

LEAN HOSPITAL MANAGEMENT IMPLEMENTATION IN RURAL PRIVATE HOSPITAL: ITS EFFECT ON JOB SATISFACTION AND TURNOVER INTENTION

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Abstract. Previous studies in Indonesia examining the effect of lean hospital management implementation on employee's job satisfaction and turnover intention had not been done. Results from studies in other countries regarding the effect of lean hospital for employee's wellbeing also point to contradictions, being positive or negative. The expected positive effect of lean hospital implementation for employee's wellbeing is to encourage the sustainability of lean management implementation in hospital. Adina MC Hospital as a rural private hospital in Central Java has implemented the lean concept to improve the quality of hospital service in the last seven months. This study is aimed to determine the effect of lean hospital tools (Value Stream Mapping and 5S) to job satisfaction and turnover intention of hospital employees in the context of job demands as mediator and job resources as moderator. Questionnaires were given to 78 employees of Adina MC Hospital who had been working for more than one year. All data and hypotheses testing were analyzed using smartPLS. The findings show that the implementation of lean hospital tools (5S) is positively associated with job satisfaction. The influence of lean hospital tools' VSM could not be seen because it has been dropped out in reliability testing instruments. Job satisfaction was also found to be negatively associated with turnover intention. In the context of job resources, the findings show that job resources moderate the correlation between lean hospital tools (5S) implementation with job satisfaction, so lean hospital implementation could promote employee's job satisfaction when supported by adequate job resources. Job resources are also not found to moderate the correlation between job demands with job satisfaction and both hypotheses of job demands mediate the correlation between lean hospital tools implementation with job satisfaction and turnover intention have been rejected.

Keywords: lean hospital, job satisfaction, turnover intention, job demands, job resources

1. INTRODUCTION

In recent years, interest in improving the quality and productivity in the health care sector by implementing lean thinking continues to rise [1]–[3]. Lean concept motivates many hospital administrators to use lean hospital principles to make improvements [4], [5]. On the other hand, the lean concepts has become the fundamental of policy making and strategic planning in many hospitals in the world, including the UK, Sweden and Iran [6]–[8], Adina Mother and Child Hospital (MC Hospital) is a special type C rural private hospital in Wonosobo and is one of several hospitals in Central Java, Indonesia to implement lean hospital management throughout its health services. This hospital implements lean hospital management as a continuous improvement effort in improving the quality of health services in hospital.

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Lean implementation means that there is a change or a reorganization of the entire structure and practical work. Successful lean implementation is often seen only from the aspect of improvement of operational and financial performance [9]. Some examples of successful lean implementation in hospitals are : Oncology Gynaecology Academic Clinic from University of Virginia which managed to reduce the total waiting time significantly from 119 minutes to 82 minutes [10], Academic Uro-Oncology Clinic at the University Health Network in Toronto which managed to increase the value added time from 30.6% to 66.3% of the overall time of visit [11] and a type C private Hospital in West Java which managed to accelerate the discharge of patients by decreasing the amount of activity from 41 to 17 activities that have an added value of 32% [12]. Whereas in the last seven months at Adina MC Hospital Wonosobo, there has been some improvements, which are the reduction of operating costs of consumable materials by 10% and the maintenance costs of equipment by 85%.

On the other hand, the impact of the implementation of lean is perceived or thought by the employees to not get much attention [9], especially the effect of lean hospital in private hospitals in Indonesia. From the results of the last three years, the study of lean hospital in Indonesia was only done in a type C public hospital [12], and a type B public hospital [13] but those studies only considered the aspect of operational performance improvement (such as reduced waiting time) and not of the perception of the employees. In other countries, lean implementation has been studied related to increased job demand and diminishing resources [14] as well as their management difficulties in forming employee involvement in the implementation of this concept [9], [15]. Study in lean production implementation also found that the employee's involvement in lean not only gives them new responsibilities but also causes psychological stress and strain on employees [16], so if managers ignored this work condition, then this may cause negative impact on employees such as moral problems or turnover [17]. On the other hand, some studies have found a positive impact of the lean implementation to working conditions [18], [19] including increase in employee's job satisfaction if they are supported by adequate job resources [20]. Lean implementation also has an impact on increasing productivity [21], [22].

