

FACTORS AFFECTING THE APPLICATION OF LEAN MANAGEMENT AT QUANG NAM UNIVERSITY (VIETNAM)

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Abstract: *the article analyzes the factors affecting the Lean Management at Quang Nam University. The initial factors identified include: Leadership and Management, Employee, Financial Ability, Communication and Appointment Culture. However, after analyzing through the questionnaire with a valid 171 votes, the revised research model has only 3 influencing factors: Resources (leaders and managers, employees and financial capacity), Communication and Organizational Culture. The results showed that the factor of Resources has the strongest influence on the application of Lean Management at Quang Nam University, followed by Communication and finally Organizational Culture.*

Keywords: *lean management, higher education, factors, Quang Nam University.*

ФАКТОРЫ, ВЛИЯЮЩИЕ НА ПРИМЕНЕНИЕ БЕРЕЖЛИВОГО УПРАВЛЕНИЯ В УНИВЕРСИТЕТЕ КУАНГ НАМ (ВЬЕТНАМ)

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Аннотация: *в статье анализируются факторы, влияющие на бережливое управление в университете Куанг Нам. Первоначальные выявленные факторы включают в себя: лидерство и менеджмент, сотрудников, финансовые возможности, коммуникацию и культуру назначения. Однако после анализа анкеты с действительным 171 голосом, пересмотренная модель исследования имеет только 3 влияющих фактора: ресурсы (руководители и менеджеры, сотрудники и финансовые возможности), коммуникация и организационная культура. Результаты показали, что фактор ресурсов имеет самое сильное влияние на применение бережливого управления в университете Куанг Нам, за которым следуют коммуникации и, наконец, организационная культура.*

Ключевые слова: *бережливое управление, высшее образование, факторы, Университет Куанг Нам.*

1. Place the problem

Lean Management has been studied and applied successfully at many prestigious universities around the world, especially in the US and Europe, including Cardiff University (Wales), Napier University. Edinburgh (Scotland), University of Technology Michigan (USA), Rensselaer Polytechnic Institute (USA), University of Aberdeen (Scotland), University of Oklahoma (USA), University of St Andrews (Scotland) ... Universities has gradually accepted Lean management in activities of university services such as student management, human resources administration, finance, library, housing ... and at the same time applied more and more in activities. training, research and knowledge transfer to identify, effectively eliminate waste in all operations, optimize resources, including human, financial systems, and infrastructure, thus, improving quality, efficiency and sustainable development.

Despite such importance, in order to apply Lean Management in higher education, it is necessary to carefully study its application conditions to suit the characteristics of the general higher education environment and different characteristics for each particular school. Therefore, it is necessary to study the factors affecting the application to determine the conditions for applying Lean Management in higher education.

However, in the world and in Vietnam, there are not many studies on the factors affecting the application of Lean management in higher education. That is also the research gap that the topic focuses on.

2. Objects and research methods

The research object of the topic are factors affecting the Lean application in Quang Nam University.

The topic uses qualitative and quantitative research methods including document research combined with interviewing through questionnaires to identify the factors that affect the application of Lean Management at Quang Nam University. .

Research sample:

- *Sampling method:* Sampling method is a method of sampling in combination with convenience.

- *Determination of sample size:*

The research model has the number of observed variables is 34. If according to the standard of 5 samples for one observed variable, the required minimum sample size is $n = 170 (34 \times 5)$. However, based on the capacity, the number of school staff and the study time, the author decided the sample size is $N = 180$.

The final result is 171 valid questionnaires used as data for the official study, reaching a rate of 95%.

3. Research results

3.1. Building research models and hypotheses

Synthesizing from previous studies, factors affecting the application of Lean Management in higher education are identified including: Leadership and management, Staff (lecturers, specialists and staff), Financial ability, Communication and Organizational Culture.

Thus, the proposed research model is determined as follows:

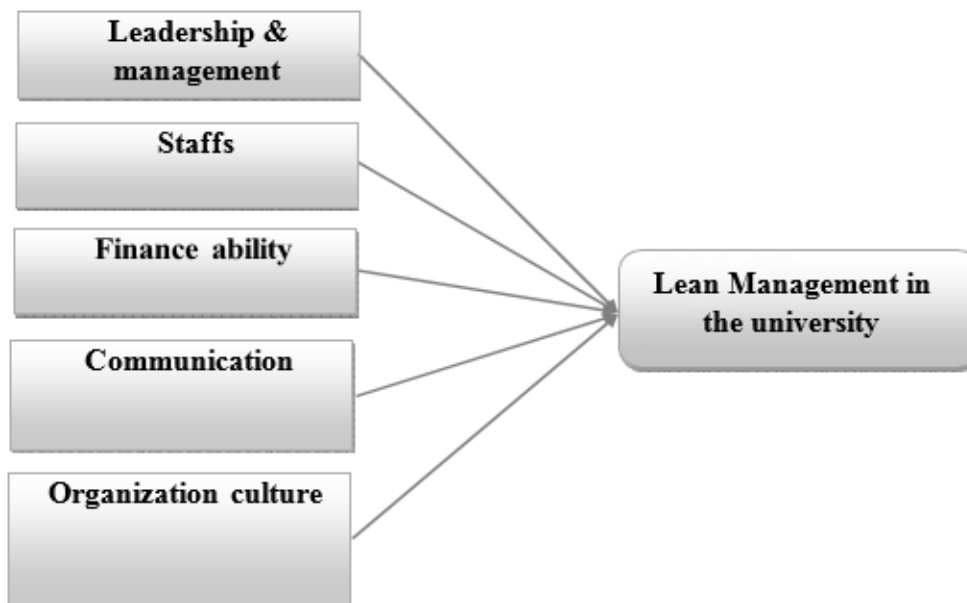


Fig. 1. Research model of factors affecting the application of Lean Management in higher education

