyu.edu.hk

To: heru.prastawa@gmail.com

CC:

Subject: Journal of Quality Assurance in Hospitality & Tourism - Manuscript ID WQAH-2020-0146.R1 has been submitted online

Body: 22-May-2021

Dear Dr Prastawa:

Your manuscript entitled "Employees' Perception of Lean Six Sigma Implementation to Business Performance on Low-cost Budget Hotels" has been successfully submitted online and is presently being given full consideration for publication in Journal of Quality Assurance in Hospitality & Tourism.

Your manuscript ID is WQAH-2020-0146.R1.

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Date Sent: 22-May-2021

BUKTI 4

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To: heru.prastawa@gmail.com

CC:

Subject: Journal of Quality Assurance in Hospitality & Tourism - Decision on Manuscript ID WQAH-2020-0146.R1

Body: 06-Jul-2021

Dear Dr Prastawa,

Thank you for resubmitting your paper to Journal of Quality Assurance in Hospitality & Tourism.

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I would be grateful if you could now provide a final paper following (Journal) guidelines, with a Title page containing authors affiliation and e-mail address (page 1), followed by Abstract and Key Words (page 2), and full text, all in the same document. Only tables and figures are to be included as a separate document.

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Sincerely,
Professor Hanqin Qiu
Editor in Chief, Journal of Quality Assurance in Hospitality & Tourism
qiuhanqin@nankai.edu.cn

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
All my concerns had been answered adequately, the authors can improve this paper with professional language editors, good luck.

Date Sent: 06-Jul-2021

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From: hmhanqin@polyu.edu.hk

To: heru.prastawa@gmail.com

CC:

Subject: Journal of Quality Assurance in Hospitality & Tourism - Manuscript ID WQAH-2020-0146.R2 has been submitted online

Body: 03-Aug-2021

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From: qiuhanqin@nankai.edu.cn

To: heru.prastawa@gmail.com

CC:

Subject: Journal of Quality Assurance in Hospitality & Tourism - Decision on Manuscript ID WQAH-2020-0146.R2

Body: 18-Aug-2021

Dear Dr Prastawa:

Ref: Employees' Perception of Lean Six Sigma Implementation to Business Performance on Low-cost Budget Hotels

Our reviewers have now considered your paper and have recommended publication in Journal of Quality Assurance in Hospitality & Tourism. We are pleased to accept your paper in its current form which will now be forwarded to the publisher for copy editing and typesetting.

You will receive proofs for checking, and instructions for transfer of copyright in due course.

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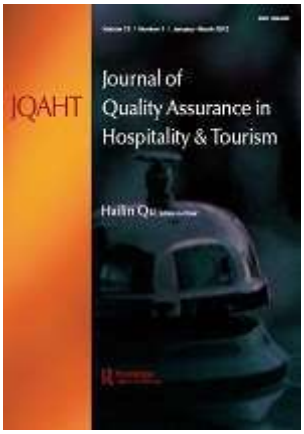
Sincerely,
Professor Hanqin Qiu
Editor in Chief, Journal of Quality Assurance in Hospitality & Tourism
qiuhanqin@nankai.edu.cn

Date Sent: 18-Aug-2021



Employees' Perception of Lean Six Sigma Implementation to Business Performance

Journal:	*Journal of Quality Assurance in Hospitality & Tourism*
Manuscript ID	WQAH-2020-0146
Manuscript Type:	Research Note
Keywords (pick from the list OR enter your own):	Critical success factors, Lean Six Sigma, hospitality, virtual hotel operator, business performance
Abstract:	This paper has aim to identify the critical success factors of LSS at low-cost budget hotel which affiliate to Virtual Hotel Operator (VHO) give some knowledge how the CSF influence the LSS implementation, and how LSS could affect the operational and organizational performance based on the employee's perception. The approach is carried out with To achieve this objective, the researcher surveyed 120 respondents who work in the hotels that affiliate with VHO such as Airy Rooms, RedDoorz, and OYO Rooms at Semarang city. The result shows, among six CSFs that determined, there are only three CSF that affect the LSS implementation, those are: management involvement and commitment, linking LSS to business strategy, and project selection and prioritization. LSS has weaker direct influence on organizational performance rather than their relationship through operational performance. This research was based on the employee's perception if LSS implemented in their working environment, to give some point of view what CSF will successfully affect the LSS implementation and whether it will effectively boost the performances or not. At the end of this paper, authors try to explain what is the importance of the CSFs at hotels' industry especially hotels that affiliate with VHO.

Employees' Perception of Lean Six Sigma Implementation to Business Performance

Abstract

This paper has aim to identify the critical success factors of LSS at low-cost budget hotel which affiliate to Virtual Hotel Operator (VHO) give some knowledge how the CSF influence the LSS implementation, and how LSS could affect the operational and organizational performance based on the employee's perception. The approach is carried out with To achieve this objective, the researcher surveyed 120 respondents who work in the hotels that affiliate with VHO such as Airy Rooms, RedDoorz, and OYO Rooms at Semarang city. The result shows, among six CSFs that determined, there are only three CSF that affect the LSS implementation, those are: management involvement and commitment, linking LSS to business strategy, and project selection and prioritization. LSS has weaker direct influence on organizational performance rather than their relationship through operational performance. This research was based on the employee's perception if LSS implemented in their working environment, to give some point of view what CSF will successfully affect the LSS implementation and whether it will effectively boost the performances or not. At the end of this paper, authors try to explain what is the importance of the CSFs at hotels' industry especially hotels that affiliate with VHO.

Keywords – Critical success factors, Lean Six Sigma, hospitality, virtual hotel operator, business performance

Paper type – Research paper

1. Introduction

Lean Six Sigma (LSS) as a strategy and business methodology has proven to improves the performance of a process to produce customer satisfaction (Snee, 2010). LSS as an integrated methodology, combining the speed of Lean to smooth the process and the robustness of Six Sigma through a disciplined and systematic approach to solve problems (Antony *et al*, 2018). Lean focuses on eliminating activities that do not add value to the final product, while Six Sigma focuses on eliminating variations in the process. It is agreed that the both goal is to create an effective production system to meet customer satisfaction by creating a good quality of product (Dogan and Gurcan, 2018). By applying Lean and Six Sigma in parallel are noted in many case study papers in both the manufacturing and the service sector (Albliwi *et al*, 2014). In service organizations, Lean intends to reduce waste in terms of time and making processes more efficient, meanwhile Six Sigma focuses to improves the process by reducing the variability, to achieve result of efficiency close to 99.9997% of the time (Antony *et al*, 2017).

Semarang, as the capital of Central Java, is currently developing a tourism business to attract local and foreign tourists. The easy access to transportation starts with the presence of airport, stations and terminals, as well as culinary that is quite interesting, making tourists not only just for transit in the city of Semarang, but also want to stay and enjoy the city of Semarang longer (Shofia *et al*, 2020). Based on Semarang City Hospitality Statistics 2018, non-star hotel has total amount of 106 which is the highest number compared to the star-hotel. But in fact, the highest rate occupancy is dominated by 3+star-hotels (Badan Pusat Statistik Kota Semarang, 2018).

This has shown that the hotels' customers believe that with prices that are slightly higher than non-star hotels, they get much better service.

To catch up on the level of occupancy, non-star hotels collaborate with Virtual Hotel Operators (VHO). VHO partners mostly come from economy class hotels to middle class and local brands. Meanwhile, VHO customers are those classified as budget travelers who are looking for affordable accommodation with good value offered (Wiastuti and Susilowardhani, 2016). VHO runs as mediator between hotel and customers. VHO makes it easy for partners to be more easily found by customers under the name VHO that houses their partners. After providing complete data on rooms to be rented out, VHO will market the rooms so they can be booked by customers through OTA, the official VHO website, or the VHO application on a smartphone. After the customer / guest of the inn booked a room from a partner, then the customer will pay the room rent and service fee to VHO. From these costs, VHO pays the agreed room rental price to partners as much as 65% -70% of the total paid by the customer. For certain classes, VHO guarantees partners full profits without any deductions for a certain period of time even if the partner does not meet the sales target. Indirectly, customers have rented rooms from partner hotels, and of course in return, partners provide rooms that have been rented by VHO customers.

In real day-to-day cases, VHOs are faced with problems where hotel's workers have below-average skills when serving hotel customers. This is caused by not all employees do not all understand the ins and outs of hospitality and have an education that supports their performance in the hospitality industry. Though VHO has a target to provide good service and quality above the standard of quality service. There are possibilities for low budget hotels' workforce to face problem such as: the lack of experience, lack of training, the lack of fluency in speaking a foreign language, lack of positive attitude towards work, and un-ergonomic workplace (Shofia *et al*, 2020; Bhat *et al*, 2014).

To overcome those problems, it can be resolved by implementing LSS in hotels. By combining both of them, LSS is proven to be able to improve performance in many departments in a hotel even in the small hotel with a limited budget (Lancaster, 2011). LSS has benefits such as: removes non-value adding activities (waste), reduces the damaged products / transactions, shorten the cycle times, delivers the right product / service at the right time in the right place (Laureani, 2012). Other benefits also mentioned that LSS could help companies to utilize resources (human, financial and system) efficiently. (Kabir *et al*, 2013) and gain improvement benefit of operational and organizational (Jeyaraman *et al*, 2012).

In facts, there is still lack understanding about what and how LSS is in company's point of view. Kamar (2014) revealed the barriers to introduce Six Sigma process in hotel industry such as resistance to change and the desire to maintain the quality currently used in the hotel, lack of knowledge of Six Sigma, lack of adequate information about Six Sigma and lack of clarity about the expected benefits. Also from the management point of view, they misunderstood when companies do implementation LSS, they need to implement cost and subsequent implementation of Lean adoption, before they are able commit (Achanga *et al*, 2006). That is why not much hotels, moreover VHO which is broadly spread all over nation, especially in Semarang city, do not apply the Lean, Six Sigma, or LSS.

Manager needs to concentrate more on readiness factors to formulate the execution process of LSS for continuous improvement of the organization (Vaishnavi and Suresh, 2020). To help companies implement Lean and avoid costly failures, previous researchers have suggested a number of critical success factors (CSF) (Netland, 2016). CSF can be defined as "some things

that must go well to ensure success for a manager or organization, and therefore they represent managerial areas or companies that must be given special attention and continuously to produce high performance" (Netland, 2016; Boynton and Zmud 1984).

In order to introduce the knowledge of LSS to hospitality industry, therefore, this study has aim to identify LSS implementation to business performance on low-cost budget hotel that affiliate with VHO, based on employees' perspective, by identifying the critical success factors of LSS. This gives some point of views how the CSF influence the LSS implementation, and how LSS could affect the operational and organizational performance based on the employee's perception. According to the problem formulation in this study, the following questions arise: what CSFs could be successfully influence the implementation of LSS in low-cost budget hotels in Semarang City? And how is the relationship between the implementation of LSS with company performance consisting of operational performance and organizational performance?
This study will include the previous studies both Lean and Six Sigma to take into account of critical success factors of LSS.

2. Literaature review

2.1 Critical success factor (CSF) of LSS implementation

Based on Table 1, according to Shofia *et al* (2020), there are nine CSF of LSS has already concluded to be measured at LSS implementation in low-cost budget hotel industry at Semarang city. They are: management involvement and commitment, communication, organizations' infrastructure, training and education, linking LSS to business strategy, project prioritization and selection, project management skill, understanding LSS tools and technique, and cultural change.

Table 1

However, not all CSFs mentioned above will be used in this study, such as organizational infrastructure, project management skills, and understanding of LSS tools and techniques. Previous studies have shown that organizational infrastructure and project management performance are not factors that influence the implementation of LSS, although they affect, but it was slightly. The understanding of LSS tools and techniques in this study is deemed inappropriate, because in reality, the object of research is not many who understand the LSS implementation, so, it can also be understood if the research object does not understand LSS tools and techniques

According to Table 2, it seems there is no significant differences on what CSFs that affect LSS implementation in both manufacturing and service industry. Previous researches seem agreed that the most important CSF in the implementation of LSS is management involvement and commitment. Management involvement and commitment is one of important element to success the implementation of LSS in any organization (Albliwi *et al*, 2014). When management do not have any commitment, it would be very difficult to implement Lean in the organization, and it will be a major obstacle when it comes to implement it (Zhou, 2016). Top management has an important role in the creation and management of process management systems, and it is necessary to directly participate in order to realize the successful implementation of LSS. In the research of Brun (2011), Manville *et al* (2012), Laureany and Antony (2012), found that management involvement and commitment were factors that influenced the successful implementation of LSS. Netland (2015) revealed that to succeed by implementing the Lean

program, managers must commit to and involve themselves in implementation activities Laureani and Antony (2018), suggested that organizations must have leaders who are committed to inspire the employees and build a different culture continuously to get the benefits of the implementation of LSS.

H_1: Management involvement and commitment has a positive influence on the successful implementation of LSS

Communication is also an important element for managers to explain how LSS works and how much LSS benefits in doing work to subordinates, to spread business strategies and meet customer needs, and to form a solid work team. Timans *et al* (2012), in their research revealed that communication has an influence on the successful implementation of LSS. Noori (2015) revealed, effective communication at all levels vertically and horizontally is one of the factors that influence the success of Lean. Lack of effective communication will also have an impact on the failure of LSS implementation (Albliwi *et al*, 2014).

H_2: Communication has a positive effect on the successful implementation of LSS

Training and education also have a significant role in communicating the "why" and "how" and the LSS project. According to Kamar's research (2014), an appropriate training program has the aim to ensures the managers and employees can use and implement Six-Sigma techniques effectively. With the LSS knowledge provided, it will be easier for employees, especially operators to work more effectively and efficiently. Whereas training is an important factor for the successful implementation of LSS as well as procedures for reducing time on LSS implementation can make savings for companies and reduce labor costs (Albliwi *et al*, 2014).

H_3: *Education and training have a positive effect on the successful implementation of LSS*

Furthermore, the connection between the LSS project and business strategy can be shown in nominal terms that can help the development of a business strategy. Based on research by Brun (2011), Setijono *et al* (2012) and Kamar (2014), Linking LSS and business strategy is a CSF that is considered important in implementing LSS. Manville *et al* (2012) revealed that many companies believe LSS helps companies achieve their strategic goals. Noori (2015) states that to get success and improve performance in the long run, the Lean program must be related to the company's strategy.

H_4: Linking LSS to business strategy has a positive effect on the successful implementation of LSS

Additionally, Albliwi *et al* (2014), believe that top management must be able to choose the right project for the right people to succeed in LSS. The selected projects must be projects that have a business goal or goal of a company. According to Netland (2015), there is a continuing need for proper planning, follow-up, and funding for the Lean program. Timans *et al* (2012) argued, companies must design systems to prioritize and select projects, also containing standards for different projects with different time frames, from very short projects (1-5 days) to long-term projects.

H_5: *Priority and project selection have a positive effect on the successful implementation of LSS*

Last but not least, the application of LSS requires significant changes to the company's culture in carrying out business operations both in structure and infrastructure. There needs to be an

awareness of the needs and benefits and LSS so that the LSS project can run smoothly and successfully. Noori (2015) argues that good cultural change is the result of a continuous combination of training and Lean projects. Setijono *et al* (2012) and Dora *et al* (2016) revealed in their research that organizational culture is one of the success factors in implementing LSS.

H_6: Cultural change has a positive effect on the successful implementation of LSS

2.2 Relationship between implementation of LSS with business performance

The level of performance in a company is measured through operations and organization (Jeyaraman *et al*, 2012). Operational performance in the service industry, measured based on customer satisfaction, customer relationships, increased forecasting strategies, improved product quality services, and increased efficiency of internal processes (Kamar, 2014).

Ismail Salaheldin, (2009) measures organizational performance based on return on investment (ROI), market share growth, investment in R&D, and market orientation. Jayaraman and Teo (2012) in their research measure organizational performance based on financial aspects such as revenue growth, net profit, profit-to-income ratio and return on assets, and also non-financial aspects such as the capacity to develop competitive profiles, new product development and market development.

The relationship between LSS implementation and business performance is elaborated in the research of the Nawanir *et al* (2013), Lean Manufacturing has a positive influence on operational performance in manufacturing companies. Meanwhile the Kamar (2014) states that, some hotels that implement Six-Sigma are aware of the fact that Six-Sigma is one of the most effective strategies to improve product / service quality, improve internal processes and develop overall operational excellence.

H_7: The implementation of LSS has a positive effect on operational performance

From the aspect of organizational level, LSS helps companies achieve stronger competitive advantages so that companies become more competitive, and then have an effect on better financial improvement. Improved performance and productivity by creating a higher product reliability and lower volatility at the level of internal process operations reducing company exposure to economic risk is directly proportional to increased profitability and return on investment.

H_8: The implementation of LSS has a positive effect on organizational performance

In the relationship between operational performance and organizational performance, Ismail Salaheldin (2009) suggests that operational performance has a strong influence on financial performance, but it is quite weak on non-financial performance. Not much different, Garcia-Bernal and Ramirez-Aleson (2015) suggest that operational performance has a positive effect on financial performance. Nawanir (2013) states that the better the operational performance, the better the organizational performance.

H_9: Operational performance has a positive effect on organizational performance

According to hypothesis building in the literature review, it can be concluded that CSF such as management involvement and commitment, communication, training and education, linking

LSS to business strategy, project prioritization and selection, and cultural change, has a positive relationship to the implementation of LSS. Meanwhile, the implementation of LSS has positive relationship to operational performance and organizational performance, and operational performance also has a positive relationship to organizational performance. Those relationships drawn in Figure 1.

Figure 1. Research framework

3. Methodology

In this study, researchers have determined hotels that are supported by Airy Rooms, Reddoorz, and OYO Semarang, with composition of 39 respondents from Airy Rooms, 62 from Reddoorz, and 19 from OYO. This number come up from the suggestion of Sugiyono (2012), the sample should be ten times the variables, so it means 10 x 9 = 90. But to prevent the abnormality of the data, authors decide to increase the samples total amount of 120. Respondents were mostly the employee of the hotel, include the owner or manager of hotels. This is very clear considering low budget hotels rarely have a manager, and the owner is their direct supervisor. In this study, it was very difficult to meet the owners, so many questionnaires were filled out by operational employees. Even though the respondents are from low-cost budget class, but the selection of this category was due to the fact that it is the most suitable one for the study because such hotels are the most likely committed to quality initiatives since they have a management that houses them with a better system compared to low budget hotels in general.

Primary data collection in this study is to conduct interviews and distribute questionnaires directly to respondents who are related to this research from January – early February 2020. The measurement scale that used is Likert scale. To prevent worse scenarios and bias results, researchers believe that the "neutral" option in the questionnaire must be eliminated. It will use 10 scores starting from strongly disagree to strongly agree.

To analyze the questioner data, it will use SEM-PLS method and using SmartPLS 2.0 program to process the data. PLS is a SEM technique based on an iterative approach that maximizes the explained variance and endogenous construction (Fornell and Bookstein, 1982; Hair *et al*, 2014). This method was used to figure out CSF that affect the LSS implementation and the relationship between LSS and hotel performance.

4. Result

4.1 Sample demographic

The first section of the survey asked the respondents to identify their biographical information. This study divides the function of the position into two, namely managerial and operational levels. The managerial level includes managerial and supervisory positions, while the operational level is employees who have operational functions at the hotel where they work. Can be seen in Table IV, respondents in this study were dominated by respondents with positions at the operational level of 78% and the remaining 22% were workers at the managerial level.

Respondents in this study were dominated by workers who had worked for more or less 1-3 years. Meanwhile, workers who worked for more than 3 years ranked second with a total of 20% and followed by workers who worked less than 1 year with a percentage of 17% as shown in Table 4.

Table 4

At the time of this research, hotels in partnership with RedDoorz was easier to find and more to be open rather than Airy Rooms and OYO. As a result of this survey, respondents from hotels in partnership with RedDoorz had the highest number with a percentage of 52%, followed by Airy Rooms 32% and OYO 16%. From Table 4 it can be seen that, most of the hotels have only started partnering less than a year. Respondents with the lowest percentage are hotels that have partnered for more than 2 years.

As illustrated in Table 4, as many as 71% of workers do not yet understand the Lean Six Sigma project and as many as 76% of the hotels do not implement LSS in their place of work. As many as 22% of the total sample have applied, as many as 8% have applied LSS for approximately 1-2 years and as many as 9% have only applied LSS less than a year. Meanwhile, hotels that has implemented LSS projects for more than 2 years is 7%.

4.2 Data analysis

The specification of the model in this study is based on the framework on Figure 2 and indicators of the latent construct depicted in Figure 2. From Figure 2, we can also see the inner and outer models which are the sub-models of this analysis.

Figure 2

From the picture it can be seen that management involvement and commitment (MIC) consists of four indicators, communication (COM) consists of two indicators, education and training (TRAIN) consists of three indicators, linking LSS to business strategy (LINK) consists of three indicators, and both project selection and prioritization (PROJ) also cultural change (CLTR) consists of one indicator only.

Meanwhile, LSS implementation (LSS) consists of three variables, operational performance (OPR) consists of seven indicators, and organizational performances (ORG) consists of eight indicators.

Ghozali and Latan (2015) suggested that to measure the validity by seeing the value of convergent validity and discriminant validity. Convergent validity on SmartPLS 2 can be seen in the outer loading value is > 0.70. From Table V, can be seen that ORG5 and LSS3 do not fulfil the requirement of convergent validity because the outer loading value are below 0.7. So, for the next measurement step, LSS3 and ORG5 will be deleted.

Table 5

In the validity test, it can be seen that in AVE each construct has a value above 0.5. From Table 6 it can be seen that each construct has fulfilled these criteria and can be declared valid.

Table 6

Table VI shows that each construct has an AVE value above 0.5. This shows that the value of convergent validity in this research model is very good. As for the AVE value = 1, it means that the indicator has the magnitude of the variance contained in the construct is perfect. This value occurs in constructs that only have 1 indicator.

To see the value of discriminant validity, it can be done by comparing the value of variable's constructs to other variable's constructs. From Table 7, it shows that the value of relationship among variable's construct has a value greater comparing to the relationship of the construct to other variable's construct. That way, this model can show that latent constructs predict indicators in their blocks better than indicators in other blocks. This has shown that this research model meets the discriminant validity criteria.

Table 7

Besides the construct validity test, a construct reliability test is also measured by two criteria, namely composite reliability and Cronbach's alpha from the indicator block measured from the construct. The construct is declared to be reliable if both criteria meet a value of more than 0.70. From Table 6 it can be seen that each construct has a composite reliability value and Cronbach alpha is all worth more than 0.70. This shows that the constructs in this research model have a fairly high reliability and good.