Most of lean hospital implementation studies had a positive impact on the working conditions of employees [18]–[20], [22], Lean implementation which is a concept of organizational development is expected to be sustainably applied. Sustainable organizational development is optimizing the organization financial performance and working conditions [23]. More attention to working conditions and well-being or human resource management has been proved to be profitable for achieving better quality and more efficient health services through redesign process or reorganization such as lean. Therefore, the aim of this study is to determine the effect of lean hospital tools (Value Stream Mapping and 5S) to job satisfaction and turnover intention of hospital employees in the context of job demands and job resources.

2. THEORETICAL BACKGROUND AND HYPOTHESES

2.1. Lean Hospital Tools, Job Satisfaction and Turnover Intention

The lean hospital management implementation is generally implemented as an improvement process. Adina MC Hospital uses Value Stream Mapping (VSM) and the 5S method (Sort, Set in Order, Shine, Sustain and Standardize) in its implementation. VSM and 5S are the lean tools which are most frequently used as a fundamental tools at the beginning of lean management implementation in an organization [24]. In VSM, employees map every workflow, analyzing the value-added activity and identify the actions that are taken to eliminate non-value-added activities and create a workflow that has simpler and shorter

leading times. In health services or hospitals, VSM is used to describe the diagrammatic representation of a patient's journey through the system and ensures identification of each individual stage in the treatment process or other medical procedures, the value they perceived, duration, inter-correlation, process failure, staff relations or staff-patient relations [25]. VSM improves clarity in the organization, promote employee's involvement and participation in problem solving [26]. While the 5S method is a form of visual surveillance and standardization whose aim is to organize and equip the workspace, for example, 5S control the storage of devices that are not being used and so that work can be carried in safer conditions.

In hospitals and health services, health professionals and managers implement the lean tools to improve efficiency, patient's clinical outcome, satisfaction and safety both for employees and patients [27]. Satisfied employees are also more committed to the organization and it also lowers the employee's turnover intention. Central to most turnover theories is the notion that job satisfaction directly and negatively relates to employees' turnover intentions [28]

H1: Lean hospital tools implementation will be positively associated with job satisfaction

H2: Job satisfaction will be negatively associated with turnover intention

2.2 Job Demands and Job Resources

Job demands used in this study is excessive workload and emotional demands. This study was conducted to prove that the lean tools implementation affects either job satisfaction or turnover intention of the hospital's employees, in the context of job resources and job demands. The lean hospital implementation is expected to promote employee's job satisfaction and to prevent turnover intention, therefore job demands must be balanced with job resources. In recent study, lean tools implementation could improve employees' and managers' job satisfaction when supported by adequate job resources, but when the support is not available, lean tools could hamper employee's job satisfaction [6]. On the other hand, lean implementation in manufacturing sector cause psychological stress and strain on employees [16]. If this condition were ignored by the managers, it will induce a negative impact on employees such as turnover [17].

Job resources used in this study were taken from a preliminary qualitative study of lean implementation in Sweden's psychiatric health care [20]. Job security, role clarity and participation have been selected as the indicators of job resources. Job security that includes psychological safety is one of the important job resources in this study. The previous research of successful lean implementation in the public sector found that insecurity (insecurity) inhibits the process of lean [29]. The results of the study at Virginia Mason Hospital, known for success in implementing lean hospital management, found that there was clarity in expectations, responsibility and accountability in its manager's work. [20]. The findings showed the importance of role clarity in lean implementation. Furthermore, an organization that has a high level of participation during lean implementation performs better and has a higher employee's engagement and satisfaction. The results of the health services study also showed that the participation approach in implementing VSM could promote employee's involvement and job satisfaction in the hospital [30].