Leadership and management: An excellent leadership and management is one of the key factors driving the success of lean governance implementation (Anchanga et al., 2006). Without the continuous support and commitment from top management, the initiative's true importance will be questioned and the energy behind it will weaken (Pande et.al., 2000). Some companies implementing Lean Management fail due to poor management support (Jeyaraman and Teo, 2011). Therefore, leadership and management are considered the most essential prerequisites for the successful adoption of desired improvement initiatives (Antony and Banuelas, 2001; Coronado and Antony, 2002; Henderson and Evans, 2000).

Employees: Human resources are an important asset of any organization (Mohammad, Rashidi & Karimdoust, 2014). By training and empowering this resource, the organization can explore the possibility of success in streamlined implementation. Therefore, it is important to use human resources and train them skillfully. (Mohammad, Rashidi & Karimdoust, 2014). Train skilled minds in the organization, including employees and managers. Empowering key resources and changing attitudes are an important step towards success in the implementation process (Jurado, Fuentes & Gomez, 2013). According to Jurado, Fuentes & Gomez (2013) looks at employees' opinions, actively listening to their suggestions, and implementing suggestions that will motivate them in the longer term, will ultimately help make changes. The organization's skilled workers are critical to the company's growth and success (Jeyaraman and Teo, 2011). Therefore, in the service sector, more attention should be paid to the skills and training of employees to achieve the goal of lean governance implementation.

Financial Capability: Financial capacity is an important success factor in determining any successful project. Implementing the lean initiative requires some substantial investments in resource development, training materials, purchasing statistical software copyright, seeking advice, rewards and recognition systems and systems. other to foster and maintain culture (Anchanga et al., 2006). The importance of financial viability to the success of lean governance can be viewed in terms of compensation and compensation (Bhasin, 2011) and infrastructure (Jeyaraman and Teo, 2011).

Communication: Communication is seen as another important element of Lean Management's implementation. Antony and Banuelas (2001) emphasize that effective and regular communication provides employees with a motto and remains motivated in making continuous improvement efforts. The implementation of Lean Management requires effective top-down communication to provide employees with clear goals and consistent mission statements (Lluís Cuatrecasas Arbós, 2002). Instead of working individually, successfully implementing Lean Management requires teamwork of all employees in the organization. Brainstorming and regular communication are often considered key components of the successful implementation of various innovation initiatives (Staats et al., 2011; Jeyaraman and Teo, 2011). Communication is one of the success factors, because many authors argue that not understanding and communicating the urgency of lean transformation can lead to implementation and change failures (Womack & Jones et al, 1990). Therefore, it is important for the organization to pay attention to communication both in terms of vertical and horizontal communication.

Organizational culture: Organizational culture has been defined in many ways by many researchers. While Schein & Edgar (1984) built culture in different respects, they gave the official definition of culture as a model of the underlying assumptions that a certain group invented, discovered. or develop to learn to deal with adaptive problems with external and internal integration. "Or Organizational culture is the behaviors and attitudes of a group. Lean culture means the changing behavior, feelings and thoughts of the staff. The organization has very little chance to the successful implementation of Lean Management unless attention to culture. Anchanga et al. (2006) say that the creation of documents Supportive organizational culture is an essential foundation for the implementation of the lean concept. Antony and Banuelas (2001) agreed that the successful implementation requires adjusting the organizational culture and changing the attitudes of the kernel. member. Bhasin (2011) mentioned that cooperation is necessary to achieve and sustain successful lean implementation. Bhasin and Burcher (2006) and Dahlgaard and Dahlgaard -Park (2006) reviewed the key success factors for Lean Management's adoption towards cultural implications. Therefore, it can be said that organizational culture is an important factor when it comes to the success of lean management and implementation (Liker & Hoseus, 2008). In general, it is imperative that the organization consider important aspects of the cultural factor including openness, collaboration, acquisition, and sharing of data.

3.2. Building research hypotheses

H1: Leadership and management factors affect the application of Lean Management at Quang Nam University.

H2: Staff factors that affect the application of Lean Management at Quang Nam University

H3: Factor Financial ability affects the application of Lean Management at Quang Nam University

H4: Communication factors affect the application of Lean Management at Quang Nam University

H5: The organizational culture factor influences the application of Lean Management at Quang Nam University

3.3. Evaluate the scale by Cronbach's Alpha confidence coefficient

Based on information from the questionnaires, the author assesses the reliability of the scale by Cronbach's alpha coefficients and shows that all observed variables are satisfactory, so they will be included in the kernel analysis. Next factor. Cronbach's alpha coefficients of all components are from 0.8 to 1, so it can be said that this is a good scale.