To measure the inner model in this study, it can be done by looking at the value of R^2. Based on Table 8, LSS implementation, operational performance, and organizational performance have construct values above 0.70. This shows that each construct has a substantial degree of accuracy. It can also be interpreted that LSS implementation can be influenced by CSF by 77.6%, while the remaining 22.4% can be influenced by other constructs that are not included in the model in this study. Operational performance's construct in this study was influenced by 76.4% by the construct of LSS implementation, the remaining 23.6% could be influenced by other constructs that were not included in the research model. The construct of organizational performance can be influenced by the constructs of LSS implementation and operational performance by 71.8%, the remaining 28.2% can be influenced by other constructs that are not included in the research model.

Table 8

The next evaluation of the inner model is to look at the path coefficient. In Table 9 it can be seen that the LSS implementation has relationship to operational performance as much as 0.874. Meanwhile through operational performance, LSS implementation influences organizational performance as much as 0.409. In contrary, LSS implementation could also influence organizational performance but only 0.408. Though it is a much closed value, but this research reveals that LSS implementation will affect organizational performance better through considering the operational performance.

Table 9

Hypothesis Testing

At this stage the model is evaluated using the t test. The t test is used for hypothesis testing which is performed through the bootstrapping procedure on the SmartPLS 2 program. The significant level used was 95% ($\alpha = 0.05$) with a t-table of 1.96. If the t-statistic value (| O / STDEV |) is **smaller than 1.96, then the hypothesis is rejected**.

Table 10

From Table 10 it can be concluded that there are three CSFs that have positive relationship to the implementation LSS, those are: management involvement and commitment (H_1), linking LSS to business strategy (H_4), and project selection and prioritization (H_5). Meanwhile, the other CSFs such as communication (H_2), education and training (H_3), and cultural change (H_6) don't have positive relationship to the implementation of LSS.

The relationship between implementation of LSS to the performances, both on the operational (H_7) and organizational performance (H_8), has proved that it has positive relationship to them. In another hand, operational performance also has a positive relationship to organizational.

5. Discussion

5.1 Relationship between CSFs and the implementation of LSS

Previous studies have shown that the involvement and commitment of management has an influence on the successful implementation of LSS in the company. In the research of Albliwi *et al* (2014) and Laureani and Antony (2012), revealed that management involvement and commitment were the most critical factors in implementing the LSS project. If there is no involvement from management, it is ensured that the LSS project in the company will fail and will result in no improvement in the company. In line with previous research, this study also revealed that management involvement and commitment has positive relationship to implementation of LSS.

Based on Dora *et al* (2016), the lack of an appropriate communication structure is a major obstacle in the adoption of Lean manufacturing. Timans *et al* (2012) revealed that communication has an important role in the application of LSS. However, according to Manville *et al* (2012), the study revealed that an effective communication plan is in bottom five rank of CSF of LSS. In this research, communication was not also a factor considered by respondents. We are all agree that actually communication is important for top management to communicate the aim of LSS implementation in the company. But, in this research it is more important to build the awareness of LSS implementations' benefit, before building the communication between top management and the operational workers. There is a possibility that

Education and training are not just for practice, but also increase the insight of workers to develop their soft skills to become more professional in the field of work they pursue. Based on Dora *et al* (2016), it was found that training was an important factor in the successful implementation of LSS. In the opposite, training can be a significant burden for the limited budget of such companies (Brun, 2011). That could be a reason why in this study education and

training were not factors that influenced the successful implementation of LSS. Basically, all hotels employees are willing to be trained and educated by VHO to improve their ability to provide the best service for hotel's guests. However, whether VHO has adequate capabilities and facilities to train employees, is a very big challenge for VHO.

According to Brun (2011), it was revealed that the relationship of LSS with business strategies was believed to help the successful implementation of LSS. Likewise, the research by Laureani and Antony (2012) states that the link between LSS and business strategy can significantly influence the successful implementation of LSS. In line with previous studies, the results of the statistical analysis test in this study revealed that the linking LSS to business strategy had an influence on the successful implementation of LSS.

There are only few of previous studies suggested that project priority and selection were one of the determining factors for the successful implementation of LSS. However, the research of Manville *et al* (2012) and Kamar (2014) stated that project priority and selection were one of the determining factors for the successful implementation of LSS. In line with this thinking, this study found that priority and project selection had a positive relationship with the successful implementation of LSS in hotel in partnership with VHO.

According to Laureani and Antony (2012) and Brun (2011), cultural change has a significant influence on the successful implementation of LSS. However, in the research of Timans *et al* (2012), cultural change has no influence on the successful implementation of LSS. In line with that study, the statistical results on the variable of cultural change show that it has no influence on the successful implementation of LSS. This can occur if there is a lack of understanding of what and how LSS works for employees. They assume, whether or not there is an LSS project in their work environment, the results will be the same without changing anything.

5.2 Relationship between LSS implementation and operational performance

Nawanir *et al* (2013) stated that, Lean Manufacturing has a positive influence on operational performance. Not much different from the Kamar (2014), Six Sigma implementation has a significant effect on operational performance in the service industry. The success of LSS implementation is measured by the efficiency of the service process at hotel in partnership with VHO. From these efficiencies (time, cost, and resources) can result in an increase in employee performance and an increase in service quality that can increase customer satisfaction at inns that partner with VHO.

5.3 Relationship between LSS implementation and organizational performance

In the research of Nawanir *et al* (2013), Lean manufacturing has a positive relationship with financial and non-financial performance. In line with that research, this study has a positive relationship between the successful implementation of LSS and organizational performance. Certainly, the efficiency carried out in the LSS project process reduces costs that are not needed, thus increasing the profitability of hotels. In addition, by running the LSS project, of course, hotels in partnership with VHO can highlight competitive advantages compared to other hotels of the same class so as to increase room rental sales higher than before.

5.4 Relationship between operational performance and organizational performance

Nawanir *et al* (2013) state that operational performance with organizational performance is an interdependent relationship. The better the operational performance, the better the organizational performance. Meanwhile, according to Kamar (2014), operational performance has a positive effect on financial performance which is part of organizational performance. This research results also stated that operational performance has a positive relationship with organizational performance. If the hotel has a good operational performance system and is organized so that it can improve the quality of workers and customer satisfaction, then what happens is that the level of sales of hotel profitability will also increase.

5.5 Relationship between LSS implementation, operational performance, and organizational performance

According to path coefficient at Table 8, it can be seen that the direct relationship between LSS implementation and organizational performance is weaker than the indirect relationship through operational performance. It is in line with the research of Kamar (2014) that stated if organizational performance was not directly affected by the LSS implementation, but it would be affected through operational performance. It is clear that, LSS implementation will improve the operational performance which can boost the organizational performance, financially and non-financially.

6. Conclusion

LSS as a strategic tool and continuous improvement, basically can be used in various sectors of the industry, both manufacturing and services, including the lower middle class hospitality industry. CSF in the implementation of LSS is very necessary for hotels' stakeholders to be introduced in order to improve the operational and organizational performance. This study reveals that there are three out of six CSF of LSS which have positive relationship to the implementation of LSS in low-cost budget hotels in Semarang city, namely management involvement and commitment, linking LSS to business strategy, and project selection and prioritization. The research also gives some point of view that LSS could influences both operational and organizational performance.

This research has some implications both for virtual hotel operators and the hotel itself. By implementing the LSS in a right way, low-cost budget hotels may have some chances to fix the quality of service, sources both human resources and materials, which will be affect to the financial and non-financial performance in the hotels.

Management involvement and commitment are the most basic factors. Without a strong commitment from top management, it is certain that the business that will not run well. Linking LSS to business strategy is also inseparable from the intervention of top management and employees to find the best way to make continuous improvements in line with the business strategy. Supported by project selection and prioritization of the right LSS project, the business goals of hotels in partnership with VHO, to improve the business performances will be achieved.

The implementation of LSS has the benefit of ensuring services are in accordance with what is needed by consumers, removing activities that do not add value (non-value added), reducing the incidence of damaged transactions, shortening the work cycle time, and also providing the right service at the right time (Laureani, 2012). That way, it will affect the quality of operational

employees' performance so as to gain customer loyalty which also affects their satisfaction. Efficiency in the LSS process implementation reduces costs that are not needed, so as to increase the profitability of hotels. In addition, by running the LSS project, of course, hotels in partnership with VHO can highlight competitive advantages compared to other hotels of the same class so as to increase room rental sales higher than before.

As revealed by Nawanir *et al* (2013), the better the operational performance, the better the organizational performance. If VHO choose to implement LSS, the working environment will be change, and it is slowly affect the productivity of the workers, that will also increase the customer satisfaction, that will be improve organizational performance, both financially and non-financially.

This research certainly cannot be separated from a limitation. Although basically this research would like to give advice to the VHO to implement LSS in order to support improved operational and organizational performance, the reality is rather difficult because the partners themselves do not understand what and how LSS is, though there is actually a spirit of LSS that they have been implemented informally. Lack of respondents' understanding of the LSS concept became the main obstacle for the writer in collecting the questionnaire. In addition, the bustle of the workers and innkeepers also slowed down data collection so that it took a long time before the data could be processed. Based on the limitations that authors faced, there are two recommendations. Firstly, it is expected to have a comparative research between the hotels that are and are not implementing LSS in the hotels, and figure it out what CSFs could be determining the LSS implementation in both hotels and what is the impact to the performances of the hotels' industries. Secondly, for future research to be expected to have a comparative study about the condition before and after implementing LSS and what the performances' difference between the late and the future hotels with LSS implementation.

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Employees' Perception of Lean Six Sigma Implementation to Business Performance

Table 1. CSFs of Six Sigma, Lean, and LSS from previous researches

CSF \ Author	A	B	C	D	E	F	G	H	I	J
Management involvement and commitment	√	√	√	√	√	√	√	√	√	√
Education and training	√	√	√	√	√	√	√	√	√	√
Project priorities and selection	√	√	√	√	√	√	√	√	√	√
Organization's infrastructure	√		√	√	√	√	√	√		√
Communication	√	√	√	√		√	√			√
Linking LSS to business strategy	√		√	√	√	√				√
Understanding LSS tools and technique	√		√	√		√	√			√
Cultural change	√		√				√		√	√
Project management skills	√		√	√		√				√
Linking LSS to suppliers	√		√				√			
Linking LSS to awards and recognition		√		√		√				
Awareness						√	√			
LSS project tracking and review		√				√			√	
Management performance					√				√	
Vision and plan statement			√							
LSS's staff selection						√				
Data based approach						√				
Linking LSS to supply chain						√				
LSS financial accountability		√				√				

Source: Shofia *et al* (2020)

Notes: A. Brun, (2011); B. Jeyaraman and Teo (2010); C. Timans *et al* (2012); D. Manville *et al* (2012); E. Psychogios *et al* (2012); F. Laureani dan Antony (2012); G. Albliwi *et al* (2014); H. Dora *et al* (2013); I. Kamar (2014); J. Shofia *et al* (2020)

Table 2. CSFs that affect Lean, Six Sigma and LSS in manufacturing and service industry

Authors	Top CSFs of Lean/ Six Sigma/ Lean Six Sigma
Manufacturing Industry	
Brun (2011)	Management involvement and commitment
	Cultural change
	Linking six sigma to business strategy
Manville *et al* (2012)	Senior management commitment
	Linking LSS to business strategy
	Linking LSS to customer
Timans *et al* (2012)	Linking LSS to customer
	Vision and plan statement
	Communication
Dora *et al* (2016)	Top management commitment
	Training
	Resources
Service Industry	
Psychogios *et al* (2012)	Top management support and involvement
	Organizational culture
	Training
Kamar (2014)	Project selection
	Linking LSS to business strategy
	Commited leadership and capabilities
	Training and education

Table 3. Business performance's elements in hospitality industry

Business Performance	**Elements**
Operational Performance	Customer Satisfaction
	Customer relationship
	Improve strategic forecasting
	Improvement of service/product quality
	Improvement of internal process efficiency
	Improvement of productivity
	Improvement of waste elimination
Organizational Performance	Increase profitability
	Cash flows (liquidity)
	Increase operating revenue
	Reduce costs
	Return on Investment (ROI)
	Improve the competitive advantage
	Increase sales
	Develop new market

Table 4. General Profiles of Surveyed Hotels

Attribute	N = 120	%
Based on job function		
Managerial	26	22%
Operational	94	78%
Based on VHO partner		
Airy Rooms	39	33%
OYO	19	16%
RedDoorz	62	52%
Based on length of partnership		
1 - 2 yrs	27	23%
< 1 yr	72	60%
> 2 yrs	21	18%
Based on understanding LSS concept		
No	85	71%
Yes	35	29%
Based on implementation LSS in the workplace		
No	91	76%
Yes	29	24%
Based on length of implementing for LSS		
Not implementing	91	76%
< 1 yr	11	9%
> 2 yrs	8	7%
1 - 2 yrs	10	8%

Table 5. Outer Loading

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1.0								
COM1		0.965938							
COM2		0.956954							
LINK1			0.926519						
LINK2			0.919266						
LINK3			0.928913						
LSS1				0.768345					
LSS2				0.900812					
LSS3				0.565966					
LSS4				0.751917					
LSS5				0.876308					
LSS6				0.839231					
MIC1					0.898345				
MIC2					0.917903				
MIC3					0.831125				
MIC4					0.874325				
OPR1						0.855090			
OPR2						0.883351			
OPR3						0.877623			
OPR4						0.860631			
OPR5						0.876026			
OPR6						0.873884			
OPR7						0.822886			
ORG1							0.814056		
ORG2							0.778680		
ORG3							0.861403		
ORG4							0.875370		
ORG5							0.613395		
ORG6							0.818436		
ORG7							0.841193		
ORG8							0.834357		
PROJ								1.0	
TRAIN1									0.894770

TRAIN2	0.886357
TRAIN3	0.837098

Source: Primary data processing

Table 6. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	AVE
Communication	0,924	0,961	0,924
Cultural change	1,000	1,000	1,000
LSS implementation	0,891	0,921	0,700
Linking LSS to business strategy	0,855	0,947	0,855
Management involvement and commitment	0,776	0,933	0,776
Operational performance	0,944	0,954	0,747
Organizational performance	0,928	0,942	0,700
Project selection and prioritization	1,000	1,000	1,000
Training and ducation	0,763	0,906	0,763

Source: Primary data processing

Table 7. Cross Loadings

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1000000	0.604484	0.588185	0.608523	0.673616	0.681398	0.590768	0.635030	0.671065
COM1	0.578996	0.965908	0.538026	0.549048	0.804269	0.562332	0.459008	0.391509	0.776367
COM2	0.583952	0.956987	0.489393	0.489917	0.775367	0.515082	0.468540	0.373412	0.661708
LINK1	0.523974	0.447635	0.926357	0.724348	0.538658	0.706133	0.631997	0.617398	0.639467
LINK2	0.572668	0.538624	0.918155	0.789256	0.565344	0.747918	0.653095	0.586884	0.558306
LINK3	0.533848	0.495920	0.930172	0.800020	0.549475	0.743702	0.585424	0.595725	0.638471
LSS1	0.611592	0.625152	0.651468	0.780215	0.703238	0.631615	0.489871	0.621455	0.830088
LSS2	0.601467	0.463131	0.692735	0.899815	0.507942	0.798728	0.718939	0.756858	0.566804

LSS4	0.585103	0.466813	0.715374	0.742437	0.457229	0.623820	0.717856	0.515999	0.488862
LSS5	0.453584	0.393073	0.739467	0.893575	0.365337	0.825272	0.712570	0.617065	0.440135
LSS6	0.319015	0.353831	0.695592	0.855778	0.325110	0.755693	0.752892	0.538054	0.422897
MIC1	0.602638	0.814214	0.596605	0.584948	0.900849	0.555528	0.443634	0.438984	0.712196
MIC2	0.587739	0.716539	0.527595	0.487380	0.919484	0.452954	0.358973	0.502045	0.773439
MIC3	0.564639	0.700032	0.477522	0.395888	0.827571	0.457205	0.356855	0.305532	0.676773
MIC4	0.621380	0.646695	0.479295	0.447563	0.872597	0.511110	0.377427	0.503280	0.667894
OPR1	0.521732	0.442284	0.732605	0.849416	0.468909	0.854899	0.660997	0.597179	0.562251
OPR2	0.522820	0.509898	0.678783	0.808109	0.422116	0.883417	0.733409	0.596633	0.503206
OPR3	0.713189	0.576645	0.695973	0.766759	0.513764	0.878070	0.751403	0.657453	0.551125
OPR4	0.592193	0.533318	0.682590	0.730482	0.528933	0.860667	0.745604	0.604536	0.553708
OPR5	0.609681	0.498102	0.733705	0.721185	0.508135	0.875943	0.793159	0.640592	0.527367
OPR6	0.561041	0.408097	0.646672	0.744827	0.493124	0.873611	0.644252	0.670396	0.522649
OPR7	0.606522	0.416589	0.618525	0.656228	0.483943	0.822858	0.646233	0.576792	0.479078
ORG1	0.545906	0.479389	0.542310	0.750029	0.415779	0.803720	0.825352	0.574735	0.501676
ORG2	0.493723	0.444009	0.577112	0.612507	0.314147	0.584852	0.811159	0.493063	0.445064
ORG3	0.635918	0.451976	0.662678	0.734741	0.425151	0.689933	0.890320	0.607983	0.421359
ORG4	0.551248	0.342522	0.599019	0.716332	0.328657	0.699005	0.894217	0.590083	0.350836
ORG6	0.296430	0.225212	0.473032	0.622023	0.334855	0.592622	0.779149	0.533551	0.357794
ORG7	0.538524	0.486119	0.546198	0.655011	0.406889	0.754253	0.849172	0.633186	0.415574
ORG8	0.361283	0.368308	0.540328	0.670329	0.333601	0.665226	0.802276	0.600172	0.275414
PROJ	0.635030	0.398227	0.648187	0.730148	0.500619	0.717692	0.690704	1000000	0.544057
TRAIN1	0.583566	0.577561	0.568874	0.625940	0.630812	0.572788	0.478363	0.607569	0.893482
TRAIN2	0.629244	0.778919	0.637022	0.582966	0.715502	0.562563	0.481353	0.384212	0.883368
TRAIN3	0.541143	0.613892	0.519566	0.458752	0.788572	0.452591	0.246965	0.415313	0.842839

Source: Primary data processing

Table 8 R Square

	R Square
LSS implementation	0.776
Operational performance	0.764
Organizational performance	0.718

Source: Primary data processing

Table 9. Path Coefficient

	Operational Performance	Organizational Performance
LSS Implementation	0.874	0.408
Operational Peformance		0.468

Source: Primary data processing

Table 10. Hypothesis testing

	LSS implementation	Operational performance	Organizational performance	Hypothesis testing
Communication	0,170			**REJECTED**
Cultural change	0,345			**REJECTED**
LSS implementation		37,627	2,556	ACCEPTED
Linking LSS to business strategy	5,755			ACCEPTED
Management involvement and commitment	2,009			ACCEPTED
Operational performance			3,083	ACCEPTED
Organizational performance				ACCEPTED
Project selection and prioritization	4,456			ACCEPTED
Training and education	0,855			**REJECTED**

Source: Primary data processing

Employees' Perception of Lean Six Sigma Implementation to Business Performance

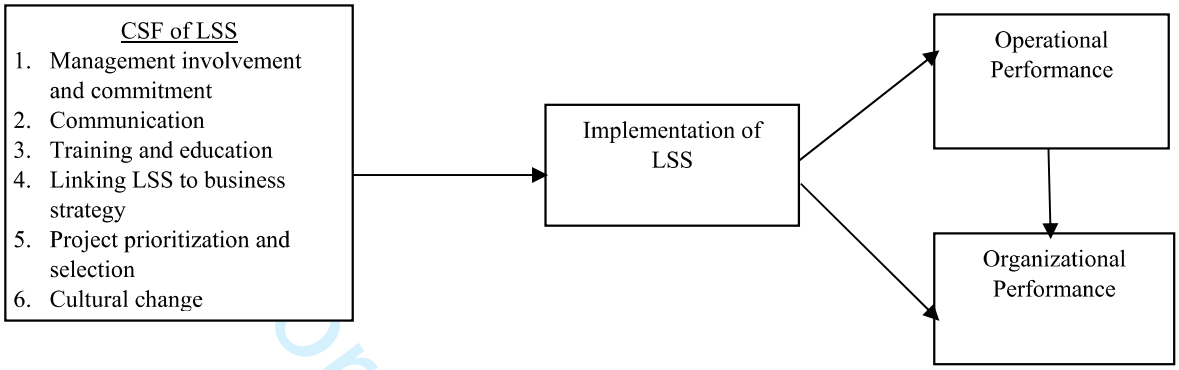
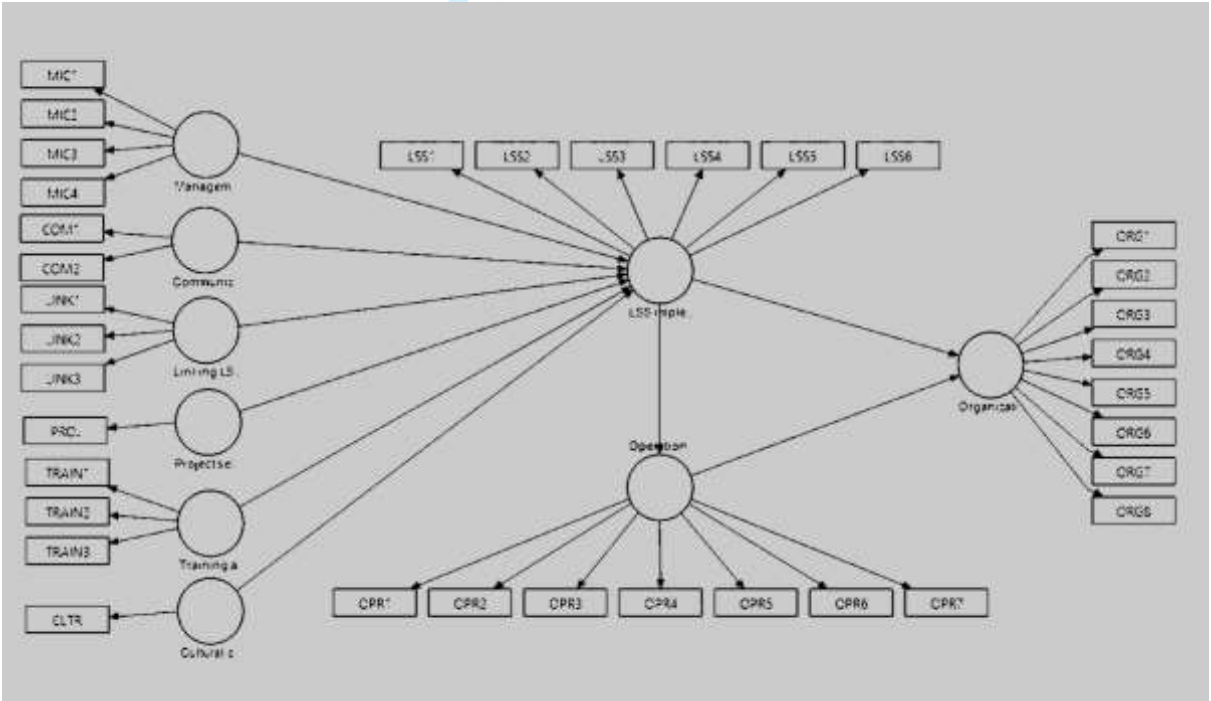


Figure 1 Research Framework



Source: SmartPLS 2

Figure 2 Model Specification

Decision Letter (WQAH-2020-0146)

From: qiuhanqin@nankai.edu.cn

To: heru.prastawa@gmail.com

CC:

Subject: Journal of Quality Assurance in Hospitality & Tourism - Decision on Manuscript ID WQAH-2020-0146

Body: 16-Mar-2021

Dear Dr Prastawa:

Your manuscript entitled "Employees' Perception of Lean Six Sigma Implementation to Business Performance", which you submitted to Journal of Quality Assurance in Hospitality & Tourism, has been reviewed. The reviewer comments are included at the bottom of this letter.