H3: Job demands mediate the correlation between lean hospital tools with job satisfaction

H4: Job demands mediate the correlation between lean hospital tools with turnover intention

H5: Job resources moderates the correlation between lean hospital tools with job satisfaction

H6: Job resources moderates the correlation between job demands with job satisfaction

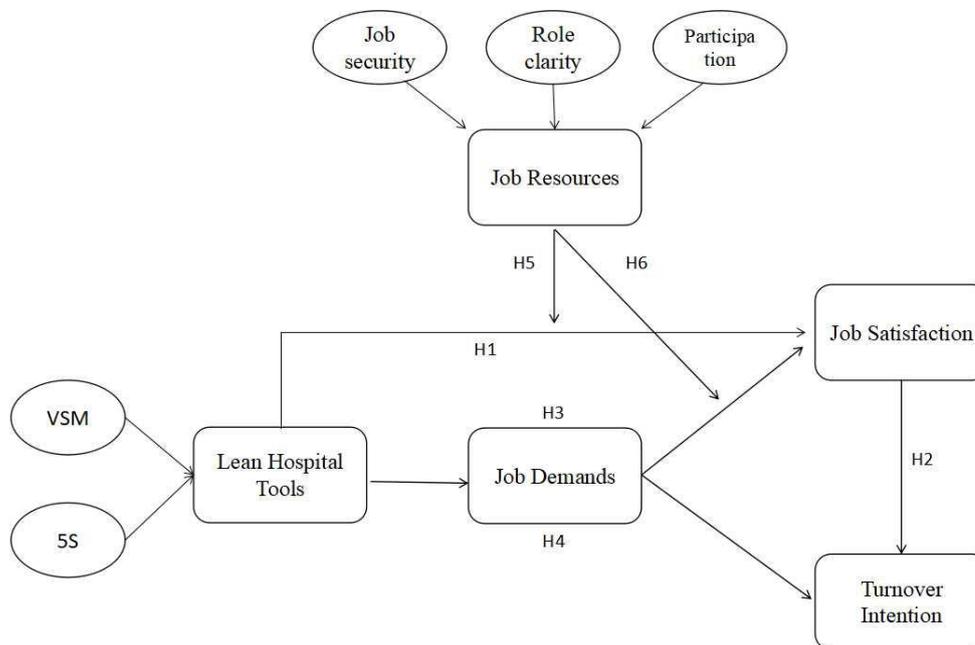


Fig.1. Hypotheses Model

3. METHOD

This study is an associative causal research with the survey method. The research location is Adina MC Hospital in Central Java which is a type C private hospital in Central Java. The population is 78 hospital employees with tenure of more than one year. Samples were taken by total sampling technique. The data collection method is using the questionnaire, mostly taken from the validated questionnaires of the New Working Life (Sw. "Det His Arbetslivet") and Leadership / Organization / Health / Production (LOHP) with the researchers' modification as well as the additional questions from a research in Sweden (Lindskog, 2016). Lean hospital tools were measured using three items with a five-point Likert scale from 1=never to 5=always. Job satisfaction was measured using two items with a five-point Likert scale from 1=never to 5=always. Job resources (job security, role clarity and participation) was measured with twelve items with a five-point Likert scale from 1= strongly disagree to 5 = strongly agree. Job demands which consist of excessive workload and emotional demands questionnaire was measured using six items with a five-point Likert scale from 1=never to 5=always. Turnover intention was measured using instruments by Sheweng (2011) which consist of five items with a five-point Likert scale from 1=never to 5=always.

Smart-Partial Least Square (smartPLS) is used as the data analysis tool. In smartPLS, outer model and inner model analyses are used to analyze the research model. The outer model analysis aims to test that the instrument used in this study is feasible to be a measurement media. In this case, it has the same function as a validity and reliability test. The output model of SmartPLS shows the convergent validity value or loading factor of each variable. Convergent validity serves to measure the validity of the indicators used to measure the variables. An indicator is said to have good reliability, if the value of outer loading is above 0.70. Meanwhile, the value of outer loading can be tolerated up to 0.50 and the value of convergent validity can be seen based on the Average Variance Extracted (AVE) where each construct must be above > 0.50. Subsequent analysis is used to ensure whether or not there are problems in the

instrument's reliability by looking at the value of composite reliability. It is intended to evaluate outer model or dimensionality test. Cut-off value used in this measurement is a composite reliability > 0.7, if the data outliers' value is less than that, so it has to be eliminated. However, the inner model analysis, also known as structural analysis models, is used to ensure that the models are accurate or robust.

4. RESULTS

4.1.Descriptive Statistic

From 78 questionnaires that are distributed, only 75 questionnaires were eligible for data analysis. From the 75 respondents, three people are in high positions, as well as top managerial level, 11 peoples are in intermediate positions, and the last 61 are in the lower positions (front liner). 45% of respondents are of ages 19-27 years, 20% of respondents are of ages 27-35 years, 9.3% are of ages 35-42 years and 25.4% are of ages 42-56 years. Most respondents (85.3%) are female. In terms of education, most respondents have a diploma D3 level (46.7%), followed by high school (27%), S1 (14.3%) and others 2.7%. Most respondents have tenure of 1-6 years (66.7%) and has followed the implementation of lean tools in Adina MC Hospital for approximately 7 months.

Table 1. Descriptive statistics of lean hospital tools and job resources variables

	Ln1	Ln2	Ln3	JR1	JR2	JR3	JR4	JR5	JR6	JR7	JR8	JR9	JR10	JR12
Mean	4.28	3.73	3.99	3.92	3.84	3.29	3.65	3.91	3.89	4.05	3.71	4.29	4.36	4.19
Median	4.00	4.00	4.00	4.00	4.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Mode	4	4	4	4	4	3	4	4	4	4	4	5	5	4
Std. Deviation	.689	1.04	.979	.784	.823	.712	.862	.918	.953	.804	.912	.749	.710	.748
Index	High (79.38)						High (78.80)							

Table 2. Descriptive statistics of job demands, job satisfaction and turnover intention variables

	JD1	JD2	JD3	JD4	JD5	JD6	JS1	JS2	TI1	TI2	TI3	TI4	TI5
Mean	4.11	3.53	3.36	2.79	2.69	4.16	3.73	3.87	2.24	2.03	2.39	2.27	1.95
Median	4.00	4.00	4.00	3.00	3.00	5.00	4.00	4.00	2.00	2.00	3.00	2.00	2.00
Mode	4	3	4	3	3	5	3	4	3	1	3	1	1
Std. Deviation	.831	1.107	1.193	1.094	1.013	1.163	.890	.859	.942	.944	1.051	1.178	.985
Index	Medium (68.80)						High (76.00)		Low (43.47)				

4.2.Analysis

The outer model for validity analysis found some indicators which have AVE > 0.5 so that it can be said to be valid and composite reliability > 0.7 so that it can be said to be reliable indicators (Table 3). At this stage, there are some indicators that are discarded (i.e. LN2, LN3, JD4, JD5, JD6 and IT 4).

Table 3. AVE and Composite Reliability

Construct	Composite Reliability	AVE
Lean	1,000	1,000
Job resources	0932	0536
Job demands	0870	0690
Job satisfaction	0912	0838
Turnover intention	0822	0545
H5 (LN.JR)	1,000	1,000
H6 (JD.JR)	1,000	1,000

Final testing in the model analysis is to find the Goodness of Fit (GoF) value. According to three levels of goodness of fit value, the result of manual calculation shows that the model has a large GoF (0,299) so it can be concluded that the established model is robust.