The reviewer(s) would like to see some revisions made to your manuscript before publication. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript.

When you revise your manuscript please highlight the changes you make in the manuscript by using the track changes mode in MS Word or by using bold or coloured text.

To start the revision, please click on the link below:

*** PLEASE NOTE: This is a two-step process. After clicking on the link, you will be directed to a webpage to confirm. ***

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This will direct you to the first page of your revised manuscript. Please enter your responses to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you made to the original manuscript. Please be as specific as possible in your response to the reviewer(s).

This link will remain active until you have submitted your revised manuscript. If you begin a revision and intend to finish it at a later time, please note that your draft will appear in the "Revised Manuscripts in Draft" queue in your Author Centre.

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to Journal of Quality Assurance in Hospitality & Tourism, your revised manuscript should be uploaded by 27-Apr-2021. If it is not possible for you to submit your revision by this date, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to Journal of Quality Assurance in Hospitality & Tourism and I look forward to receiving your revision.

Sincerely,
Professor Hanqin Qiu
Editor in Chief, Journal of Quality Assurance in Hospitality & Tourism
qiuhanqin@nankai.edu.cn

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
Reviewer Comments to Author

This paper tried to investigate Employees' Perception of Lean Six Sigma Implementation to Business Performance. It must have taken much effort to conduct the research, but its contribution is not clear to readers. In specific, it should be improved in the following ways to be published.

1. Major comments

(1) Contribution
This research is based on the 120 respondents who work in the hotels that affiliate with VHO such as Airy Rooms, RedDoorz, and OYO Rooms at Semarang city. It seems that the contribution of this research also lies in this sample towards these. Readers may wonder identifying an evaluation model is the same important for different areas or cities. That is, please discuss more about the contribution of this research and explain how the research findings can be used to give values to different area or city.

(2) Methods
Please include more information about the survey process. What are the criteria or bias that you choose the sampling procedure?

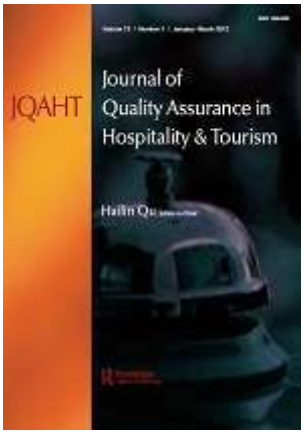
(3) Theoretical and managerial implications
Please extend the discussions in this paper and link them to the contribution. In this paper, the theoretical and managerial implications are linked to the empirical findings. Instead of linking to the empirical results, it is recommended to emphasize what the previous studies could not identify but this paper did.

Reviewer: 2

Comments to the Author
Dear Author：
This paper identified the critical success factors of LSS at the low-cost budget hotel. It clarified the CSF influence on the LSS implementation and further detected how LSS affects operational and organizational performance. The whole manuscript is formed with a clear flow. All the subsections are well connected. It may contribute to the implementation of LSS in low-cost budget hotels. This manuscript has the potential to be published with proper modification. Here are some comments for your consideration.
(1) Title. As you emphasized the CSF identification and conducted the study in the budget hotel, you may add them or one of this information in your title
(2) Refine the language and punctuation, as there are still some mistakes in the abstract and the main text.
E.g "This paper has aim to identify the critical success factors..." "The approach is carried out with To achieve this objective, the researcher surveyed 120 respondents who..."
(3) Provide a better visualization of Fig.1. You may add some symbols (e.g.hypothesis) to show the relationship.
(4) Fig.2 is not clear enough for the readers.

Good luck!

Date Sent: 16-Mar-2021



Employees' Perception of Lean Six Sigma Implementation to Business Performance on Low-cost Budget Hotels

Journal:	*Journal of Quality Assurance in Hospitality & Tourism*
Manuscript ID	WQAH-2020-0146.R1
Manuscript Type:	Research Note
Keywords (pick from the list OR enter your own):	Critical success factors, Lean Six Sigma, hospitality, virtual hotel operator, business performance
Abstract:	This study aims to identify the critical success factors (CSFs) of Lean Six Sigma (LSS) at low-cost budget hotels, which are affiliated with virtual hotel operator (VHOs) that provide some knowledge on how CSFs influence the LSS implementation and how LSS can affect operational and organizational performances on the basis of employees' perception. To achieve this objective, the researcher surveyed 120 respondents who work in hotels that are affiliated with VHOs, such as Airy Rooms, RedDoorz, and OYO Rooms at Semarang City. Result indicates that among the six CSFs that were determined, only three affected the LSS implementation, namely, management involvement and commitment, linking LSS to business strategy, and project selection and prioritization. LSS has a weaker direct influence on organizational performance than their relationship with operational performance. This study focused on hotels that have partnerships with VHOs, which do not implement LSS in their business environment. This research was based on employees' perception if LSS was implemented in their working environment to give some points of view on what CSFs could successfully affect the LSS implementation and whether it could effectively boost the performances.

INTRODUCTION

Lean Six Sigma (LSS), as a strategy and business methodology, has been proven to improve the performance of a process to produce customer satisfaction (Snee, 2010). LSS, as an integrated methodology, combines the speed of Lean to smoothen the process and the robustness of Six Sigma through a disciplined and systematic approach to solve problems (Antony *et al.*, 2018). Lean focuses on eliminating activities that do not add value to the final product, whereas Six Sigma focuses on eliminating variations in the process. Both goals create an effective production system to meet customer satisfaction by creating a good-quality product (Dogan and Gurcan, 2018). The application of Lean and Six Sigma in parallel is noted in many case studies in the manufacturing and service sectors (Albliwi *et al.*, 2014). In service organizations, Lean intends to reduce waste in terms of time and making processes more efficient than before; meanwhile, Six Sigma focuses on improving the process by reducing the variability to achieve the result of efficiency close to 99.9997% of the time (Antony *et al.*, 2017).

[1]Semarang, as the capital of Central Java Province, apart from being the center of all activities in the regional government and economy, has adequate transportation infrastructures, such as airports, train stations, and terminals that support Semarang as the center of transit in Central Java Province. This characteristic is quite attractive for investors to develop tourism activities to bring in large numbers of domestic and foreign tourists. Investors also certainly do not overlook this opportunity to build inns and hotels, which suit the needs of tourists. Based on Semarang City Hospitality Statistics 2018, a total of 106 non-star (budget) hotels exist, which is higher than that of star hotels. However, the highest rate occupancy is dominated by three-star hotels (Central Bureau of Statistics for the City of Semarang, 2018). This finding suggests that hotel customers believe that with prices that are slightly higher than budget hotels, they obtain much better service.

To catch up on the occupancy level, budget hotels collaborate with virtual hotel operators (VHOs). VHO partners mostly come from economy class hotels to middle class and local brands. Meanwhile, VHO customers are those classified as budget travelers who are looking for affordable accommodation with good value offered (Wiastuti and Susilowardhani, 2016). A VHO serves as a mediator between a hotel and a customer. The VHO makes it easy for the partner to be easily found by the customer under the name VHO that houses the partner. After providing complete data on a room to be rented out, the VHO markets the room, so that it can be booked by the customer through OTA, the official VHO website or through the VHO application on a smartphone. After the customer/guest of the inn books the room from the partner, the customer pays the room rent and service fee to the VHO. From these costs, the VHO pays the agreed room rental price to the partner as much as 65%–70% of the total paid by the customer. For certain classes, VHOs guarantee partners full profits without any deductions for a certain period even if such partners do not meet the sales target. Indirectly, customers have rented rooms from partner hotels, and in return, partners provide rooms that have been rented by VHO customers.

In real day-to-day cases, VHOs are faced with problems where hotel workers have below-average skills when serving hotel customers. The reason is that not all employees understand the ins and outs of hospitality and have an education that supports their performance in the hospitality industry. Although VHOs aim to provide good service and quality above the standard of quality service, the workforce of low-budget hotels can face problems such as lack of

experience, lack of training, lack of fluency in speaking a foreign language, lack of positive attitude toward work, and an un-ergonomic workplace (Shofia *et al*., 2020; Bhat *et al*., 2014).

These problems can be resolved by implementing Lean and Six Sigma in hotels. By combining both, LSS is proven to be able to improve performance in many departments in a hotel even in a small hotel with a limited budget (Lancaster, 2011). LSS has benefits such as removes non-value-adding activities (wastes), reduces damaged products/transactions, shortens cycle times, and delivers the right product/service at the right time in the right place (Laureani, 2012). Other benefits are LSS can help companies utilize resources (human, financial, and system) efficiently (Kabir *et al*., 2013) and gain operational and organizational improvement benefits (Jeyaraman *et al*., 2012).

The understanding about what and how LSS is from the company point of view remains lacking. Kamar (2014) revealed the barriers in introducing the Six Sigma process to the hotel industry, such as resistance to change and the desire to maintain the quality currently used in the hotel, lack of knowledge of Six Sigma, lack of adequate information about Six Sigma, and lack of clarity about the expected benefits. From the management point of view, the situation when companies implement LSS, they must implement the cost and subsequent implementation of Lean adoption before they can commit is misunderstood (Achanga *et al*., 2006). This reason explains why only few hotels, including VHOs that are broadly spread all over the nation, especially in Semarang City, do not apply LSS.

Managers must further concentrate on readiness factors to formulate the execution process of LSS for the continuous improvement of their organization (Vaishnavi and Suresh, 2020). To help companies implement Lean and avoid costly failures, previous researchers suggested several critical success factors (CSFs) (Netland, 2016). CSFs can be defined as "some things that must go well to ensure success for managers or organizations; therefore, they represent managerial areas or companies that must be given special attention continuously to produce high performance" (Netland, 2016; Boynton and Zmud, 1984).

To introduce the knowledge of LSS to the hospitality industry, this study aims to identify LSS implementation to business performance on low-cost budget hotels, which are affiliated with VHOs on the basis of employees' perspective by identifying the CSFs of LSS. This research gives some points of view on how CSFs influence the LSS implementation and how LSS can affect operational and organizational performances on the basis of employees' perception. According to the problem formulation in this study, the following questions arise: what CSFs can successfully influence the LSS implementation in low-cost budget hotels in Semarang City? What is the relationship between LSS implementation and company performance comprising operational and organizational performances?

This study includes previous studies on LSS to consider the CSFs of LSS.

REVIEW OF LITERATURE

CSFs of LSS implementation

Based on Table 1, according to Shofia *et al*. (2020), LSS has nine CSFs, which have already concluded to be measured at LSS implementation in the low-cost budget hotel industry at Semarang City: management involvement and commitment, communication, organization infrastructure, education and training, linking LSS to business strategy, project selection and

prioritization, project management skill, understanding LSS tools and techniques, and cultural change.

TABLE 1

However, not all CSFs mentioned above are used in this study, such as organizational infrastructure, project management skills, and understanding of LSS tools and techniques. Previous studies revealed that organizational infrastructure and project management performance are not factors that influence LSS implementation, although they have a slight impact. The understanding of LSS tools and techniques in this study is deemed inappropriate because in reality, the object of research is that only few understand LSS implementation; therefore, the fact that the research object does not understand LSS tools and techniques can also be understood.

TABLE 2

Table 2 presents no significant differences in the CSFs that affect LSS implementation in the manufacturing and service industries. Previous research agreed that management involvement and commitment are the most important CSFs in LSS implementation. Management involvement and commitment are two important elements to a successful implementation of LSS in any organization (Albliwi *et al*., 2014). When a management does not have any commitment, implementing Lean in the organization is difficult, which is a major obstacle (Zhou, 2016). Top management has an important role in the creation and management of process management systems, and direct participation is necessary to realize the successful implementation of LSS. Brun (2011), Manville *et al*. (2012), and Laureany and Antony (2012) found that management involvement and commitment are the factors that influence the successful implementation of LSS. Netland (2015) revealed that managers must commit to and involve themselves in implementation activities to succeed by implementing the Lean program. Laureani and Antony (2018) suggested that organizations must have leaders who are committed to inspire their employees and build a different culture continuously to obtain the benefits of the implementation of LSS.

H_1: Management involvement and commitment have a positive influence on the successful implementation of LSS.

Communication is also an important element for managers to explain how LSS works and how much LSS benefits in doing work to subordinates to spread business strategies, meet customer needs, and form a solid work team. Timans *et al*. (2012) revealed that communication has an influence on the successful implementation of LSS. Noori (2015) argued that effective communication at all levels vertically and horizontally is one of the factors that influences the success of Lean. Lack of effective communication can also have an impact on the failure of LSS implementation (Albliwi *et al*., 2014).

H_2: Communication has a positive effect on the successful implementation of LSS.

Education and training also have a significant role in communicating the “why” and “how” and the LSS project. Kamar (2014) found that an appropriate training program aims to ensure that managers and employees can use and implement the Six Sigma techniques effectively. With the LSS knowledge provided, employees, especially operators, can easily work effectively and efficiently. Meanwhile, training is an important factor for the successful implementation of LSS

and procedures because reducing time on LSS implementation can make savings for companies and reduce labor costs (Albliwi *et al*., 2014).

H_3: *Education and training have a positive effect on the successful implementation of LSS.*

Furthermore, the connection between the LSS project and business strategy can be shown in nominal terms that can help the development of a business strategy. Brun (2011), Setijono *et al*. (2012), and Kamar (2014) suggested that linking LSS and business strategy is a CSF that is considered important in implementing LSS. Manville *et al*. (2012) revealed that many companies believe that LSS helps them achieve their strategic goals. Noori (2015) stated that the Lean program must be related to the company strategy to obtain a successful and improved performance in the long run.

H_4: Linking LSS to business strategy has a positive effect on the successful implementation of LSS.

In addition, Albliwi *et al*. (2014) believed that top management must be able to choose the right project for the right people to succeed in LSS. The selected projects must be those that have business goals or company goals. According to Netland (2015), a continuing need for proper planning, follow-up, and funding for the Lean program exists. Timans *et al*. (2012) argued that companies must design systems to prioritize and select projects, which contain standards for different projects with different time frames, from short projects (one to five days) to long-term projects.

H_5: *Project selection and prioritization have a positive effect on the successful implementation of LSS.*

Last, the application of LSS requires significant changes to the company culture in carrying out business operations in terms of structure and infrastructure. An awareness of the needs and benefits and LSS must exist, so that LSS projects can run smoothly and successfully. Noori (2015) argued that good cultural change is the result of a continuous combination of training and Lean projects. Setijono *et al*. (2012) and Dora *et al*. (2016) revealed that organizational culture is one of the success factors in implementing LSS.

H_6: Cultural change has a positive effect on the successful implementation of LSS.

Relationship between LSS implementation and business performance

The performance level in a company is measured through operations and organization (Jeyaraman *et al*., 2012). Operational performance in the service industry is measured on the basis of customer satisfaction, customer relationships, increased forecasting strategies, improved product quality services, and increased efficiency of internal processes (Kamar, 2014).

Ismail Salaheldin, (2009) measured organizational performance on the basis of return on investment (ROI), market share growth, investment in research and development, and market orientation. Jayaraman and Teo (2012) measured organizational performance on the basis of financial aspects, such as revenue growth, net profit, profit-to-income ratio, and return on assets, and non-financial aspects, such as the capacity to develop competitive profiles, new product development, and market development.

Nawanir *et al.* (2013) elaborated the relationship between LSS implementation and business performance. Lean manufacturing has a positive influence on operational performance in manufacturing companies. Meanwhile, Kamar (2014) stated that some hotels that implement the Six Sigma are aware of the fact that Six Sigma is one of the most effective strategies to improve

product/service quality, improve internal processes, and develop the overall operational excellence.

H_7: LSS implementation has a positive effect on operational performance.

From the aspect of organizational level, LSS helps companies achieve stronger competitive advantages so that they become more competitive and then have an effect on better financial improvement. Improved performance and productivity by creating a higher product reliability and lower volatility at the level of internal process operations, reducing company exposure to economic risk, is directly proportional to increased profitability and ROI.

H_8: LSS implementation has a positive effect on organizational performance.

In the relationship between operational performance and organizational performance, Ismail Salaheldin (2009) suggested that operational performance has a strong influence on financial performance, but it is quite weak on non-financial performance. Similarly, Garcia-Bernal and Ramirez-Aleson (2015) indicated that operational performance has a positive effect on financial performance. Nawanir (2013) stated that the better the operational performance, the better the organizational performance.

H_9: Operational performance has a positive effect on organizational performance.

TABLE 3

According to the hypothesis building in the literature review, CSFs, such as management involvement and commitment, communication, education and training, linking LSS to business strategy, project selection and prioritization, and cultural change, have a positive relationship with LSS implementation. Meanwhile, LSS implementation has a positive relationship with operational and organizational performances; operational performance also has a positive relationship with organizational performance. These relationships are illustrated in Figure 1.

FIGURE 1

RESEARCH METHODOLOGY

[2]The primary data collection in this study was to conduct interviews and distribute questionnaires directly to respondents who are related to this research from January 2020 to early February 2020. At the time this research was conducted, the VO population in Semarang City consisted of 33 inns in collaboration with Airy Rooms, 34 inns with Reddoorz, and 20 OYO inns.

The measurement scale used in the questionnaire was the Likert scale. To prevent worse scenarios and bias results, researchers believed that the “neutral” option in the questionnaire must be eliminated. Ten scores starting from strongly disagree to strongly agree were used. The Partial Least Square–Structural Equation Modeling (PLS–SEM) method was employed to

analyze the questionnaire data, and the SmartPLS 2.0 program was used to process such data. PLS is an SEM technique based on an iterative approach that maximizes the explained variance and endogenous construction (Fornell and Bookstein, 1982; Hair *et al*., 2014). This method was used to determine the CSFs that affect the LSS implementation and the relationship between LSS and hotel performance.

Researchers distributed the questionnaires by visiting hotels that are affiliated with VHOs. Some of the questionnaires were left out for a few days, whereas others were filled out right away. Since the population of VHO was not much, researches decided to spread out the questionnaries about 2-4 questionnaires for each hotel.

This result was clear, considering that low-budget hotels rarely have a manager, and the owners are the direct supervisors. However, meeting the owners was difficult; thus, many questionnaires were filled out by operational employees. The respondents were the employees who has direct contact to customer, also the managers (if they have one), and also the owner of the hotels. Unfortunately, most employees neither knew the meaning of LSS nor the uses of LSS tools. To prevent misunderstandings, the researchers waited while the respondents were filling out the questionnaire, so that they could explain terms that the respondents did not understand.

RESULT

Sample demographic

The first part of the survey asked the respondents to identify their biographical information. This study divided the function of the position into two, namely, managerial and operational levels. The managerial level includes managerial and supervisory positions, whereas the operational level comprises employees who have operational functions at the hotel where they work. Table 4 shows that the respondents were dominated by those with positions at the operational level with a total of 78%, and the remaining 22% were workers at the managerial level. Moreover, the respondents were dominated by workers who had worked for more or less one to three years. Meanwhile, workers who worked for more than three years ranked second with a total of 20%, followed by workers who worked less than one year with a total of 17%.

TABLE 4.

At the time of this research, hotels in partnership with RedDoorz were easier to find and more open than those in partnership with Airy Rooms and OYO. As a result of this survey, respondents from hotels in partnership with RedDoorz had the highest number, accounting for 52%, followed by Airy Rooms 32% and OYO 16%. Table 4 presents that most hotels have only started partnering less than a year. Respondents with the lowest percentage are hotels that have partnered for more than two years.

As presented in Table 4, 71% of workers do not yet understand the LSS project, and approximately 76% of hotels do not implement LSS in their place of work. Moreover, 22% of the total sample have applied fully, 8% have applied LSS for approximately one to two years,

and 9% have only applied LSS for less than a year. Meanwhile, 7% of hotels have implemented LSS projects for more than two years.

Data analysis

The specification of the model in this study is based on the framework in Figure 2 and the indicators of the latent construct depicted in Figure 2. Figure 2 illustrates the inner and outer models, which are the sub-models of this analysis.

FIGURE 2

Figure 2 shows that management involvement and commitment (MIC) comprise four indicators, communication (COM) consists of two indicators, education and training (TRAIN) comprise three indicators, linking LSS to business strategy (LINK) consists of three indicators, and project selection and prioritization (PROJ) and cultural change (CLTR) comprise one indicator only.

Meanwhile, LSS implementation (LSS) consists of three variables, operational performance (OPR) comprises seven indicators, and organizational performance (ORG) consists of eight indicators.

Ghozali and Latan (2015) suggested that validity can be measured by considering the values of convergent validity and discriminant validity. Convergent validity on SmartPLS 2 that can be seen in the outer loading value is > 0.70. Table 5 presents that ORG5 and LSS3 do not fulfill the requirement of convergent validity because the outer loading value is below 0.7. Thus, for the next measurement step, LSS3 and ORG5 are deleted.