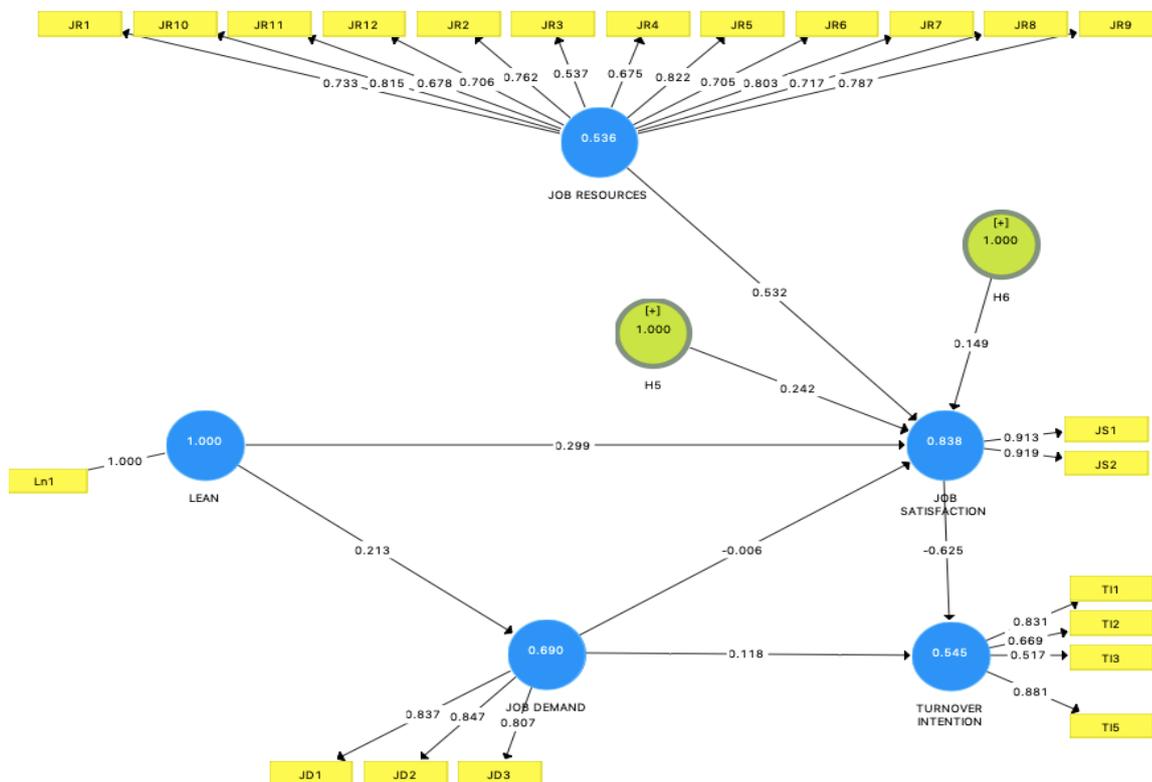


Fig. 2. Final Model

The final model (Fig.2) shows the p-value indicator. The p-value must be < 0.05 , in order to be considered statistically significant. The result for the correlation between lean hospital tools and job satisfaction is p-value = 0.015, original sample = 0.300. Furthermore, the result for the correlation between lean hospital tools and turnover intention is p-value 0.000 and original sample = -0.625. The negative signs (-) indicates a negative effect. From those data analysis, H1 and H2 are accepted.

The mediating role test result of job demands in correlation between lean hospital tools implementation with job satisfaction was found to have an indirect effect (p value = 0,968). The mediating role test result of job demands in correlation between lean hospital tools implementation with turnover intention also showed an indirect effect (p value = 0.427). In this study, this proves that H3 and H4 are rejected.