TABLE 5

In the validity test, each construct has a value above 0.5 in the AVE. Table 6 shows that each construct has fulfilled these criteria and can be declared valid.

TABLE 6

Table 6 also presents that each construct has an AVE value above 0.5, indicating that the value of convergent validity in this research model is very good. The AVE value of 1 means that the indicator of the magnitude of the variance contained in the construct is perfect. This value occurs in constructs that only have one indicator.

To obtain the value of discriminant validity, the value of one variable construct is compared with that of another variable construct. Table 7 shows that the value of relationship between the two variable constructs is greater than that of the relationship between a construct and another variable construct. Therefore, this model can show that latent constructs predict indicators in their blocks better than indicators in other blocks. Moreover, this research model meets the discriminant validity criteria.

TABLE 7

Apart from the construct validity test, a construct reliability test is also conducted using two criteria, namely, composite reliability and Cronbach's alpha from the indicator block measured from the construct. The construct is declared to be reliable if both criteria meet a value of more than 0.70. Table 6 presents that each construct has a composite reliability value, and Cronbach's alpha is all worth more than 0.70. Therefore, the constructs in this research model have a fairly high reliability and are good.

To measure the inner model in this study, the value of R^2 is observed. Table 8 shows that LSS implementation, operational performance, and organizational performance have construct values above 0.70. Thus, each construct has a substantial degree of accuracy. Another interpretation is that LSS implementation can be influenced by CSFs by 77.6%, whereas the remaining 22.4% can be influenced by other constructs that are excluded from the model in this study. The construct of operational performance in this research is influenced by the construct of LSS implementation by 76.4%; the remaining 23.6% can be influenced by other constructs that are excluded from the research model. The construct of organizational performance can be influenced by the constructs of LSS implementation and operational performance by 71.8%; the remaining 28.2% can be influenced by other constructs that are excluded from the research model.

TABLE 8

The next evaluation of the inner model is to look at the path coefficient. Table 9 shows that the LSS implementation has a relationship with operational performance as much as 0.874. Meanwhile, through operational performance, LSS implementation influences organizational performance as much as 0.409. By contrast, LSS implementation can also influence organizational performance but only 0.408. Although the values are relatively close, this research reveals that LSS implementation can affect organizational performance further by considering operational performance.

TABLE 9

Hypothesis testing

At this stage, the model is evaluated using the t-test. The t-test is used for hypothesis testing, which is performed through the bootstrapping procedure on the SmartPLS 2 program. The significant level used is 95% ($\alpha = 0.05$) with a t-table of 1.96. If the t-statistic value (| O / STDEV |) is smaller than 1.96, then the hypothesis is rejected.

TABLE 10

Table 10 presents three CSFs, which have a positive relationship with LSS implementation, namely, management involvement and commitment (H_1), linking LSS to business strategy (H_4), and project selection and prioritization (H_5). Other CSFs, such as communication (H_2), education and training (H_3), and cultural change (H_6), do not have a positive relationship with LSS implementation.

The relationship between LSS implementation and operational performance (H_7) and that between LSS implementation and organizational performance (H_8) are proven positive. Moreover, operational performance has a positive relationship with organizational performance.

DISCUSSION

Relationship between CSFs and LSS implementation

Previous studies revealed that MIC have an influence on the successful implementation of LSS in a company. Albliwi *et al*. (2014) and Laureani and Antony (2012) revealed that MIC are the most critical factors in implementing the LSS project. If no involvement from management is observed, then the LSS project in the company fails and results in no improvement in the company. In line with previous research, the present study also reveals that MIC have a positive relationship with LSS implementation.

Dora *et al*. (2016) argued that the lack of an appropriate communication structure is a major obstacle in the adoption of Lean manufacturing. Timans *et al*. (2012) revealed that communication has an important role in LSS application. However, according to Manville *et al*. (2012), an effective communication plan is in the bottom five rank of CSFs of LSS. In the current research, communication is also not considered a factor by respondents. In general, communication is important for top management to communicate the aim of LSS implementation in a company. However, in this research, building the awareness of LSS implementation benefits before building the communication between top management and operational workers is important.

Education and training are not only for practice but also increase the insights of workers to develop their soft skills to become more professional in the field of work they pursue. Dora *et al*. (2016) found that training is an important factor in the successful implementation of LSS. By contrast, training can be a significant burden for the limited budget of such companies (Brun, 2011). This reason can explain why in this study, education and training are not factors that influence the successful implementation of LSS. Basically, all hotel employees are willing to be trained and educated by VHOs to improve their ability to provide the best service for hotel guests. However, whether VHOs have adequate capabilities and facilities to train employees is a huge challenge for VHOs.

Brun (2011) revealed that the relationship of LSS with business strategy is believed to help the successful implementation of LSS. Likewise, Laureani and Antony (2012) stated that the link between LSS and business strategy can significantly influence the successful implementation of LSS. In line with previous studies, the results of the statistical analysis test in this study reveal that linking LSS to business strategy has an influence on the successful implementation of LSS.

Only few previous studies suggested that project selection and prioritization is the determining factor for the successful implementation of LSS. Nevertheless, Manville *et al*. (2012) and Kamar (2014) stated that project selection and prioritization is the determining factor for the successful implementation of LSS. In line with this thinking, the present study finds that project selection and prioritization have a positive relationship with the successful implementation of LSS in hotels that are in partnership with VHOs.

According to Laureani and Antony (2012) and Brun (2011), cultural change has a significant influence on the successful implementation of LSS. However, Timans *et al*. (2012) argued that cultural change has no influence on the successful implementation of LSS. In line with such previous research, the statistical results on the variable of cultural change show that it has no influence on the successful implementation of LSS. These results can be obtained if an understanding of what and how LSS works for employees is lacking. They assume whether an LSS project is implemented in their work environment, and the results are the same without changing anything.

Relationship between LSS implementation and operational performance

Nawanir *et al*. (2013) stated that Lean manufacturing has a positive influence on operational performance. Similarly, Kamar (2014) revealed that the Six Sigma implementation has a significant effect on operational performance in the service industry. The success of LSS implementation is measured by the efficiency of the service process at hotels, which are in partnership with VHOs. These efficiencies (time, cost, and resource) can result in an increase in employee performance and an increase in service quality that can increase customer satisfaction at inns, which are in partnership with VHOs.

Relationship between LSS implementation and organizational performance

Nawanir *et al*. (2013) added that Lean manufacturing has a positive relationship with financial and non-financial performances. In line with such research, the present study suggests a positive relationship between the successful implementation of LSS and organizational performance. Certainly, the efficiency carried out in the LSS project process reduces unnecessary costs, thus increasing hotel profitability. In addition, by running the LSS project, hotels in partnership with VHOs can highlight competitive advantages compared with other hotels of the same class to increase room rental sales.

Relationship between operational performance and organizational performance

Nawanir *et al*. (2013) stated that the relationship between operational and organizational performances is interdependent. The better the operational performance, the better the organizational performance. Meanwhile, Kamar (2014) argued that operational performance has a positive effect on financial performance, which is part of organizational performance. The present study adds that operational performance has a positive relationship with organizational performance. If a hotel has a good operational performance system and is organized, so that it can improve the quality of workers and customer satisfaction, then the sales level of hotel profitability can also increase.

Relationship between LSS implementation, operational performance, and organizational performance

According to the path coefficient in Table 8, the direct relationship between LSS implementation and organizational performance is weaker than the indirect relationship between LSS implementation and operational performance. This observation is in line with the research of Kamar (2014) who stated that if organizational performance is indirectly affected by LSS

implementation, then it can be influenced by operational performance. Clearly, LSS implementation can improve operational performance, which can boost organizational performance financially and non-financially.

CONCLUSION

LSS, as a strategic tool and continuous improvement, can be basically used in various sectors of industries such as manufacturing and service industries, including the lower middle-class hospitality industry. CSFs in LSS implementation must be introduced to hotel stakeholders to improve operational and organizational performances. This study reveals that three out of the six CSFs of LSS have a positive relationship with LSS implementation in low-cost budget hotels in Semarang City, namely, MIC, linking LSS to business strategy, and project selection and prioritization. The research also suggests that LSS can influence operational and organizational performances.

In addition, this study has some implications for VHOs and hotels. By implementing the LSS in the right way, low-cost budget hotels may have some chances to fix their service quality, including human and material resources, which can affect their financial and non-financial performances.

MIC are the most basic factors. Without a strong commitment from top management, businesses certainly cannot run well. Linking LSS to business strategy is also inseparable from the intervention of top management and employees to find the best way to make a continuous improvement in line with the business strategy. Supported by the project selection and prioritization of the right LSS project, the business goals of hotels in partnership with VHOs can be achieved to improve their business performance.

The implementation of LSS has the benefits of ensuring that services are in accordance with consumer needs, removing activities that do not add value (non-value added), reducing the incidence of damaged transactions, shortening the work cycle time, and providing the right service at the right time (Laureani, 2012). With these benefits, the performance quality of operational employees is influenced to gain customer loyalty, which also affects their satisfaction. Efficiency in the LSS process implementation reduces unnecessary costs to increase hotel profitability. In addition, by running the LSS project, hotels that are in partnership with VHOs can highlight competitive advantages compared with other hotels from the same class to increase room rental sales.

As revealed by Nawanir *et al*. (2013), the better the operational performance, the better the organizational performance. If VHOs choose to implement LSS, then the working environment changes and slowly affects the productivity of workers that can also increase customer satisfaction, which can improve organizational performance financially and non-financially.

[3]All elements of CSFs are important to consider in the introduction of the LSS method in hotels that collaborate with VHOs. This study suggests staying focused on building communication, providing education and training, and applying different cultures consistently to apply the LSS method in a sustainable manner, even though the results of this study have a negative relationship with the successful implementation of LSS.

However, this research certainly cannot be separated from a limitation. Although basically, it aims to give advice to VHOs regarding LSS implementation to support improved operational and organizational performances, the reality is rather difficult because partners themselves do not understand LSS, although it has been implemented informally. Lack of respondents' understanding of the LSS concept became the main obstacle for the researchers in collecting the questionnaire. The bustle of the workers and innkeepers also slowed down the data collection and thus took a long time before the data could be processed. Based on the limitations that the authors faced, two recommendations are presented. First, a comparative research between hotels that are and are not implementing LSS is suggested to determine the CSFs that can be considered in the LSS implementation in hotels and to figure out the impact to the performances of hotel industries. Second, future studies can conduct comparative research about the condition before and after implementing LSS and determine the difference in performance between late and future hotels with LSS implementation.

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FIGURE 1. Research framework

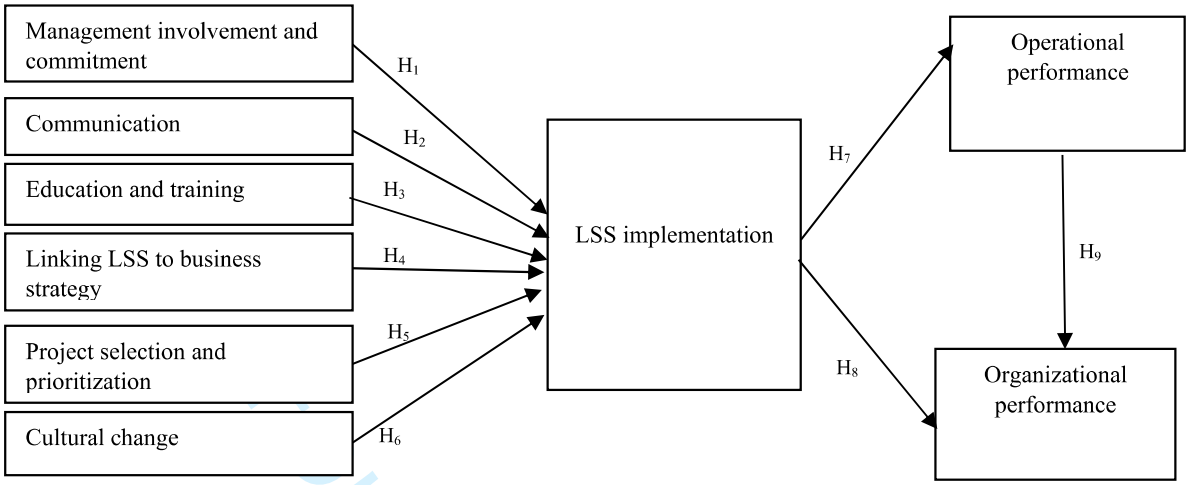
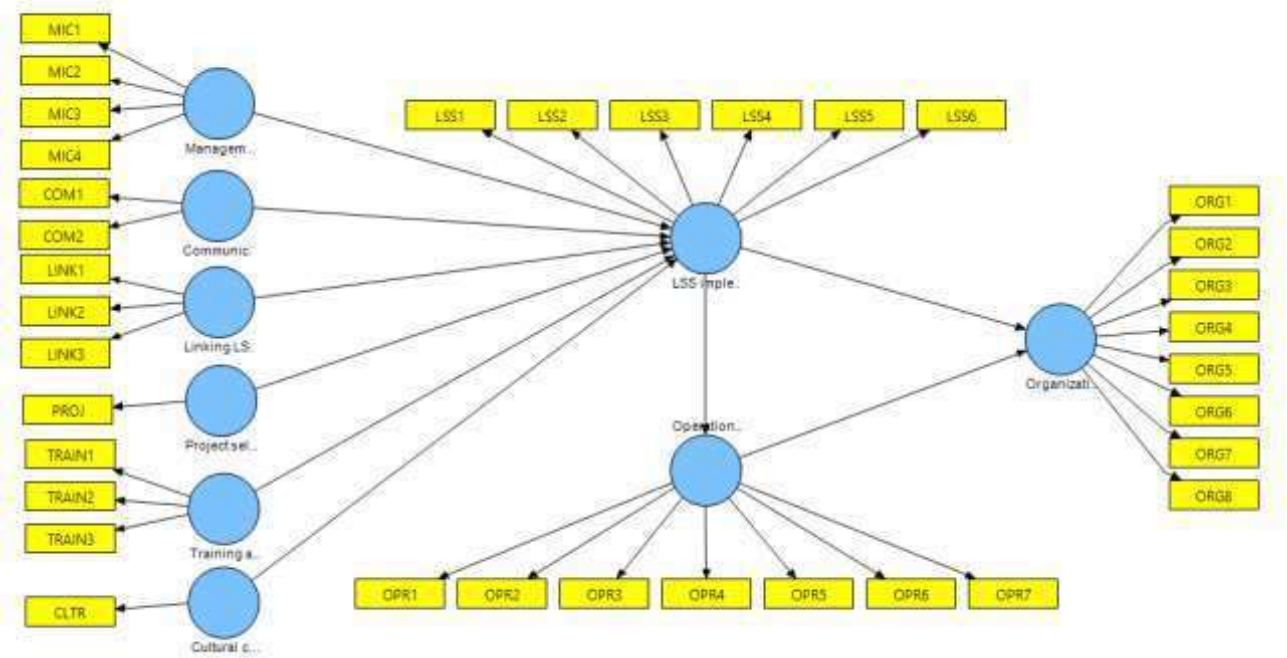


FIGURE 2. Model specification



Source: SmartPLS 2

TABLE 1. CSFs of Six Sigma, Lean, and LSS from previous research

CSF \ Author	A	B	C	D	E	F	G	H	I	J
Management involvement and commitment	√	√	√	√	√	√	√	√	√	√
Education and training	√	√	√	√	√	√	√	√	√	√
Project selection and prioritization	√	√	√	√	√	√	√	√	√	√
Organization infrastructure	√		√	√	√	√	√	√		√
Communication	√	√	√	√		√	√			√
Linking LSS to business strategy	√		√	√	√	√				√
Understanding LSS tools and techniques	√		√	√		√	√			√
Cultural change	√		√				√		√	√
Project management skills	√		√	√		√				√
Linking LSS to suppliers	√		√				√			
Linking LSS to awards and recognition		√		√		√				
Awareness						√	√			
LSS project tracking and review		√				√			√	
Management performance					√				√	
Vision and plan statement			√							
LSS staff selection						√				
Data-based approach						√				
Linking LSS to supply chain						√				
LSS financial accountability		√				√				

Source: Shofia *et al*. (2020)

Notes: A = Brun (2011); B = Jeyaraman and Teo (2010); C = Timans *et al*. (2012); D = Manville *et al*. (2012); E = Psychogios *et al*. (2012); F = Laureani and Antony (2012); G = Albliwi *et al*. (2014); H = Dora *et al*. (2013); I = Kamar (2014); J =. Shofia *et al*. (2020)

TABLE 2. CSFs that affect Lean, Six Sigma, and LSS in the manufacturing and service industries

Author	Top CSF of Lean/Six Sigma/LSS
Manufacturing Industry	
Brun (2011)	Management involvement and commitment
	Cultural change
	Linking Six Sigma to business strategy
Manville *et al*. (2012)	Senior management commitment
	Linking LSS to business strategy
	Linking LSS to customer
Timans *et al*. (2012)	Linking LSS to customer
	Vision and plan statement
	Communication
Dora *et al*. (2016)	Top management commitment
	Training
	Resources
Service Industry	
Psychogios *et al*. (2012)	Top management support and involvement
	Organizational culture
	Training
Kamar (2014)	Project selection
	Linking LSS to business strategy
	Committed leadership and capabilities
	Education and training

TABLE 3. Business performance elements in the hospitality industry

Business Performance	Element
Operational Performance	Customer satisfaction
	Customer relationship
	Improvement of strategic forecasting
	Improvement of service/product quality
	Improvement of internal process efficiency
	Improvement of productivity
	Improvement of waste elimination
Organizational Performance	Increase of profitability
	Cash flow (liquidity)
	Increase of operating revenue
	Cost reduction
	ROI
	Improvement of a competitive advantage
	Increase of sales
	Development of a new market

TABLE 4. General profiles of surveyed hotels

Attribute	*N* = 120	%
Based on job function		
Managerial	26	22%
Operational	94	78%
Based on VHO partner		
Airy Rooms	39	33%
OYO	19	16%
RedDoorz	62	52%
Based on the length of partnership		
One to two years	27	23%
< one year	72	60%
> two years	21	18%

Attribute	*N* = 120	%
Based on the understanding of the LSS concept		
No	85	71%
Yes	35	29%
Based on the LSS implementation in the workplace		
No	91	76%
Yes	29	24%
Based on the length of LSS implementation		
Not implementing	91	76%
< one year	11	9%
> two years	8	7%
One to two years	10	8%

Source: Primary data processing

TABLE 5. Outer loading

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1.0								
COM1		0.965938							
COM2		0.956954							
LINK1			0.926519						
LINK2			0.919266						
LINK3			0.928913						
LSS1				0.768345					
LSS2				0.900812					
LSS3				0.565966					
LSS4				0.751917					
LSS5				0.876308					
LSS6				0.839231					
MIC1					0.898345				
MIC2					0.917903				
MIC3					0.831125				
MIC4					0.874325				
OPR1						0.855090			

OPR2	0.883351			
OPR3	0.877623			
OPR4	0.860631			
OPR5	0.876026			
OPR6	0.873884			
OPR7	0.822886			
ORG1		0.814056		
ORG2		0.778680		
ORG3		0.861403		
ORG4		0.875370		
ORG5		0.613395		
ORG6		0.818436		
ORG7		0.841193		
ORG8		0.834357		
PROJ			1.0	
TRAIN1				0.894770
TRAIN2				0.886357
TRAIN3				0.837098

Source: Primary data processing

TABLE 6. Construct reliability and validity

	Cronbach's Alpha	Composite Reliability	AVE
Communication	0,924	0,961	0,924
Cultural change	1,000	1,000	1,000
LSS implementation	0,891	0,921	0,700
Linking LSS to business strategy	0,855	0,947	0,855
Management involvement and commitment	0,776	0,933	0,776
Operational performance	0,944	0,954	0,747
Organizational performance	0,928	0,942	0,700

Project selection and prioritization	1,000	1,000	1,000
Training and education	0,763	0,906	0,763

Source: Primary data processing

TABLE 7. Cross loadings

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1000000	0.604484	0.588185	0.608523	0.673616	0.681398	0.590768	0.635030	0.671065
COM1	0.578996	0.965908	0.538026	0.549048	0.804269	0.562332	0.459008	0.391509	0.776367
COM2	0.583952	0.956987	0.489393	0.489917	0.775367	0.515082	0.468540	0.373412	0.661708
LINK1	0.523974	0.447635	0.926357	0.724348	0.538658	0.706133	0.631997	0.617398	0.639467
LINK2	0.572668	0.538624	0.918155	0.789256	0.565344	0.747918	0.653095	0.586884	0.558306
LINK3	0.533848	0.495920	0.930172	0.800020	0.549475	0.743702	0.585424	0.595725	0.638471
LSS1	0.611592	0.625152	0.651468	0.780215	0.703238	0.631615	0.489871	0.621455	0.830088
LSS2	0.601467	0.463131	0.692735	0.899815	0.507942	0.798728	0.718939	0.756858	0.566804
LSS4	0.585103	0.466813	0.715374	0.742437	0.457229	0.623820	0.717856	0.515999	0.488862
LSS5	0.453584	0.393073	0.739467	0.893575	0.365337	0.825272	0.712570	0.617065	0.440135
LSS6	0.319015	0.353831	0.695592	0.855778	0.325110	0.755693	0.752892	0.538054	0.422897
MIC1	0.602638	0.814214	0.596605	0.584948	0.900849	0.555528	0.443634	0.438984	0.712196
MIC2	0.587739	0.716539	0.527595	0.487380	0.919484	0.452954	0.358973	0.502045	0.773439
MIC3	0.564639	0.700032	0.477522	0.395888	0.827571	0.457205	0.356855	0.305532	0.676773
MIC4	0.621380	0.646695	0.479295	0.447563	0.872597	0.511110	0.377427	0.503280	0.667894
OPR1	0.521732	0.442284	0.732605	0.849416	0.468909	0.854899	0.660997	0.597179	0.562251
OPR2	0.522820	0.509898	0.678783	0.808109	0.422116	0.883417	0.733409	0.596633	0.503206
OPR3	0.713189	0.576645	0.695973	0.766759	0.513764	0.878070	0.751403	0.657453	0.551125
OPR4	0.592193	0.533318	0.682590	0.730482	0.528933	0.860667	0.745604	0.604536	0.553708
OPR5	0.609681	0.498102	0.733705	0.721185	0.508135	0.875943	0.793159	0.640592	0.527367
OPR6	0.561041	0.408097	0.646672	0.744827	0.493124	0.873611	0.644252	0.670396	0.522649
OPR7	0.606522	0.416589	0.618525	0.656228	0.483943	0.822858	0.646233	0.576792	0.479078
ORG1	0.545906	0.479389	0.542310	0.750029	0.415779	0.803720	0.825352	0.574735	0.501676
ORG2	0.493723	0.444009	0.577112	0.612507	0.314147	0.584852	0.811159	0.493063	0.445064
ORG3	0.635918	0.451976	0.662678	0.734741	0.425151	0.689933	0.890320	0.607983	0.421359

ORG4	0.551248	0.342522	0.599019	0.716332	0.328657	0.699005	0.894217	0.590083	0.350836
ORG6	0.296430	0.225212	0.473032	0.622023	0.334855	0.592622	0.779149	0.533551	0.357794
ORG7	0.538524	0.486119	0.546198	0.655011	0.406889	0.754253	0.849172	0.633186	0.415574
ORG8	0.361283	0.368308	0.540328	0.670329	0.333601	0.665226	0.802276	0.600172	0.275414
PROJ	0.635030	0.398227	0.648187	0.730148	0.500619	0.717692	0.690704	1000000	0.544057
TRAIN1	0.583566	0.577561	0.568874	0.625940	0.630812	0.572788	0.478363	0.607569	0.893482
TRAIN2	0.629244	0.778919	0.637022	0.582966	0.715502	0.562563	0.481353	0.384212	0.883368
TRAIN3	0.541143	0.613892	0.519566	0.458752	0.788572	0.452591	0.246965	0.415313	0.842839

Source: Primary data processing

TABLE 8. R^2

	R^2
LSS implementation	0.776
Operational performance	0.764
Organizational performance	0.718

Source: Primary data processing

TABLE 9. Path coefficient

	Operational Performance	**Organizational Performance**
LSS implementation	0.874	0.408
Operational peformance		0.468

Source: Primary data processing

TABLE 10. Hypothesis testing

	LSS Implementation	Operational Performance	Organizational Performance	Hypothesis Testing
Communication	0,170			**REJECTED**
Cultural change	0,345			**REJECTED**
LSS implementation		37,627	2,556	ACCEPTED
Linking LSS to business strategy	5,755			ACCEPTED
Management involvement and commitment	2,009			ACCEPTED
Operational performance			3,083	ACCEPTED
Organizational performance				ACCEPTED
Project selection and prioritization	4,456			ACCEPTED
Education and training	0,855			**REJECTED**

Source: Primary data processing

Decision Letter (WQAH-2020-0146.R1)

From: qiuhanqin@nankai.edu.cn

To: heru.prastawa@gmail.com

CC:

Subject: Journal of Quality Assurance in Hospitality & Tourism - Decision on Manuscript ID WQAH-2020-0146.R1

Body: 06-Jul-2021

Dear Dr Prastawa,

Thank you for resubmitting your paper to Journal of Quality Assurance in Hospitality & Tourism.

I am delighted to inform you that your paper has now been accepted by the Journal of Quality Assurance in Hospitality & Tourism, subject to revision along the lines suggested below, and the reviewer comments at the end of this letter.

I would be grateful if you could now provide a final paper following (Journal) guidelines, with a Title page containing authors affiliation and e-mail address (page 1), followed by Abstract and Key Words (page 2), and full text, all in the same document. Only tables and figures are to be included as a separate document.

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Once again, thank you for submitting your manuscript to Journal of Quality Assurance in Hospitality & Tourism and I look forward to receiving your revision.

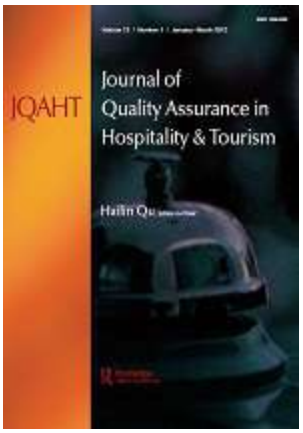
Sincerely,
Professor Hanqin Qiu
Editor in Chief, Journal of Quality Assurance in Hospitality & Tourism
qiuhanqin@nankai.edu.cn

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
All my concerns had been answered adequately, the authors can improve this paper with professional language editors, good luck.

Date Sent: 06-Jul-2021



Employees' Perception of Lean Six Sigma Implementation to Business Performance on Low-cost Budget Hotels

Journal:	*Journal of Quality Assurance in Hospitality & Tourism*
Manuscript ID	WQAH-2020-0146.R2
Manuscript Type:	Research Note
Keywords (pick from the list OR enter your own):	Critical success factors, Lean Six Sigma, hospitality, virtual hotel operator, business performance
Abstract:	This study aims to identify the critical success factors (CSFs) of Lean Six Sigma (LSS) at low-cost budget hotels, which are affiliated with virtual hotel operator (VHOs) that provide some knowledge on how CSFs influence the LSS implementation and how LSS can affect operational and organizational performances on the basis of employees' perception. To achieve this objective, the researcher surveyed 120 respondents who work in hotels that are affiliated with VHOs, such as Airy Rooms, RedDoorz, and OYO Rooms at Semarang City. Result indicates that among the six CSFs that were determined, only three affected the LSS implementation, namely, management involvement and commitment, linking LSS to business strategy, and project selection and prioritization. LSS has a weaker direct influence on organizational performance than their relationship with operational performance. This study focused on hotels that have partnerships with VHOs, which do not implement LSS in their business environment. This research was based on employees' perception if LSS was implemented in their working environment to give some points of view on what CSFs could successfully affect the LSS implementation and whether it could effectively boost the performances.

Employees' Perception of Lean Six Sigma Implementation to Business Performance on Low-cost Budget Hotels

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Employees' Perception of Lean Six Sigma Implementation to Business Performance on Low-cost Budget Hotels

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ABSTRACT

This study aims to identify the critical success factors (CSFs) of Lean Six Sigma (LSS) at low-cost budget hotels, which are affiliated with virtual hotel operators (VHOs) that provide some knowledge on how CSFs influence the LSS implementation and how LSS can affect operational and organizational performances on the basis of employees' perception. To achieve this objective, the researcher surveyed 120 respondents who work in hotels that are affiliated with VHOs, such as Airy Rooms, RedDoorz, and OYO Rooms at Semarang City. The result indicates that among the six CSFs that were determined, only three affected the LSS implementation, namely, management involvement and commitment, linking LSS to business strategy, and project selection and prioritization. LSS has a weaker direct influence on organizational performance than its relationship with operational performance. This study focused on hotels that have partnerships with VHOs, which do not implement LSS in their business environment. This research was based on employees' perception if LSS was implemented in their working environment to give some points of view on what CSFs could successfully affect the LSS implementation and whether it could effectively boost the performances.

At the end of part of the discussion, the authors attempted to explain the importance of CSFs in the hotel industry, especially hotels that are affiliated with VHOs, and how they can influence the success of LSS and finally can affect hotel performance.

KEYWORD – critical success factors, Lean Six Sigma, hospitality, virtual hotel operator, business performance

INTRODUCTION

Lean Six Sigma (LSS), as a strategy and business methodology, has been proven to improve the performance of a process to produce customer satisfaction (Snee, 2010). LSS, as an integrated methodology, combines the speed of Lean to smoothen the process and the robustness of Six Sigma through a disciplined and systematic approach to solve problems (Antony *et al*., 2018). Lean focuses on eliminating activities that do not add value to the final product, whereas Six Sigma focuses on eliminating variations in the process. Both goals create an effective production system to meet customer satisfaction by creating a good-quality product (Dogan and Gurcan, 2018). The application of Lean and Six Sigma in parallel is noted in many case studies in the manufacturing and service sectors (Albliwi *et al*., 2014). In service organizations, Lean intends to reduce waste in terms of time and making processes more efficient than before; meanwhile, Six Sigma focuses on improving the process by reducing the variability to achieve the result of efficiency close to 99.9997% of the time (Antony *et al*., 2017).

Semarang, as the capital of Central Java Province, apart from being the center of all activities in the regional government and economy, has adequate transportation infrastructures, such as airports, train stations, and terminals that support Semarang as the center of transit in Central Java Province. This characteristic is quite attractive for investors to develop tourism activities to bring in large numbers of domestic and foreign tourists. Investors also certainly do not overlook this opportunity to build inns and hotels, which suit the needs of tourists. Based on Semarang City Hospitality Statistics 2018, a total of 106 non-star (budget) hotels exist, which is higher than that of star hotels. However, the highest rate occupancy is dominated by three-star hotels (Central Bureau of Statistics for the City of Semarang, 2018). This finding suggests that hotel customers believe that with prices that are slightly higher than budget hotels, they obtain much better service.

To catch up on the occupancy level, budget hotels collaborate with virtual hotel operators (VHOs). VHO partners mostly come from economy class hotels to middle class and local brands. Meanwhile, VHO customers are those classified as budget travelers who are looking for affordable accommodation with good value offered (Wiastuti and Susilowardhani, 2016). A VHO serves as a mediator between a hotel and a customer. The VHO makes it easy for the partner to be easily found by the customer under the name VHO that houses the partner. After providing complete data on a room to be rented out, the VHO markets the room, so that it can be booked by the customer through OTA, the official VHO website or through the VHO application on a smartphone. After the customer/guest of the inn books the room from the partner, the customer pays the room rent and service fee to the VHO. From these costs, the VHO pays the agreed room rental price to the partner as much as 65%–70% of the total paid by the customer. For certain classes, VHOs guarantee partners full profits without any deductions for a certain period even if such partners do not meet the sales target. Indirectly, customers have rented rooms from partner hotels, and in return, partners provide rooms that have been rented by VHO customers.

In real day-to-day cases, VHOs are faced with problems where hotel workers have below-average skills when serving hotel customers. The reason is that not all employees understand the ins and outs of hospitality and have an education that supports their performance in the hospitality industry. Although VHOs aim to provide good service and quality above the standard of quality service, the workforce of low-budget hotels can face problems such as lack of experience, lack of training, lack of fluency in speaking a foreign language, lack of positive attitude toward work, and an un-ergonomic workplace (Shofia *et al*., 2020; Bhat *et al*., 2014).

These problems can be resolved by implementing Lean and Six Sigma in hotels. By combining both, LSS is proven to be able to improve performance in many departments in a hotel even in a small hotel with a limited budget (Lancaster, 2011). LSS has benefits such as removes non-value-adding activities (wastes), reduces damaged products/transactions, shortens cycle times, and delivers the right product/service at the right time in the right place (Laureani, 2012). Other benefits are LSS can help companies utilize resources (human, financial, and system) efficiently (Kabir *et al*., 2013) and gain operational and organizational improvement benefits (Jeyaraman *et al*., 2012).

The understanding about what and how LSS is from the company point of view remains lacking. Kamar (2014) revealed the barriers in introducing the Six Sigma process to the hotel industry, such as resistance to change and the desire to maintain the quality currently used in the hotel, lack of knowledge of Six Sigma, lack of adequate information about Six Sigma, and lack of clarity about the expected benefits. From the management point of view, the situation when companies implement LSS, they must implement the cost and subsequent implementation of Lean adoption before they can commit is misunderstood (Achanga *et al*., 2006). This reason explains why only few hotels, including VHOs that are broadly spread all over the nation, especially in Semarang City, do not apply LSS.

Managers must further concentrate on readiness factors to formulate the execution process of LSS for the continuous improvement of their organization (Vaishnavi and Suresh, 2020). To help companies implement Lean and avoid costly failures, previous researchers suggested several critical success factors (CSFs) (Netland, 2016). CSFs can be defined as "some things that must go well to ensure success for managers or organizations; therefore, they represent managerial areas or companies that must be given special attention continuously to produce high performance" (Netland, 2016; Boynton and Zmud, 1984).

To introduce the knowledge of LSS to the hospitality industry, this study aims to identify LSS implementation to business performance on low-cost budget hotels, which are affiliated with VHOs on the basis of employees' perspective by identifying the CSFs of LSS. This research gives some points of view on how CSFs influence the LSS implementation and how LSS can affect operational and organizational performances on the basis of employees' perception. According to the problem formulation in this study, the following questions arise: what CSFs can successfully influence the LSS implementation in low-cost budget hotels in Semarang City? What is the relationship between LSS implementation and company performance comprising operational and organizational performances?

This study includes previous studies on LSS to consider the CSFs of LSS.

REVIEW OF LITERATURE

CSFs of LSS implementation

Based on Table 1, according to Shofia *et al*. (2020), LSS has nine CSFs, which have already concluded to be measured at LSS implementation in the low-cost budget hotel industry at Semarang City: management involvement and commitment, communication, organization infrastructure, education and training, linking LSS to business strategy, project selection and prioritization, project management skill, understanding LSS tools and techniques, and cultural change. ----------

Insert Table 1 about here

However, not all CSFs mentioned above are used in this study, such as organizational infrastructure, project management skills, and understanding of LSS tools and techniques. Previous studies revealed that organizational infrastructure and project management performance are not factors that influence LSS implementation, although they have a slight impact. The understanding of LSS tools and techniques in this study is deemed inappropriate because in reality, the object of research is that only few understand LSS implementation; therefore, the fact that the research object does not understand LSS tools and techniques can also be understood.----

Insert Table 2 about here

Table 2 presents no significant differences in the CSFs that affect LSS implementation in the manufacturing and service industries. Previous research agreed that management involvement and commitment are the most important CSFs in LSS implementation. Management involvement and commitment are two important elements to a successful implementation of LSS in any organization (Albliwi *et al*., 2014). When a management does not have any commitment, implementing Lean in the organization is difficult, which is a major obstacle (Zhou, 2016). Top management has an important role in the creation and management of process management systems, and direct participation is necessary to realize the successful implementation of LSS. Brun (2011), Manville *et al*. (2012), and Laureany and Antony (2012) found that management involvement and commitment are the factors that influence the successful implementation of LSS. Netland (2015) revealed that managers must commit to and involve themselves in implementation activities to succeed by implementing the Lean program. Laureani and Antony (2018) suggested that organizations must have leaders who are committed to inspire their employees and build a different culture continuously to obtain the benefits of the implementation of LSS.

H_1: Management involvement and commitment have a positive influence on the successful implementation of LSS.

Communication is also an important element for managers to explain how LSS works and how much LSS benefits in doing work to subordinates to spread business strategies, meet customer needs, and form a solid work team. Timans *et al*. (2012) revealed that communication has an influence on the successful implementation of LSS. Noori (2015) argued that effective communication at all levels vertically and horizontally is one of the factors that influences the success of Lean. Lack of effective communication can also have an impact on the failure of LSS implementation (Albliwi *et al*., 2014).

H_2: Communication has a positive effect on the successful implementation of LSS.

Education and training also have a significant role in communicating the "why" and "how" and the LSS project. Kamar (2014) found that an appropriate training program aims to ensure that managers and employees can use and implement the Six Sigma techniques effectively. With the LSS knowledge provided, employees, especially operators, can easily work effectively and efficiently. Meanwhile, training is an important factor for the successful implementation of LSS and procedures because reducing time on LSS implementation can make savings for companies and reduce labor costs (Albliwi *et al*., 2014).

H_3: *Education and training have a positive effect on the successful implementation of LSS.*

Furthermore, the connection between the LSS project and business strategy can be shown in nominal terms that can help the development of a business strategy. Brun (2011), Setijono *et al*. (2012), and Kamar (2014) suggested that linking LSS and business strategy is a CSF that is considered important in implementing LSS. Manville *et al*. (2012) revealed that many companies believe that LSS helps them achieve their strategic goals. Noori (2015) stated that the Lean program must be related to the company strategy to obtain a successful and improved performance in the long run.

H_4: Linking LSS to business strategy has a positive effect on the successful implementation of LSS.

In addition, Albliwi *et al*. (2014) believed that top management must be able to choose the right project for the right people to succeed in LSS. The selected projects must be those that have business goals or company goals. According to Netland (2015), a continuing need for proper planning, follow-up, and funding for the Lean program exists. Timans *et al*. (2012) argued that companies must design systems to prioritize and select projects, which contain standards for different projects with different time frames, from short projects (one to five days) to long-term projects.

H_5: *Project selection and prioritization have a positive effect on the successful implementation of LSS.*

Last, the application of LSS requires significant changes to the company culture in carrying out business operations in terms of structure and infrastructure. An awareness of the needs and benefits and LSS must exist, so that LSS projects can run smoothly and successfully. Noori (2015) argued that good cultural change is the result of a continuous combination of training and Lean projects. Setijono *et al*. (2012) and Dora *et al*. (2016) revealed that organizational culture is one of the success factors in implementing LSS.

H_6: Cultural change has a positive effect on the successful implementation of LSS.

Relationship between LSS implementation and business performance

The performance level in a company is measured through operations and organization (Jeyaraman *et al*., 2012). Operational performance in the service industry is measured on the basis of customer satisfaction, customer relationships, increased forecasting strategies, improved product quality services, and increased efficiency of internal processes (Kamar, 2014).

Ismail Salaheldin, (2009) measured organizational performance on the basis of return on investment (ROI), market share growth, investment in research and development, and market orientation. Jayaraman and Teo (2012) measured organizational performance on the basis of financial aspects, such as revenue growth, net profit, profit-to-income ratio, and return on assets, and non-financial aspects, such as the capacity to develop competitive profiles, new product development, and market development.

Nawanir *et al.* (2013) elaborated the relationship between LSS implementation and business performance. Lean manufacturing has a positive influence on operational performance in manufacturing companies. Meanwhile, Kamar (2014) stated that some hotels that implement the Six Sigma are aware of the fact that Six Sigma is one of the most effective strategies to improve product/service quality, improve internal processes, and develop the overall operational excellence.

H_7: LSS implementation has a positive effect on operational performance.

From the aspect of organizational level, LSS helps companies achieve stronger competitive advantages so that they become more competitive and then have an effect on better financial improvement. Improved performance and productivity by creating a higher product reliability and lower volatility at the level of internal process operations, reducing company exposure to economic risk, is directly proportional to increased profitability and ROI.

H_8: LSS implementation has a positive effect on organizational performance.

In the relationship between operational performance and organizational performance, Ismail Salaheldin (2009) suggested that operational performance has a strong influence on financial performance, but it is quite weak on non-financial performance. Similarly, Garcia-Bernal and Ramirez-Aleson (2015) indicated that operational performance has a positive effect on financial performance. Nawanir (2013) stated that the better the operational performance, the better the organizational performance.

H_9: Operational performance has a positive effect on organizational performance. ----------

Insert Table 3 about here

According to the hypothesis building in the literature review, CSFs, such as management involvement and commitment, communication, education and training, linking LSS to business strategy, project selection and prioritization, and cultural change, have a positive relationship with LSS implementation. Meanwhile, LSS implementation has a positive relationship with operational and organizational performances; operational performance also has a positive relationship with organizational performance. These relationships are illustrated in Figure 1. ----------

Insert Figure 1 about here

RESEARCH METHODOLOGY

The primary data collection in this study was to conduct interviews and distribute questionnaires directly to respondents who are related to this research from January 2020 to early February 2020. At the time this research was conducted, the VO population in Semarang City consisted of 33 inns in collaboration with Airy Rooms, 34 inns with Reddoorz, and 20 OYO inns.

The measurement scale used in the questionnaire was the Likert scale. To prevent worse scenarios and bias results, researchers believed that the "neutral" option in the questionnaire must be eliminated. Ten scores starting from strongly disagree to strongly agree were used. The Partial Least Square–Structural Equation Modeling (PLS–SEM) method was employed to analyze the questionnaire data, and the SmartPLS 2.0 program was used to process such data. PLS is an SEM technique based on an iterative approach that maximizes the explained variance and endogenous construction (Fornell and Bookstein, 1982; Hair *et al*., 2014). This method was used to determine the CSFs that affect the LSS implementation and the relationship between LSS and hotel performance.

Researchers distributed the questionnaires by visiting hotels that are affiliated with VHOs. Some of the questionnaires were left out for a few days, whereas others were filled out right away. Since the population of VHO was not much, researchers decided to spread out the questionnaires about 2-4 questionnaires for each hotel.

This result was clear, considering that low-budget hotels rarely have a manager, and the owners are the direct supervisors. However, meeting the owners was difficult; thus, many questionnaires were filled out by operational employees. The respondents were the employees who has direct contact to customer, also the managers (if they have one), and also the owner of the hotels. Unfortunately, most employees neither knew the meaning of LSS nor the uses of LSS tools. To prevent misunderstandings, the researchers waited while the respondents were filling out the questionnaire, so that they could explain terms that the respondents did not understand.

RESULT

Sample demographic

The first part of the survey asked the respondents to identify their biographical information. This study divided the function of the position into two, namely, managerial and operational levels. The managerial level includes managerial and supervisory positions, whereas the operational level comprises employees who have operational functions at the hotel where they work. Table 4 shows that the respondents were dominated by those with positions at the operational level with a total of 78%, and the remaining 22% were workers at the managerial level. Moreover, the respondents were dominated by workers who had worked for more or less one to three years. Meanwhile, workers who worked for more than three years ranked second with a total of 20%, followed by workers who worked less than one year with a total of 17%. ----------

Insert Table 5 about here

At the time of this research, hotels in partnership with RedDoorz were easier to find and more open than those in partnership with Airy Rooms and OYO. As a result of this survey, respondents from hotels in partnership with RedDoorz had the highest number, accounting for 52%, followed by Airy Rooms 32% and OYO 16%. Table 4 presents that most hotels have only started partnering less than a year. Respondents with the lowest percentage are hotels that have partnered for more than two years.

As presented in Table 4, 71% of workers do not yet understand the LSS project, and approximately 76% of hotels do not implement LSS in their place of work. Moreover, 22% of the total sample have applied fully, 8% have applied LSS for approximately one to two years, and 9% have only applied LSS for less than a year. Meanwhile, 7% of hotels have implemented LSS projects for more than two years.

Data analysis

The specification of the model in this study is based on the framework in Figure 2 and the indicators of the latent construct depicted in Figure 2. Figure 2 illustrates the inner and outer models, which are the sub-models of this analysis. ----------

Insert Figure 2 about here

Figure 2 shows that management involvement and commitment (MIC) comprise four indicators, communication (COM) consists of two indicators, education and training (TRAIN) comprise three indicators, linking LSS to business strategy (LINK) consists of three indicators, and project selection and prioritization (PROJ) and cultural change (CLTR) comprise one indicator only.