Meanwhile, the moderating role test result of job resources in correlation between lean hospital tools with job satisfaction shows a moderation effect = 0.033, so H5 is accepted. On the other hand, in the moderating role test result of job resources in correlation between job satisfaction with job demands shows a moderation effect = 0.230 ($p > 0.05$), so that H6 is rejected.

5. DISCUSSION

This study aims to identify the extent in which the lean tools (5S, and VSM) affect working conditions for employees and managers in Adina MC Hospital that have implemented the concept of lean hospital in the last seven months. The working conditions being assessed have a positive impact such as on job satisfaction or negative impact such as on employee's turnover intention. Lean hospital tools that are significantly associated to job satisfaction is only 5S, because VSM does not pass the reliability test. This may be because respondents who implement VSM are mostly respondents on manager-level positions, but respondents in the lower position level only understand 5S as a hospital lean tool that is currently applied. This results is consistent with a research that states the implementation of lean hospital tools, can increase employee's and patient's satisfaction [27]. This study also found that employee's job satisfaction is negatively associated with turnover intention, and this finding is consistent with the statement about job satisfaction which makes employees more committed to the organization and lower employee's turnover [28]

The mediating role test result of job demands on correlation between lean hospital tools with job satisfaction, as well as correlation of lean hospital tools with turnover intention is an indirect effect. So, this study found that job demands do not mediate both correlations. This is not in accordance with Karasek's theory which stated that job demands (i.e. high workload) can be considered as a challenge, not as a mental or psychological burden, which could predict job satisfaction [6]. The result of job demands does not mediate the correlation between lean hospital tools with job satisfaction, which is supported by the findings of the first hypotheses in this study that lean hospital tools is positively and directly associated with job satisfaction (without any mediators). Meanwhile, in the results of the test where job demands do not mediate the correlation between lean hospital tools implementation and turnover intentions, it is possible that the correlation could have a direct effect without there being a mediator, however in this study the correlation between lean hospital tools implementation and turnover intention is not tested directly and will need further research. Although in theory, preliminary studies where lean management is applied by manufacturers, it is found that the implementation of lean could cause moral problems and employee turnover caused by psychological stress on the employees. [17]. In a preliminary study that was performed on health service employees in the hospital, it is also found that

there is a positive correlation between job demands with turnover intention. [31]. Other considerations can be seen from the results of descriptive statistics which show that the index of the respondent's answer to the job demands indicator shows a medium result, which means that most of the answers do not lead to a positive or negative effect.

Furthermore, this study also found that job resources moderates the correlation between lean hospital tools with job satisfaction. This is consistent with previous studies that show about implementation of lean hospital tools can improve job satisfaction when they are supported by adequate job resources [6], All the indicators of job resources which are job security, role clarity and participation has passed validity and reliability test. These results also show the importance of job resources (role clarity) in the implementation of lean hospital tools, and according to the results of previous research at the Virginia Mason Hospital, where there is a successful implementation of lean hospital, role clarity helps managers and employees in implemented lean successfully [20]. Employee participation in the lean hospital tools implementation is also in accordance with previous studies in which companies with high employee participation when implemented lean hospital, will have higher job satisfaction [32].

The last hypothesis found that job resources do not moderate the correlation between job demands with job satisfaction. This is not in accordance with preliminary studies that stated if there are adequate job resources and that they are balanced with job demands when lean hospital management is implemented, then employee's job satisfaction can be increased [6]. This result is also possible because the correlation between the variables in this research model are proved to be significant with a direct correlation, without mediation from job demands, so that the correlation between job demand with job satisfaction which is moderated by job resources are not proven.

6. MANAGERIAL IMPLICATION

The results provide information to the hospital management that the implementation of lean tools, especially the implementation of 5S, promotes job satisfaction of employees in Adina MC Hospital. Management should support policies that encourage adequate job resources (job security, role clarity and participation) so that the implementation of lean management in Adina MC Hospital could be sustained successfully.

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