Meanwhile, LSS implementation (LSS) consists of three variables, operational performance (OPR) comprises seven indicators, and organizational performance (ORG) consists of eight indicators.

Ghozali and Latan (2015) suggested that validity can be measured by considering the values of convergent validity and discriminant validity. Convergent validity on SmartPLS 2 that can be seen in the outer loading value is > 0.70. Table 5 presents that ORG5 and LSS3 do not fulfill the requirement of convergent validity because the outer loading value is below 0.7. Thus, for the next measurement step, LSS3 and ORG5 are deleted. ----------

Insert Table 5 about here

In the validity test, each construct has a value above 0.5 in the AVE. Table 6 shows that each construct has fulfilled these criteria and can be declared valid. ----------

Insert Table 6 about here

Table 6 also presents that each construct has an AVE value above 0.5, indicating that the value of convergent validity in this research model is very good. The AVE value of 1 means that the indicator of the magnitude of the variance contained in the construct is perfect. This value occurs in constructs that only have one indicator.

To obtain the value of discriminant validity, the value of one variable construct is compared with that of another variable construct. Table 7 shows that the value of relationship between the two variable constructs is greater than that of the relationship between a construct and another variable construct. Therefore, this model can show that latent constructs predict indicators in their blocks better than indicators in other blocks. Moreover, this research model meets the discriminant validity criteria. ----------

Insert Table 7 about here

Apart from the construct validity test, a construct reliability test is also conducted using two criteria, namely, composite reliability and Cronbach's alpha from the indicator block measured from the construct. The construct is declared to be reliable if both criteria meet a value of more than 0.70. Table 6 presents that each construct has a composite reliability value, and Cronbach's alpha is all worth more than 0.70. Therefore, the constructs in this research model have a fairly high reliability and are good.

To measure the inner model in this study, the value of R^2 is observed. Table 8 shows that LSS implementation, operational performance, and organizational performance have construct values above 0.70. Thus, each construct has a substantial degree of accuracy. Another interpretation is that LSS implementation can be influenced by CSFs by 77.6%, whereas the remaining 22.4% can be influenced by other constructs that are excluded from the model in this study. The construct of operational performance in this research is influenced by the construct of LSS implementation by 76.4%; the remaining 23.6% can be influenced by other constructs that are excluded from the research model. The construct of organizational performance can be influenced by the constructs of LSS implementation and operational performance by 71.8%; the remaining 28.2% can be influenced by other constructs that are excluded from the research model. ----------

Insert Table 8 about here

The next evaluation of the inner model is to look at the path coefficient. Table 9 shows that the LSS implementation has a relationship with operational performance as much as 0.874. Meanwhile, through operational performance, LSS implementation influences organizational performance as much as 0.409. By contrast, LSS implementation can also influence organizational performance but only 0.408. Although the values are relatively close, this research reveals that LSS implementation can affect organizational performance further by considering operational performance. ----------

Insert Table 9 about here

Hypothesis testing

At this stage, the model is evaluated using the t-test. The t-test is used for hypothesis testing, which is performed through the bootstrapping procedure on the SmartPLS 2 program. The significant level used is 95% ($\alpha = 0.05$) with a t-table of 1.96. If the t-statistic value (| O / STDEV |) is smaller than 1.96, then the hypothesis is rejected. ----------

Insert Table 10 about here

Table 10 presents three CSFs, which have a positive relationship with LSS implementation, namely, management involvement and commitment (H_1), linking LSS to business strategy (H_4), and project selection and prioritization (H_5). Other CSFs, such as communication (H_2), education

and training (H_3), and cultural change (H_6), do not have a positive relationship with LSS implementation.

The relationship between LSS implementation and operational performance (H_7) and that between LSS implementation and organizational performance (H_8) are proven positive. Moreover, operational performance has a positive relationship with organizational performance.

DISCUSSION

Relationship between CSFs and LSS implementation

Previous studies revealed that MIC have an influence on the successful implementation of LSS in a company. Albliwi *et al*. (2014) and Laureani and Antony (2012) revealed that MIC are the most critical factors in implementing the LSS project. If no involvement from management is observed, then the LSS project in the company fails and results in no improvement in the company. In line with previous research, the present study also reveals that MIC have a positive relationship with LSS implementation.

Dora *et al*. (2016) argued that the lack of an appropriate communication structure is a major obstacle in the adoption of Lean manufacturing. Timans *et al*. (2012) revealed that communication has an important role in LSS application. However, according to Manville *et al*. (2012), an effective communication plan is in the bottom five rank of CSFs of LSS. In the current research, communication is also not considered a factor by respondents. In general, communication is important for top management to communicate the aim of LSS implementation in a company. However, in this research, building the awareness of LSS implementation benefits before building the communication between top management and operational workers is important.

Education and training are not only for practice but also increase the insights of workers to develop their soft skills to become more professional in the field of work they pursue. Dora *et al*. (2016) found that training is an important factor in the successful implementation of LSS. By contrast, training can be a significant burden for the limited budget of such companies (Brun, 2011). This reason can explain why in this study, education and training are not factors that influence the successful implementation of LSS. Basically, all hotel employees are willing to be trained and educated by VHOs to improve their ability to provide the best service for hotel guests. However, whether VHOs have adequate capabilities and facilities to train employees is a huge challenge for VHOs.

Brun (2011) revealed that the relationship of LSS with business strategy is believed to help the successful implementation of LSS. Likewise, Laureani and Antony (2012) stated that the link between LSS and business strategy can significantly influence the successful implementation of LSS. In line with previous studies, the results of the statistical analysis test in this study reveal that linking LSS to business strategy has an influence on the successful implementation of LSS.

Only few previous studies suggested that project selection and prioritization is the determining factor for the successful implementation of LSS. Nevertheless, Manville *et al*. (2012) and Kamar (2014) stated that project selection and prioritization is the determining factor for the successful implementation of LSS. In line with this thinking, the present study finds that project selection and

prioritization have a positive relationship with the successful implementation of LSS in hotels that are in partnership with VHOs.

According to Laureani and Antony (2012) and Brun (2011), cultural change has a significant influence on the successful implementation of LSS. However, Timans *et al*. (2012) argued that cultural change has no influence on the successful implementation of LSS. In line with such previous research, the statistical results on the variable of cultural change show that it has no influence on the successful implementation of LSS. These results can be obtained if an understanding of what and how LSS works for employees is lacking. They assume whether an LSS project is implemented in their work environment, and the results are the same without changing anything.

Relationship between LSS implementation and operational performance

Nawanir *et al*. (2013) stated that Lean manufacturing has a positive influence on operational performance. Similarly, Kamar (2014) revealed that the Six Sigma implementation has a significant effect on operational performance in the service industry. The success of LSS implementation is measured by the efficiency of the service process at hotels, which are in partnership with VHOs. These efficiencies (time, cost, and resource) can result in an increase in employee performance and an increase in service quality that can increase customer satisfaction at inns, which are in partnership with VHOs.

Relationship between LSS implementation and organizational performance

Nawanir *et al*. (2013) added that Lean manufacturing has a positive relationship with financial and non-financial performances. In line with such research, the present study suggests a positive relationship between the successful implementation of LSS and organizational performance. Certainly, the efficiency carried out in the LSS project process reduces unnecessary costs, thus increasing hotel profitability. In addition, by running the LSS project, hotels in partnership with VHOs can highlight competitive advantages compared with other hotels of the same class to increase room rental sales.

Relationship between operational performance and organizational performance

Nawanir *et al*. (2013) stated that the relationship between operational and organizational performances is interdependent. The better the operational performance, the better the organizational performance. Meanwhile, Kamar (2014) argued that operational performance has a positive effect on financial performance, which is part of organizational performance. The present study adds that operational performance has a positive relationship with organizational performance. If a hotel has a good operational performance system and is organized, so that it can improve the quality of workers and customer satisfaction, then the sales level of hotel profitability can also increase.

Relationship between LSS implementation, operational performance, and organizational performance

According to the path coefficient in Table 8, the direct relationship between LSS implementation and organizational performance is weaker than the indirect relationship between

LSS implementation and operational performance. This observation is in line with the research of Kamar (2014) who stated that if organizational performance is indirectly affected by LSS implementation, then it can be influenced by operational performance. Clearly, LSS implementation can improve operational performance, which can boost organizational performance financially and non-financially.

CONCLUSION

LSS, as a strategic tool and continuous improvement, can be basically used in various sectors of industries such as manufacturing and service industries, including the lower middle-class hospitality industry. CSFs in LSS implementation must be introduced to hotel stakeholders to improve operational and organizational performances. This study reveals that three out of the six CSFs of LSS have a positive relationship with LSS implementation in low-cost budget hotels in Semarang City, namely, MIC, linking LSS to business strategy, and project selection and prioritization. The research also suggests that LSS can influence operational and organizational performances.

In addition, this study has some implications for VHOs and hotels. By implementing the LSS in the right way, low-cost budget hotels may have some chances to fix their service quality, including human and material resources, which can affect their financial and non-financial performances.

MIC are the most basic factors. Without a strong commitment from top management, businesses certainly cannot run well. Linking LSS to business strategy is also inseparable from the intervention of top management and employees to find the best way to make a continuous improvement in line with the business strategy. Supported by the project selection and prioritization of the right LSS project, the business goals of hotels in partnership with VHOs can be achieved to improve their business performance.

The implementation of LSS has the benefits of ensuring that services are in accordance with consumer needs, removing activities that do not add value (non-value added), reducing the incidence of damaged transactions, shortening the work cycle time, and providing the right service at the right time (Laureani, 2012). With these benefits, the performance quality of operational employees is influenced to gain customer loyalty, which also affects their satisfaction. Efficiency in the LSS process implementation reduces unnecessary costs to increase hotel profitability. In addition, by running the LSS project, hotels that are in partnership with VHOs can highlight competitive advantages compared with other hotels from the same class to increase room rental sales.

As revealed by Nawanir *et al*. (2013), the better the operational performance, the better the organizational performance. If VHOs choose to implement LSS, then the working environment changes and slowly affects the productivity of workers that can also increase customer satisfaction, which can improve organizational performance financially and non-financially.

All elements of CSFs are important to consider in the introduction of the LSS method in hotels that collaborate with VHOs. This study suggests staying focused on building communication, providing education and training, and applying different cultures consistently to apply the LSS

method in a sustainable manner, even though the results of this study have a negative relationship with the successful implementation of LSS.

However, this research certainly cannot be separated from a limitation. Although basically, it aims to give advice to VHOs regarding LSS implementation to support improved operational and organizational performances, the reality is rather difficult because partners themselves do not understand LSS, although it has been implemented informally. Lack of respondents' understanding of the LSS concept became the main obstacle for the researchers in collecting the questionnaire. The bustle of the workers and innkeepers also slowed down the data collection and thus took a long time before the data could be processed. Based on the limitations that the authors faced, two recommendations are presented. First, a comparative research between hotels that are and are not implementing LSS is suggested to determine the CSFs that can be considered in the LSS implementation in hotels and to figure out the impact to the performances of hotel industries. Second, future studies can conduct comparative research about the condition before and after implementing LSS and determine the difference in performance between late and future hotels with LSS implementation.

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Figure 1. Research framework

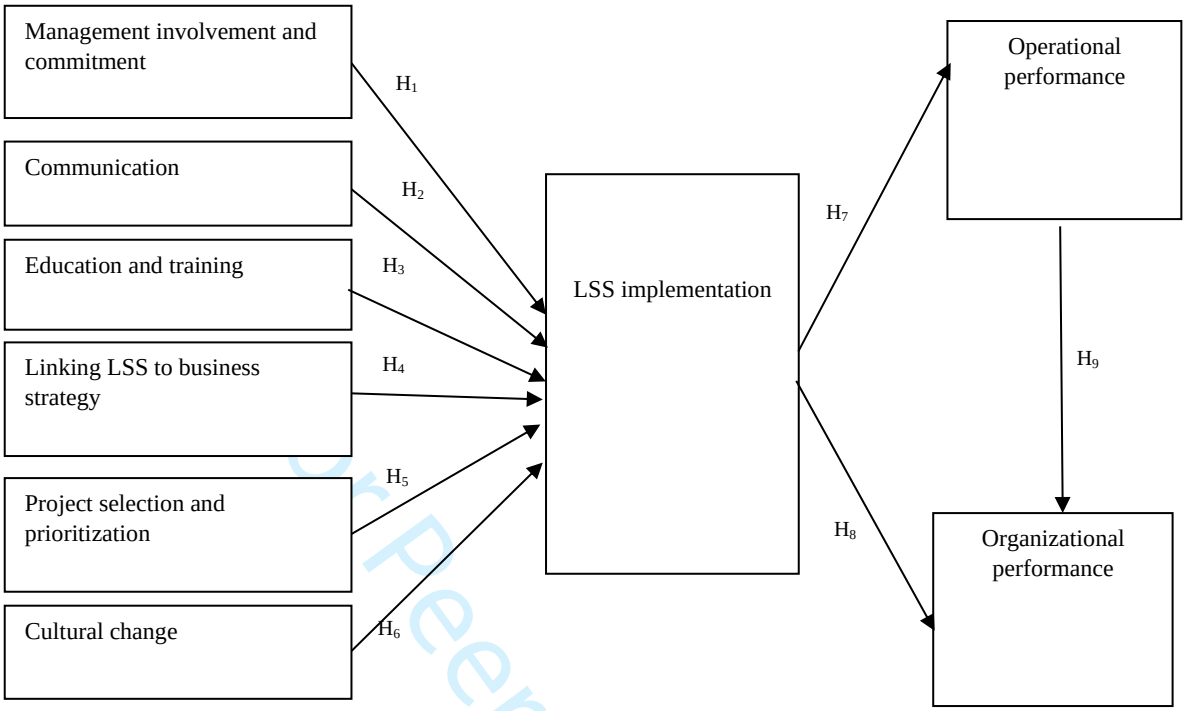
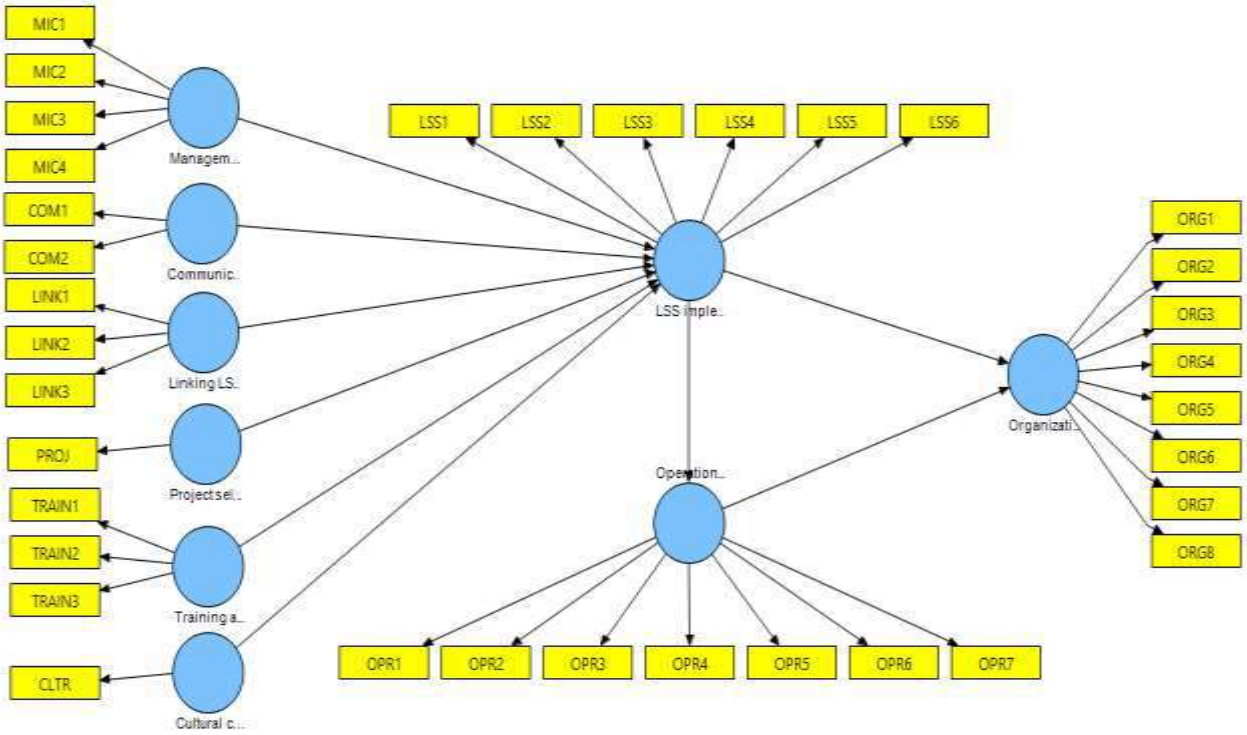


Figure 2. Model specification



Source: SmartPLS 2

Table 1. CSFs of Six Sigma, Lean, and LSS from previous research

CSF \ Author	A	B	C	D	E	F	G	H	I	J
Management involvement and commitment	√	√	√	√	√	√	√	√	√	√
Education and training	√	√	√	√	√	√	√	√	√	√
Project selection and prioritization	√	√	√	√	√	√	√	√	√	√
Organization infrastructure	√		√	√	√	√	√	√		√
Communication	√	√	√	√		√	√			√
Linking LSS to business strategy	√		√	√	√	√				√
Understanding LSS tools and techniques	√		√	√		√	√			√
Cultural change	√		√				√		√	√
Project management skills	√		√	√		√				√
Linking LSS to suppliers	√		√				√			
Linking LSS to awards and recognition		√		√		√				
Awareness						√	√			
LSS project tracking and review		√				√			√	
Management performance					√				√	
Vision and plan statement			√							
LSS staff selection						√				
Data-based approach						√				
Linking LSS to supply chain						√				
LSS financial accountability		√				√				

Source: Shofia *et al*. (2020)

Notes: A = Brun (2011); B = Jeyaraman and Teo (2010); C = Timans *et al*. (2012); D = Manville *et al*. (2012); E = Psychogios *et al*. (2012); F = Laureani and Antony (2012); G = Albliwi *et al*. (2014); H = Dora *et al*. (2013); I = Kamar (2014); J =. Shofia *et al*. (2020)

Table 2. CSFs that affect Lean, Six Sigma, and LSS in the manufacturing and service industries

Author	Top CSF of Lean/Six Sigma/LSS
Manufacturing Industry	
Brun (2011)	Management involvement and commitment
	Cultural change
	Linking Six Sigma to business strategy
Manville *et al*. (2012)	Senior management commitment
	Linking LSS to business strategy
	Linking LSS to customer
Timans *et al*. (2012)	Linking LSS to customer
	Vision and plan statement
	Communication
Dora *et al*. (2016)	Top management commitment
	Training
	Resources
Service Industry	
Psychogios *et al*. (2012)	Top management support and involvement
	Organizational culture
	Training
Kamar (2014)	Project selection
	Linking LSS to business strategy
	Committed leadership and capabilities
	Education and training

Table 3. Business performance elements in the hospitality industry

Business Performance	Element
Operational Performance	Customer satisfaction
	Customer relationship
	Improvement of strategic forecasting
	Improvement of service/product quality
	Improvement of internal process efficiency
	Improvement of productivity
	Improvement of waste elimination
Organizational Performance	Increase of profitability
	Cash flow (liquidity)
	Increase of operating revenue
	Cost reduction
	ROI
	Improvement of a competitive advantage
	Increase of sales
	Development of a new market

Table 4. General profiles of surveyed hotels

Attribute	*N* = 120	%
Based on job function		
Managerial	26	22%
Operational	94	78%
Based on VHO partner		
Airy Rooms	39	33%
OYO	19	16%
RedDoorz	62	52%
Based on the length of partnership		
One to two years	27	23%
< one year	72	60%
> two years	21	18%
Based on the understanding of the LSS concept		
No	85	71%
Yes	35	29%
Based on the LSS implementation in the workplace		
No	91	76%
Yes	29	24%
Based on the length of LSS implementation		
Not implementing	91	76%
< one year	11	9%
> two years	8	7%
One to two years	10	8%

Source: Primary data processing

Table 5 Outer loading

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1.0								
COM1		0.965938							
COM2		0.956954							
LINK1			0.926519						
LINK2			0.919266						
LINK3			0.928913						
LSS1				0.768345					
LSS2				0.900812					
LSS3				0.565966					
LSS4				0.751917					
LSS5				0.876308					
LSS6				0.839231					
MIC1					0.898345				
MIC2					0.917903				
MIC3					0.831125				
MIC4					0.874325				
OPR1						0.855090			
OPR2						0.883351			
OPR3						0.877623			
OPR4						0.860631			
OPR5						0.876026			
OPR6						0.873884			
OPR7						0.822886			
ORG1							0.814056		
ORG2							0.778680		
ORG3							0.861403		
ORG4							0.875370		
ORG5							0.613395		
ORG6							0.818436		
ORG7							0.841193		
ORG8							0.834357		
PROJ								1.0	
TRAIN1									0.894770
TRAIN2									0.886357
TRAIN3									0.837098

Source: Primary data processing

Table 6. Construct reliability and validity

	Cronbach's Alpha	Composite Reliability	AVE
Communication	0,924	0,961	0,924
Cultural change	1,000	1,000	1,000
LSS implementation	0,891	0,921	0,700
Linking LSS to business strategy	0,855	0,947	0,855
Management involvement and commitment	0,776	0,933	0,776
Operational performance	0,944	0,954	0,747
Organizational performance	0,928	0,942	0,700
Project selection and prioritization	1,000	1,000	1,000
Training and education	0,763	0,906	0,763

Source: Primary data processing

Table 7. Cross loadings

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1000000	0.604484	0.588185	0.608523	0.673616	0.681398	0.590768	0.635030	0.671065
COM1	0.578996	0.965908	0.538026	0.549048	0.804269	0.562332	0.459008	0.391509	0.776367
COM2	0.583952	0.956987	0.489393	0.489917	0.775367	0.515082	0.468540	0.373412	0.661708
LINK1	0.523974	0.447635	0.926357	0.724348	0.538658	0.706133	0.631997	0.617398	0.639467
LINK2	0.572668	0.538624	0.918155	0.789256	0.565344	0.747918	0.653095	0.586884	0.558306
LINK3	0.533848	0.495920	0.930172	0.800020	0.549475	0.743702	0.585424	0.595725	0.638471
LSS1	0.611592	0.625152	0.651468	0.780215	0.703238	0.631615	0.489871	0.621455	0.830088
LSS2	0.601467	0.463131	0.692735	0.899815	0.507942	0.798728	0.718939	0.756858	0.566804
LSS4	0.585103	0.466813	0.715374	0.742437	0.457229	0.623820	0.717856	0.515999	0.488862
LSS5	0.453584	0.393073	0.739467	0.893575	0.365337	0.825272	0.712570	0.617065	0.440135
LSS6	0.319015	0.353831	0.695592	0.855778	0.325110	0.755693	0.752892	0.538054	0.422897
MIC1	0.602638	0.814214	0.596605	0.584948	0.900849	0.555528	0.443634	0.438984	0.712196

MIC2	0.587739	0.716539	0.527595	0.487380	0.919484	0.452954	0.358973	0.502045	0.773439
MIC3	0.564639	0.700032	0.477522	0.395888	0.827571	0.457205	0.356855	0.305532	0.676773
MIC4	0.621380	0.646695	0.479295	0.447563	0.872597	0.511110	0.377427	0.503280	0.667894
OPR1	0.521732	0.442284	0.732605	0.849416	0.468909	0.854899	0.660997	0.597179	0.562251
OPR2	0.522820	0.509898	0.678783	0.808109	0.422116	0.883417	0.733409	0.596633	0.503206
OPR3	0.713189	0.576645	0.695973	0.766759	0.513764	0.878070	0.751403	0.657453	0.551125
OPR4	0.592193	0.533318	0.682590	0.730482	0.528933	0.860667	0.745604	0.604536	0.553708
OPR5	0.609681	0.498102	0.733705	0.721185	0.508135	0.875943	0.793159	0.640592	0.527367
OPR6	0.561041	0.408097	0.646672	0.744827	0.493124	0.873611	0.644252	0.670396	0.522649
OPR7	0.606522	0.416589	0.618525	0.656228	0.483943	0.822858	0.646233	0.576792	0.479078
ORG1	0.545906	0.479389	0.542310	0.750029	0.415779	0.803720	0.825352	0.574735	0.501676
ORG2	0.493723	0.444009	0.577112	0.612507	0.314147	0.584852	0.811159	0.493063	0.445064
ORG3	0.635918	0.451976	0.662678	0.734741	0.425151	0.689933	0.890320	0.607983	0.421359
ORG4	0.551248	0.342522	0.599019	0.716332	0.328657	0.699005	0.894217	0.590083	0.350836
ORG6	0.296430	0.225212	0.473032	0.622023	0.334855	0.592622	0.779149	0.533551	0.357794
ORG7	0.538524	0.486119	0.546198	0.655011	0.406889	0.754253	0.849172	0.633186	0.415574
ORG8	0.361283	0.368308	0.540328	0.670329	0.333601	0.665226	0.802276	0.600172	0.275414
PROJ	0.635030	0.398227	0.648187	0.730148	0.500619	0.717692	0.690704	1000000	0.544057
TRAIN1	0.583566	0.577561	0.568874	0.625940	0.630812	0.572788	0.478363	0.607569	0.893482
TRAIN2	0.629244	0.778919	0.637022	0.582966	0.715502	0.562563	0.481353	0.384212	0.883368
TRAIN3	0.541143	0.613892	0.519566	0.458752	0.788572	0.452591	0.246965	0.415313	0.842839

Source: Primary data processing

Table 8. R^2

	R^2
LSS implementation	0.776
Operational performance	0.764
Organizational performance	0.718

Source: Primary data processing

Table 9. Path coefficient

	Operational Performance	Organizational Performance
LSS implementation	0.874	0.408
Operational peformance		0.468

Source: Primary data processing

Table 10. Hypothesis testing

	LSS Implementation	Operational Performance	Organizational Performance	Hypothesis Testing
Communication	0,170			**REJECTED**
Cultural change	0,345			**REJECTED**
LSS implementation		37,627	2,556	ACCEPTED
Linking LSS to business strategy	5,755			ACCEPTED
Management involvement and commitment	2,009			ACCEPTED
Operational performance			3,083	ACCEPTED
Organizational performance				ACCEPTED
Project selection and prioritization	4,456			ACCEPTED
Education and training	0,855			**REJECTED**

Source: Primary data processing

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Employees' Perception of Lean Six Sigma Implementation to Business Performance on Low-cost Budget Hotels

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ABSTRACT

This study aims to identify the critical success factors (CSFs) of Lean Six Sigma (LSS) at low-cost budget hotels, which are affiliated with virtual hotel operators (VHOs) that provide some knowledge on how CSFs influence the LSS implementation and how LSS can affect operational and organizational performances on the basis of employees' perception. To achieve this objective, the researcher surveyed 120 respondents who work in hotels that are affiliated with VHOs, such as Airy Rooms, RedDoorz, and OYO Rooms at Semarang City. The result indicates that among the six CSFs that were determined, only three affected the LSS implementation, namely, management involvement and commitment, linking LSS to business strategy, and project selection and prioritization. LSS has a weaker direct influence on organizational performance than its relationship with operational performance. This study focused on hotels that have partnerships with VHOs, which do not implement LSS in their business environment. This research was based on employees' perception if LSS was implemented in their working environment to give some points of view on what CSFs could successfully affect the LSS implementation and whether it could effectively boost the performances.

At the end of part of the discussion, the authors attempted to explain the importance of CSFs in the hotel industry, especially hotels that are affiliated with VHOs, and how they can influence the success of LSS and finally can affect hotel performance.

KEYWORDS

Critical success factors; lean six sigma; hospitality; virtual hotel operator; business performance

Introduction

Lean Six Sigma (LSS), as a strategy and business methodology, has been proven to improve the performance of a process to produce customer satisfaction (Snee, 2010). LSS, as an integrated methodology, combines the speed of Lean to smoothen the process and the robustness of Six Sigma through a disciplined and systematic approach to solve problems (Antony et al., 2018). Lean focuses on eliminating activities that do not add value to the final product, whereas Six Sigma focuses on eliminating variations in the process. Both goals create an effective production system to meet customer

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satisfaction by creating a good-quality product (Dogan & Gurcan, 2018). The application of Lean and Six Sigma in parallel is noted in many case studies in the manufacturing and service sectors (Albliwi et al., 2014). In service organizations, Lean intends to reduce waste in terms of time and making processes more efficient than before; meanwhile, Six Sigma focuses on improving the process by reducing the variability to achieve the result of efficiency close to 99.9997% of the time (Antony et al., 2017).

Semarang, as the capital of Central Java Province, apart from being the center of all activities in the regional government and economy, has adequate transportation infrastructures, such as airports, train stations, and terminals that support Semarang as the center of transit in Central Java Province. This characteristic is quite attractive for investors to develop tourism activities to bring in large numbers of domestic and foreign tourists. Investors also certainly do not overlook this opportunity to build inns and hotels, which suit the needs of tourists. Based on Semarang City Hospitality Statistics 2018, a total of 106 non-star (budget) hotels exist, which is higher than that of star hotels. However, the highest rate occupancy is dominated by three-star hotels (Central Bureau of Statistics for the City of Semarang, 2018). This finding suggests that hotel customers believe that with prices that are slightly higher than budget hotels, they obtain much better service.

To catch up on the occupancy level, budget hotels collaborate with virtual hotel operators (VHOs). VHO partners mostly come from economy class hotels to middle class and local brands. Meanwhile, VHO customers are those classified as budget travelers who are looking for affordable accommodation with good value offered (Wiastuti, 2016). A VHO serves as a mediator between a hotel and a customer. The VHO makes it easy for the partner to be easily found by the customer under the name VHO that houses the partner. After providing complete data on a room to be rented out, the VHO markets the room, so that it can be booked by the customer through OTA, the official VHO website or through the VHO application on a smartphone. After the customer/guest of the inn books the room from the partner, the customer pays the room rent and service fee to the VHO. From these costs, the VHO pays the agreed room rental price to the partner as much as 65%–70% of the total paid by the customer. For certain classes, VHOs guarantee partners full profits without any deductions for a certain period even if such partners do not meet the sales target. Indirectly, customers have rented rooms from partner hotels, and in return, partners provide rooms that have been rented by VHO customers.

In real day-to-day cases, VHOs are faced with problems where hotel workers have below-average skills when serving hotel customers. The reason is that not all employees understand the ins and outs of hospitality and have an education that supports their performance in the hospitality industry. Although VHOs aim to provide good service and quality above the standard

of quality service, the workforce of low-budget hotels can face problems such as lack of experience, lack of training, lack of fluency in speaking a foreign language, lack of positive attitude toward work, and an un-ergonomic workplace (Bhat et al., 2014; Shofia et al., 2020).

These problems can be resolved by implementing Lean and Six Sigma in hotels. By combining both, LSS is proven to be able to improve performance in many departments in a hotel even in a small hotel with a limited budget (Lancaster, 2011). LSS has benefits such as removes non-value-adding activities (wastes), reduces damaged products/transactions, shortens cycle times, and delivers the right product/service at the right time in the right place (Laureani, 2012). Other benefits are LSS can help companies utilize resources (human, financial, and system) efficiently (Kabir et al., 2013) and gain operational and organizational improvement benefits (Jayaraman et al., 2012).

The understanding about what and how LSS is from the company point of view remains lacking. Kamar (2014) revealed the barriers in introducing the Six Sigma process to the hotel industry, such as resistance to change and the desire to maintain the quality currently used in the hotel, lack of knowledge of Six Sigma, lack of adequate information about Six Sigma, and lack of clarity about the expected benefits. From the management point of view, the situation when companies implement LSS, they must implement the cost and subsequent implementation of Lean adoption before they can commit is misunderstood (Achanga et al., 2006). This reason explains why only few hotels, including VHOs that are broadly spread all over the nation, especially in Semarang City, do not apply LSS.

Managers must further concentrate on readiness factors to formulate the execution process of LSS for the continuous improvement of their organization (Vaishnavi & Suresh, 2020). To help companies implement Lean and avoid costly failures, previous researchers suggested several critical success factors (CSFs) (Netland, 2016). CSFs can be defined as "some things that must go well to ensure success for managers or organizations; therefore, they represent managerial areas or companies that must be given special attention continuously to produce high performance" (Netland, 2016; Boynton and Zmud, 1984).

To introduce the knowledge of LSS to the hospitality industry, this study aims to identify LSS implementation to business performance on low-cost budget hotels, which are affiliated with VHOs on the basis of employees' perspective by identifying the CSFs of LSS. This research gives some points of view on how CSFs influence the LSS implementation and how LSS can affect operational and organizational performances on the basis of employees' perception. According to the problem formulation in this study, the following questions arise: what CSFs can successfully influence the LSS implementation in low-cost budget hotels in Semarang City? What is the relationship between LSS implementation and company performance comprising operational and organizational performances?

This study includes previous studies on LSS to consider the CSFs of LSS.

Review of literature

CSFs of LSS implementation

Based on Table 1, according to Shofia et al. (2020), LSS has nine CSFs, which have already concluded to be measured at LSS implementation in the low-cost budget hotel industry at Semarang City: management involvement and commitment, communication, organization infrastructure, education and training, linking LSS to business strategy, project selection and prioritization, project management skill, understanding LSS tools and techniques, and cultural change.

However, not all CSFs mentioned above are used in this study, such as organizational infrastructure, project management skills, and understanding of LSS tools and techniques. Previous studies revealed that organizational infrastructure and project management performance are not factors that influence LSS implementation, although they have a slight impact. The understanding of LSS tools and techniques in this study is deemed inappropriate because in reality, the object of research is that only few understand LSS implementation; therefore, the fact that the research object does not understand LSS tools and techniques can also be understood. – -

Table 1. CSFs of Six Sigma, Lean, and LSS from previous research.

Author CSF	A	B	C	D	E	F	G	H	I	J
Management involvement and commitment	√	√	√	√	√	√	√	√	√	√
Education and training	√	√	√	√	√	√	√	√	√	√
Project selection and prioritization	√	√	√	√	√	√	√	√	√	√
Organization infrastructure	√		√	√	√	√	√	√		√
Communication	√	√	√	√		√	√			√
Linking LSS to business strategy	√		√	√	√	√				√
Understanding LSS tools and techniques	√		√	√		√	√			√
Cultural change	√		√				√		√	√
Project management skills	√		√	√		√				√
Linking LSS to suppliers	√		√				√			
Linking LSS to awards and recognition		√		√		√				
Awareness						√	√			
LSS project tracking and review		√				√			√	
Management performance					√				√	
Vision and plan statement			√							
LSS staff selection						√				
Data-based approach						√				
Linking LSS to supply chain						√				
LSS financial accountability		√				√				

Source: Shofia et al. (2020)

Notes: A = Brun (2011), Jeyaraman and Teo (2010), Timans et al. (2012), Manville et al. (2012), Psychogios et al. (2012), Laureani and Antony (2012), and Albliwi et al. (2014); H = Dora et al. (2013); I = Kamar (2014); J = . Shofia et al. (2020)

Table 2 presents no significant differences in the CSFs that affect LSS implementation in the manufacturing and service industries. Previous research agreed that management involvement and commitment are the most important CSFs in LSS implementation. Management involvement and commitment are two important elements to a successful implementation of LSS in any organization (Albliwi et al., 2014). When a management does not have any commitment, implementing Lean in the organization is difficult, which is a major obstacle (Zhou, 2016). Top management has an important role in the creation and management of process management systems, and direct participation is necessary to realize the successful implementation of LSS. Brun (2011), Manville et al. (2012), and Laureany and Antony (2012) found that management involvement and commitment are the factors that influence the successful implementation of LSS. Netland (2016) revealed that managers must commit to and involve themselves in implementation activities to succeed by implementing the Lean program. Laureani and Antony (2018) suggested that organizations must have leaders who are committed to inspire their employees and build a different culture continuously to obtain the benefits of the implementation of LSS.

H_1: Management involvement and commitment have a positive influence on the successful implementation of LSS.

Communication is also an important element for managers to explain how LSS works and how much LSS benefits in doing work to subordinates to spread business strategies, meet customer needs, and form a solid work team. Timans

Table 2. CSFs that affect Lean, Six Sigma, and LSS in the manufacturing and service industries.

Author	Top CSF of Lean/Six Sigma/LSS
Manufacturing Industry	
Brun (2011)	Management involvement and commitment
	Cultural change
	Linking Six Sigma to business strategy
Manville et al. (2012)	Senior management commitment
	Linking LSS to business strategy
	Linking LSS to customer
Timans et al. (2012)	Linking LSS to customer
	Vision and plan statement
	Communication
Dora et al. (2016)	Top management commitment
	Training
	Resources
Service Industry	
Psychogios et al. (2012)	Top management support and involvement
	Organizational culture
	Training
Kamar (2014)	Project selection
	Linking LSS to business strategy
	Committed leadership and capabilities
	Education and training

Table 3. Business performance elements in the hospitality industry.

Business Performance	Element
Operational Performance	Customer satisfaction
	Customer relationship
	Improvement of strategic forecasting
	Improvement of service/product quality
	Improvement of internal process efficiency
	Improvement of productivity
	Improvement of waste elimination
Organizational Performance	Increase of profitability
	Cash flow (liquidity)
	Increase of operating revenue
	Cost reduction
	ROI
	Improvement of a competitive advantage
	Increase of sales
	Development of a new market

et al. (2012) revealed that communication has an influence on the successful implementation of LSS. Noori (2015) argued that effective communication at all levels vertically and horizontally is one of the factors that influences the success of Lean. Lack of effective communication can also have an impact on the failure of LSS implementation (Albliwi et al., 2014).

H_2: Communication has a positive effect on the successful implementation of LSS.

Education and training also have a significant role in communicating the "why" and "how" and the LSS project. Kamar (2014) found that an appropriate training program aims to ensure that managers and employees can use and implement the Six Sigma techniques effectively. With the LSS knowledge provided, employees, especially operators, can easily work effectively and efficiently. Meanwhile, training is an important factor for the successful implementation of LSS and procedures because reducing time on LSS implementation can make savings for companies and reduce labor costs (Albliwi et al., 2014).

H_3: *Education and training have a positive effect on the successful implementation of LSS.*

Furthermore, the connection between the LSS project and business strategy can be shown in nominal terms that can help the development of a business strategy. Brun (2011), Setijono et al. (2012), and Kamar (2014) suggested that linking LSS and business strategy is a CSF that is considered important in implementing LSS. Manville et al. (2012) revealed that many companies believe that LSS helps them achieve their strategic goals. Noori (2015) stated that the Lean program must be related to the company strategy to obtain a successful and improved performance in the long run.

H_4: Linking LSS to business strategy has a positive effect on the successful implementation of LSS.

In addition, Albliwi et al. (2014) believed that top management must be able to choose the right project for the right people to succeed in LSS. The selected projects must be those that have business goals or company goals. According to Netland (2016), a continuing need for proper planning, follow-up, and funding for the Lean program exists. Timans et al. (2012) argued that companies must design systems to prioritize and select projects, which contain standards for different projects with different time frames, from short projects (one to five days) to long-term projects.

H_5: *Project selection and prioritization have a positive effect on the successful implementation of LSS.*

Last, the application of LSS requires significant changes to the company culture in carrying out business operations in terms of structure and infrastructure. An awareness of the needs and benefits and LSS must exist, so that LSS projects can run smoothly and successfully. Noori (2015) argued that good cultural change is the result of a continuous combination of training and Lean projects. Setijono et al. (2012) and Dora et al. (2016) revealed that organizational culture is one of the success factors in implementing LSS.

H_6: Cultural change has a positive effect on the successful implementation of LSS.

Relationship between LSS implementation and business performance

The performance level in a company is measured through operations and organization (Jayaraman et al., 2012). Operational performance in the service industry is measured on the basis of customer satisfaction, customer relationships, increased forecasting strategies, improved product quality services, and increased efficiency of internal processes (Kamar, 2014).

Ismail Salaheldin (2009) measured organizational performance on the basis of return on investment (ROI), market share growth, investment in research and development, and market orientation. Jayaraman et al. (2012) measured organizational performance on the basis of financial aspects, such as revenue growth, net profit, profit-to-income ratio, and

return on assets, and non-financial aspects, such as the capacity to develop competitive profiles, new product development, and market development.

Nawanir et al. (2013) elaborated the relationship between LSS implementation and business performance. Lean manufacturing has a positive influence on operational performance in manufacturing companies. Meanwhile, Kamar (2014) stated that some hotels that implement the Six Sigma are aware of the fact that Six Sigma is one of the most effective strategies to improve product/service quality, improve internal processes, and develop the overall operational excellence.

H_7: LSS implementation has a positive effect on operational performance.

From the aspect of organizational level, LSS helps companies achieve stronger competitive advantages so that they become more competitive and then have an effect on better financial improvement. Improved performance and productivity by creating a higher product reliability and lower volatility at the level of internal process operations, reducing company exposure to economic risk, is directly proportional to increased profitability and ROI.

H_8: LSS implementation has a positive effect on organizational performance.

In the relationship between operational performance and organizational performance, Ismail Salaheldin (2009) suggested that operational performance has a strong influence on financial performance, but it is quite weak on non-financial performance. Similarly, García-Bernal and Ramírez-Alesón (2015) indicated that operational performance has a positive effect on financial performance. Nawanir et al. (2013) stated that the better the operational performance, the better the organizational performance.

H_9: Operational performance has a positive effect on organizational performance. – – – – -

According to the hypothesis building in the literature review, CSFs, such as management involvement and commitment, communication, education and training, linking LSS to business strategy, project selection and prioritization, and cultural change, have a positive relationship with LSS implementation. Meanwhile, LSS implementation has a positive relationship with operational and organizational performances; operational performance also has a positive relationship with organizational performance. These relationships are illustrated in Figure 1. – – – – – – – – – –

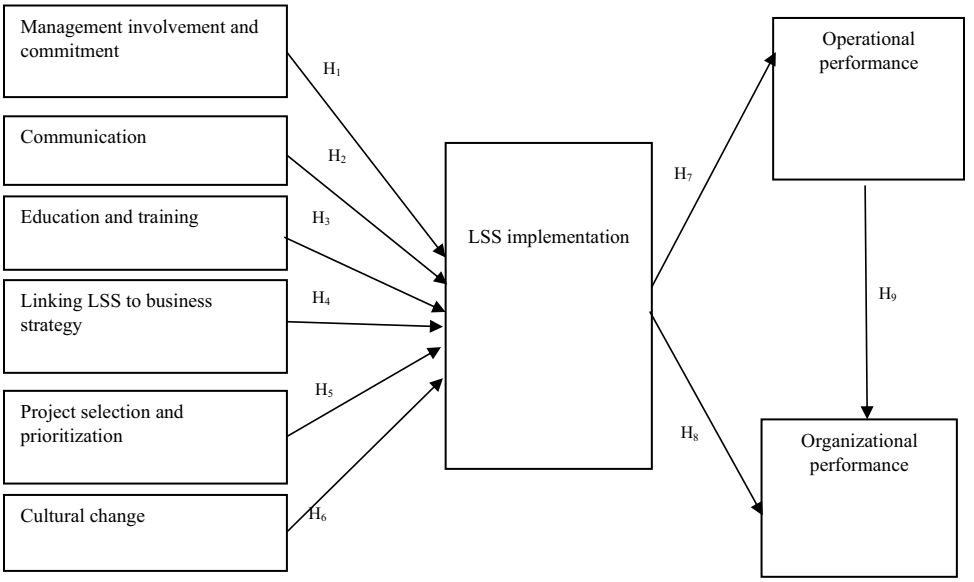

Figure 1. Research framework.

Research methodology

The primary data collection in this study was to conduct interviews and distribute questionnaires directly to respondents who are related to this research from January 2020 to early February 2020. At the time this research was conducted, the VO population in Semarang City consisted of 33 inns in collaboration with Airy Rooms, 34 inns with Reddoorz, and 20 OYO inns.

The measurement scale used in the questionnaire was the Likert scale. To prevent worse scenarios and bias results, researchers believed that the "neutral" option in the questionnaire must be eliminated. Ten scores starting from strongly disagree to strongly agree were used. The Partial Least Square–Structural Equation Modeling (PLS–SEM) method was employed to analyze the questionnaire data, and the SmartPLS 2.0 program was used to process such data. PLS is an SEM technique based on an iterative approach that maximizes the explained variance and endogenous construction (Fornell and Bookstein, 1982; Hair et al., 2014). This method was used to determine the CSFs that affect the LSS implementation and the relationship between LSS and hotel performance.

Researchers distributed the questionnaires by visiting hotels that are affiliated with VHOs. Some of the questionnaires were left out for a few days, whereas others were filled out right away. Since the population of VHO was not much, researchers decided to spread out the questionnaires about 2–4 questionnaires for each hotel.

This result was clear, considering that low-budget hotels rarely have a manager, and the owners are the direct supervisors. However, meeting the owners was difficult; thus, many questionnaires were filled out by operational

employees. The respondents were the employees who has direct contact to customer, also the managers (if they have one), and also the owner of the hotels. Unfortunately, most employees neither knew the meaning of LSS nor the uses of LSS tools. To prevent misunderstandings, the researchers waited while the respondents were filling out the questionnaire, so that they could explain terms that the respondents did not understand.

Result

Sample demographic

The first part of the survey asked the respondents to identify their biographical information. This study divided the function of the position into two, namely, managerial and operational levels. The managerial level includes managerial and supervisory positions, whereas the operational level comprises employees who have operational functions at the hotel where they work. Table 4 shows that the respondents were dominated by those with positions at the operational level with a total of 78%, and the remaining 22% were workers at the managerial level. Moreover, the respondents were dominated by workers who had worked for more or less one to three years. Meanwhile, workers who worked for more than three years ranked second with a total of 20%, followed by workers who worked less than one year with a total of 17%. – – – – – – – – – – – – – – – – –

Table 4. General profiles of surveyed hotels.

Attribute	N = 120	%
Based on job function		
Managerial	26	22%
Operational	94	78%
Based on VHO partner		
Airy Rooms	39	33%
OYO	19	16%
RedDoorz	62	52%
Based on the length of partnership		
One to two years	27	23%
< one year	72	60%
> two years	21	18%
Based on the understanding of the LSS concept		
No	85	71%
Yes	35	29%
Based on the LSS implementation in the workplace		
No	91	76%
Yes	29	24%
Based on the length of LSS implementation		
Not implementing	91	76%
< one year	11	9%
> two years	8	7%
One to two years	10	8%

Source: Primary data processing

At the time of this research, hotels in partnership with RedDoorz were easier to find and more open than those in partnership with Airy Rooms and OYO. As a result of this survey, respondents from hotels in partnership with RedDoorz had the highest number, accounting for 52%, followed by Airy Rooms 32% and OYO 16%. Table 4 presents that most hotels have only started partnering less than a year. Respondents with the lowest percentage are hotels that have partnered for more than two years.

As presented in Tables 4, 71% of workers do not yet understand the LSS project, and approximately 76% of hotels do not implement LSS in their place of work. Moreover, 22% of the total sample have applied fully, 8% have applied LSS for approximately one to two years, and 9% have only applied LSS for less than a year. Meanwhile, 7% of hotels have implemented LSS projects for more than two years.

Data analysis

The specification of the model in this study is based on the framework in Figure 2 and the indicators of the latent construct depicted in Figure 2. Figure 2 illustrates the inner and outer models, which are the sub-models of this analysis. – -

Figure 2 shows that management involvement and commitment (MIC) comprise four indicators, communication (COM) consists of two indicators, education and training (TRAIN) comprise three indicators, linking LSS to

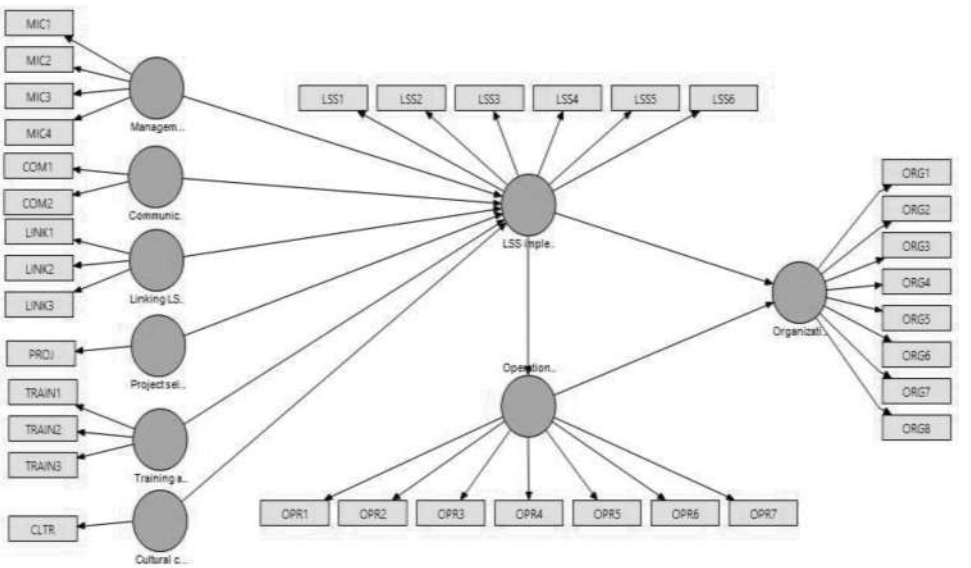

Figure 2. Model specification. Source: SmartPLS 2

business strategy (LINK) consists of three indicators, and project selection and prioritization (PROJ) and cultural change (CLTR) comprise one indicator only.

Meanwhile, LSS implementation (LSS) consists of three variables, operational performance (OPR) comprises seven indicators, and organizational performance (ORG) consists of eight indicators.

Ghozali and Latan (2015) suggested that validity can be measured by considering the values of convergent validity and discriminant validity. Convergent validity on SmartPLS 2 that can be seen in the outer loading value is > 0.70. Table 5 presents that ORG5 and LSS3 do not fulfill the requirement of convergent validity because the outer loading value is below 0.7. Thus, for the next measurement step, LSS3 and ORG5 are deleted. – -

In the validity test, each construct has a value above 0.5 in the AVE. Table 6 shows that each construct has fulfilled these criteria and can be declared valid. – – – – – – – – – – – – – – –

Table 5. Outer loading.

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1.0								
COM1		0.965938							
COM2		0.956954							
LINK1			0.926519						
LINK2			0.919266						
LINK3			0.928913						
LSS1				0.768345					
LSS2				0.900812					
LSS3				0.565966					
LSS4				0.751917					
LSS5				0.876308					
LSS6				0.839231					
MIC1					0.898345				
MIC2					0.917903				
MIC3					0.831125				
MIC4					0.874325				
OPR1						0.855090			
OPR2						0.883351			
OPR3						0.877623			
OPR4						0.860631			
OPR5						0.876026			
OPR6						0.873884			
OPR7						0.822886			
ORG1							0.814056		
ORG2							0.778680		
ORG3							0.861403		
ORG4							0.875370		
ORG5							0.613395		
ORG6							0.818436		
ORG7							0.841193		
ORG8							0.834357		
PROJ								1.0	
TRAIN1									0.894770
TRAIN2									0.886357
TRAIN3									0.837098

Source: Primary data processing

Table 6. Construct reliability and validity.

	Cronbach's Alpha	Composite Reliability	AVE
Communication	0,924	0,961	0,924
Cultural change	1,000	1,000	1,000
LSSimplementation	0,891	0,921	0,700
Linking LSS to business strategy	0,855	0,947	0,855
Management involvement and commitment	0,776	0,933	0,776
Operational performance	0,944	0,954	0,747
Organizational performance	0,928	0,942	0,700
Project selection and prioritization	1,000	1,000	1,000
Training and education	0,763	0,906	0,763

Source: Primary data processing

Table 6 also presents that each construct has an AVE value above 0.5, indicating that the value of convergent validity in this research model is very good. The AVE value of 1 means that the indicator of the magnitude of the variance contained in the construct is perfect. This value occurs in constructs that only have one indicator.

To obtain the value of discriminant validity, the value of one variable construct is compared with that of another variable construct. Table 7 shows that the value of relationship between the two variable constructs is greater than that of the relationship between a construct and another variable construct. Therefore, this model can show that latent constructs predict indicators in their blocks better than indicators in other blocks. Moreover, this research model meets the discriminant validity criteria. –

Apart from the construct validity test, a construct reliability test is also conducted using two criteria, namely, composite reliability and Cronbach's alpha from the indicator block measured from the construct. The construct is declared to be reliable if both criteria meet a value of more than 0.70. Table 6 presents that each construct has a composite reliability value, and Cronbach's alpha is all worth more than 0.70. Therefore, the constructs in this research model have a fairly high reliability and are good.

To measure the inner model in this study, the value of R^2 is observed. Table 8 shows that LSS implementation, operational performance, and organizational performance have construct values above 0.70. Thus, each construct has a substantial degree of accuracy. Another interpretation is that LSS implementation can be influenced by CSFs by 77.6%, whereas the remaining 22.4% can be influenced by other constructs that are excluded from the model in this study. The construct of operational performance in this research is influenced by the construct of LSS implementation by 76.4%; the remaining 23.6% can be influenced by other constructs that are excluded from the research model. The construct of organizational performance can be influenced by the constructs of LSS implementation and

Table 7. Cross loadings.

	CLTR	COM	LINK	LSS	MIC	OPR	ORG	PROJ	TRAIN
CLTR	1000000	0.604484	0.588185	0.608523	0.673616	0.681398	0.590768	0.635030	0.671065
COM1	0.578996	0.965908	0.538026	0.549048	0.804269	0.562332	0.459008	0.391509	0.776367
COM2	0.583952	0.956987	0.489393	0.489917	0.775367	0.515082	0.468540	0.373412	0.661708
LINK1	0.523974	0.447635	0.926357	0.724348	0.538658	0.706133	0.631997	0.617398	0.639467
LINK2	0.572668	0.538624	0.918155	0.789256	0.565344	0.747918	0.653095	0.586884	0.558306
LINK3	0.533848	0.495920	0.930172	0.800020	0.549475	0.743702	0.585424	0.595725	0.638471
LSS1	0.611592	0.625152	0.651468	0.780215	0.703238	0.631615	0.489871	0.621455	0.830088
LSS2	0.601467	0.463131	0.692735	0.899815	0.507942	0.798728	0.718939	0.756858	0.566804
LSS4	0.585103	0.466813	0.715374	0.742437	0.457229	0.623820	0.717856	0.515999	0.488862
LSS5	0.453584	0.393073	0.739467	0.893575	0.365337	0.825272	0.712570	0.617065	0.440135
LSS6	0.319015	0.353831	0.695592	0.855778	0.325110	0.755693	0.752892	0.538054	0.422897
MIC1	0.602638	0.814214	0.596605	0.584948	0.900849	0.555528	0.443634	0.438984	0.712196
MIC2	0.587739	0.716539	0.527595	0.487380	0.919484	0.452954	0.358973	0.502045	0.773439
MIC3	0.564639	0.700032	0.477522	0.395888	0.827571	0.457205	0.356855	0.305532	0.676773
MIC4	0.621380	0.646695	0.479295	0.447563	0.872597	0.511110	0.377427	0.503280	0.667894
OPR1	0.521732	0.442284	0.732605	0.849416	0.468909	0.854899	0.660997	0.597179	0.562251
OPR2	0.522820	0.509898	0.678783	0.808109	0.422116	0.883417	0.733409	0.596633	0.503206
OPR3	0.713189	0.576645	0.695973	0.766759	0.513764	0.878070	0.751403	0.657453	0.551125
OPR4	0.592193	0.533318	0.682590	0.730482	0.528933	0.860667	0.745604	0.604536	0.553708
OPR5	0.609681	0.498102	0.733705	0.721185	0.508135	0.875943	0.793159	0.640592	0.527367
OPR6	0.561041	0.408097	0.646672	0.744827	0.493124	0.873611	0.644252	0.670396	0.522649
OPR7	0.606522	0.416589	0.618525	0.656228	0.483943	0.822858	0.646233	0.576792	0.479078
ORG1	0.545906	0.479389	0.542310	0.750029	0.415779	0.803720	0.825352	0.574735	0.501676
ORG2	0.493723	0.444009	0.577112	0.612507	0.314147	0.584852	0.811159	0.493063	0.445064
ORG3	0.635918	0.451976	0.662678	0.734741	0.425151	0.689933	0.890320	0.607983	0.421359
ORG4	0.551248	0.342522	0.599019	0.716332	0.328657	0.699005	0.894217	0.590083	0.350836
ORG6	0.296430	0.225212	0.473032	0.622023	0.334855	0.592622	0.779149	0.533551	0.357794
ORG7	0.538524	0.486119	0.546198	0.655011	0.406889	0.754253	0.849172	0.633186	0.415574
ORG8	0.361283	0.368308	0.540328	0.670329	0.333601	0.665226	0.802276	0.600172	0.275414
PROJ	0.635030	0.398227	0.648187	0.730148	0.500619	0.717692	0.690704	1000000	0.544057
TRAIN1	0.583566	0.577561	0.568874	0.625940	0.630812	0.572788	0.478363	0.607569	0.893482
TRAIN2	0.629244	0.778919	0.637022	0.582966	0.715502	0.562563	0.481353	0.384212	0.883368
TRAIN3	0.541143	0.613892	0.519566	0.458752	0.788572	0.452591	0.246965	0.415313	0.842839

Source: Primary data processing

Table 8. $R^{2.}$

	R^2
LSS implementation	0.776
Operational performance	0.764
Organizational performance	0.718

Source: Primary data processing

Table 9. Path coefficient.

	Operational Performance	Organizational Performance
LSS implementation	0.874	0.408
Operational peformance		0.468

Source: Primary data processing

operational performance by 71.8%; the remaining 28.2% can be influenced by other constructs that are excluded from the research model. – – – – – – – – –

The next evaluation of the inner model is to look at the path coefficient. Table 9 shows that the LSS implementation has a relationship with operational performance as much as 0.874. Meanwhile, through operational performance, LSS implementation influences organizational performance as much as 0.409. By contrast, LSS implementation can also influence organizational performance but only 0.408. Although the values are relatively close, this research reveals that LSS implementation can affect organizational performance further by considering operational performance. – -

Hypothesis testing

At this stage, the model is evaluated using the t-test. The t-test is used for hypothesis testing, which is performed through the bootstrapping procedure on the SmartPLS 2 program. The significant level used is 95% ($\alpha = 0.05$) with a t-table of 1.96. If the t-statistic value (| O/STDEV |) is smaller than 1.96, then the hypothesis is rejected. – – – – – – – – – – – – – – – -

Table 10 presents three CSFs, which have a positive relationship with LSS implementation, namely, management involvement and commitment (H_1), linking LSS to business strategy (H_4), and project selection and prioritization (H_5). Other CSFs, such as communication (H_2), education and training (H_3), and cultural change (H_6), do not have a positive relationship with LSS implementation.

The relationship between LSS implementation and operational performance (H_7) and that between LSS implementation and organizational performance (H_8) are proven positive. Moreover, operational performance has a positive relationship with organizational performance.

Table 10. Hypothesis testing.

	LSS Implementation	Operational Performance	Organizational Performance	Hypothesis Testing
Communication	0,170			REJECTED
Cultural change	0,345			REJECTED
LSS implementation		37,627	2,556	ACCEPTED
Linking LSS to business strategy	5,755			ACCEPTED
Management involvement and commitment	2,009			ACCEPTED
Operational performance			3,083	ACCEPTED
Organizational performance				ACCEPTED
Project selection and prioritization	4,456			ACCEPTED
Education and training	0,855			REJECTED

Source: Primary data processing

Discussion

Relationship between CSFs and LSS implementation

Previous studies revealed that MIC have an influence on the successful implementation of LSS in a company. Albliwi et al. (2014) and Laureani and Antony (2012) revealed that MIC are the most critical factors in implementing the LSS project. If no involvement from management is observed, then the LSS project in the company fails and results in no improvement in the company. In line with previous research, the present study also reveals that MIC have a positive relationship with LSS implementation.

Dora et al. (2016) argued that the lack of an appropriate communication structure is a major obstacle in the adoption of Lean manufacturing. Timans et al. (2012) revealed that communication has an important role in LSS application. However, according to Manville et al. (2012), an effective communication plan is in the bottom five rank of CSFs of LSS. In the current research, communication is also not considered a factor by respondents. In general, communication is important for top management to communicate the aim of LSS implementation in a company. However, in this research, building the awareness of LSS implementation benefits before building the communication between top management and operational workers is important.

Education and training are not only for practice but also increase the insights of workers to develop their soft skills to become more professional in the field of work they pursue. Dora et al. (2016) found that training is an important factor in the successful implementation of LSS. By contrast, training can be a significant burden for the limited budget of such companies (Brun, 2011). This reason can explain why in this study, education and training are not factors that influence the successful implementation of LSS. Basically, all hotel employees are willing to be trained

and educated by VHOs to improve their ability to provide the best service for hotel guests. However, whether VHOs have adequate capabilities and facilities to train employees is a huge challenge for VHOs.

Brun (2011) revealed that the relationship of LSS with business strategy is believed to help the successful implementation of LSS. Likewise, Laureani and Antony (2012) stated that the link between LSS and business strategy can significantly influence the successful implementation of LSS. In line with previous studies, the results of the statistical analysis test in this study reveal that linking LSS to business strategy has an influence on the successful implementation of LSS.

Only few previous studies suggested that project selection and prioritization is the determining factor for the successful implementation of LSS. Nevertheless, Manville et al. (2012) and Kamar (2014) stated that project selection and prioritization is the determining factor for the successful implementation of LSS. In line with this thinking, the present study finds that project selection and prioritization have a positive relationship with the successful implementation of LSS in hotels that are in partnership with VHOs.

According to Laureani and Antony (2012) and Brun (2011), cultural change has a significant influence on the successful implementation of LSS. However, Timans et al. (2012) argued that cultural change has no influence on the successful implementation of LSS. In line with such previous research, the statistical results on the variable of cultural change show that it has no influence on the successful implementation of LSS. These results can be obtained if an understanding of what and how LSS works for employees is lacking. They assume whether an LSS project is implemented in their work environment, and the results are the same without changing anything.

Relationship between LSS implementation and operational performance

Nawanir et al. (2013) stated that Lean manufacturing has a positive influence on operational performance. Similarly, Kamar (2014) revealed that the Six Sigma implementation has a significant effect on operational performance in the service industry. The success of LSS implementation is measured by the efficiency of the service process at hotels, which are in partnership with VHOs. These efficiencies (time, cost, and resource) can result in an increase in employee performance and an increase in service quality that can increase customer satisfaction at inns, which are in partnership with VHOs.

Relationship between LSS implementation and organizational performance

Nawanir et al. (2013) added that Lean manufacturing has a positive relationship with financial and non-financial performances. In line with such research, the present study suggests a positive relationship between the

successful implementation of LSS and organizational performance. Certainly, the efficiency carried out in the LSS project process reduces unnecessary costs, thus increasing hotel profitability. In addition, by running the LSS project, hotels in partnership with VHOs can highlight competitive advantages compared with other hotels of the same class to increase room rental sales.

Relationship between operational performance and organizational performance

Nawanir et al. (2013) stated that the relationship between operational and organizational performances is interdependent. The better the operational performance, the better the organizational performance. Meanwhile, Kamar (2014) argued that operational performance has a positive effect on financial performance, which is part of organizational performance. The present study adds that operational performance has a positive relationship with organizational performance. If a hotel has a good operational performance system and is organized, so that it can improve the quality of workers and customer satisfaction, then the sales level of hotel profitability can also increase.

Relationship between LSS implementation, operational performance, and organizational performance

According to the path coefficient in Table 8, the direct relationship between LSS implementation and organizational performance is weaker than the indirect relationship between LSS implementation and operational performance. This observation is in line with the research of Kamar (2014) who stated that if organizational performance is indirectly affected by LSS implementation, then it can be influenced by operational performance. Clearly, LSS implementation can improve operational performance, which can boost organizational performance financially and non-financially.

Conclusion

LSS, as a strategic tool and continuous improvement, can be basically used in various sectors of industries such as manufacturing and service industries, including the lower middle-class hospitality industry. CSFs in LSS implementation must be introduced to hotel stakeholders to improve operational and organizational performances. This study reveals that three out of the six CSFs of LSS have a positive relationship with LSS implementation in low-cost budget hotels in Semarang City, namely, MIC, linking LSS to

business strategy, and project selection and prioritization. The research also suggests that LSS can influence operational and organizational performances.

In addition, this study has some implications for VHOs and hotels. By implementing the LSS in the right way, low-cost budget hotels may have some chances to fix their service quality, including human and material resources, which can affect their financial and non-financial performances.

MIC are the most basic factors. Without a strong commitment from top management, businesses certainly cannot run well. Linking LSS to business strategy is also inseparable from the intervention of top management and employees to find the best way to make a continuous improvement in line with the business strategy. Supported by the project selection and prioritization of the right LSS project, the business goals of hotels in partnership with VHOs can be achieved to improve their business performance.

The implementation of LSS has the benefits of ensuring that services are in accordance with consumer needs, removing activities that do not add value (non-value added), reducing the incidence of damaged transactions, shortening the work cycle time, and providing the right service at the right time (Laureani, 2012). With these benefits, the performance quality of operational employees is influenced to gain customer loyalty, which also affects their satisfaction. Efficiency in the LSS process implementation reduces unnecessary costs to increase hotel profitability. In addition, by running the LSS project, hotels that are in partnership with VHOs can highlight competitive advantages compared with other hotels from the same class to increase room rental sales.

As revealed by Nawanir et al. (2013), the better the operational performance, the better the organizational performance. If VHOs choose to implement LSS, then the working environment changes and slowly affects the productivity of workers that can also increase customer satisfaction, which can improve organizational performance financially and non-financially.

All elements of CSFs are important to consider in the introduction of the LSS method in hotels that collaborate with VHOs. This study suggests staying focused on building communication, providing education and training, and applying different cultures consistently to apply the LSS method in a sustainable manner, even though the results of this study have a negative relationship with the successful implementation of LSS.

However, this research certainly cannot be separated from a limitation. Although basically, it aims to give advice to VHOs regarding LSS implementation to support improved operational and organizational performances, the reality is rather difficult because partners themselves do not understand LSS, although it has been implemented informally. Lack of respondents' understanding of the LSS concept became the main obstacle for the researchers in collecting the questionnaire. The bustle of the workers and innkeepers also slowed down the data collection and thus took a long time before the data

could be processed. Based on the limitations that the authors faced, two recommendations are presented. First, a comparative research between hotels that are and are not implementing LSS is suggested to determine the CSFs that can be considered in the LSS implementation in hotels and to figure out the impact to the performances of hotel industries. Second, future studies can conduct comparative research about the condition before and after implementing LSS and determine the difference in performance between late and future hotels with LSS implementation.

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