3.4. Explore factor analysis EFA

After meeting the reliability test requirement, 34 observed variables will be included in the factor analysis. The analysis is carried out as follows:

3.4.1. Analyzing the factors affecting the application of Lean Management at Quang Nam University

Extraction method: Root factor analysis.

Rotation method: Varimax.

The results of the last implementation of the EFA were as follows: KMO = 0.960, Sig = 0.000, the total variance extracted was 71.755% > 50%, so the factor analysis was met. With 31 observed variables on factors affecting the application of Lean Management at Quang Nam University after the factor analysis process, there are 3 extracted factors. The scales for leadership and management, employees, and financial ability are combined into one factor because these three components do not reach discriminant validity. Thus, the 5 components according to the theoretical model after the analysis process become 3 components as follows: the first is leadership factors, employees and financial capacity combined into a factor called resources. The second factor is communication and the third factor is organizational culture. Each component had the following disorder order among specific variables:

- Resource composition: includes 19 observed variables, including employee NV4, NV2, NV1, NV5, NV3, financial capacity including TC2, TC1, TC3, TC4, leaders include LD2, LD5, LD4, LD3, LD6 LD1, LD7, two variables belonging to the organizational culture are VH5, VH3, one variable in GT6.

- Communication Components: includes 7 observed variables, namely GT3, GT5, GT4, GT8, GT7, GT1, GT2.

Organizational Culture: includes 5 observed variables, namely VH7, VH1, VH2, VH6, and VH4.

3.4.2. Analysis of factors applying Lean Management at Quang Nam University

Lean Management application scale includes 3 observed variables AD1, AD2, AD3.

These variables will be included in factor analysis to check convergence.

The result KMO = 0.742, Sig. = 0.000, there is a factor extracted with total variance extracted 88.831% (> 50%) satisfying the conditions of factor analysis. Thus, the results of factor analysis applying Lean Management show that all 3 observed variables have load coefficients > 0.5 and used to explain the appropriate scale of Lean Management application.

3.4.3. Adjusted model after EFA analysis

Based on the results of factor analysis for discovery of EFA, the author revised the research model of factors affecting the application of Lean Management at Quang Nam University as follows:

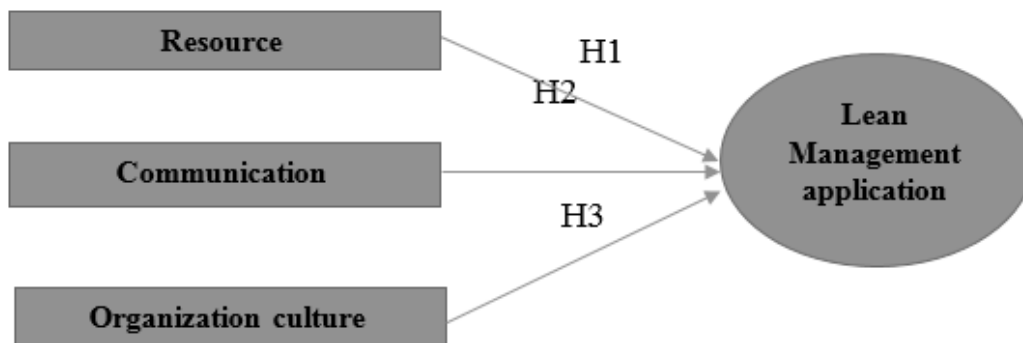


Fig. 2. Adjusted model after EFA analysis

Thus, compared to the original model, the adjusted research model includes 5 factors, grouped into 3 factors: Resource factor, Communication factor and Organizational culture factor.

The hypotheses of the adjusted research model are as follows:

H1: Resources influencing the application of Lean Management at Quang Nam University.

H2: Communication influences the application of Lean Management at Quang Nam University.

H3: Organizational culture affects the application of Lean Management at Quang Nam University.

3.5. Test models and hypotheses

3.5.1. Correlation analysis between variables

Results of the correlation between the independent variable and the dependent variable Applying Lean Management shown through the Pearson correlation coefficient are as follows:

- Coefficient of Pearson (Resource and Application of Lean Management) = 0.630

- Coefficient of Pearson (Communication and Application of Lean Management) = 0.628

- Coefficient of Pearson (Cultural Organizations and Application of Lean Management) = 0.442

Thus, there is a close correlation between the dependent variable AD (Applying Lean Management) with the independent variables NL (Leadership and management, employees and financial capacity), GT (communication) and Culture (Literature). organizational chemistry). Correlation coefficient between variables applying Lean Management with other variables is greater than 0.3. On the other hand, the correlation coefficients between the independent variables are all zero, proving that these variables are completely independent of each other. Therefore, it can be concluded that there is no multicollinearity phenomenon between the independent variables, so it meets the conditions for inclusion in the regression analysis.

3.5.2. Multiple linear regression analysis

Linear regression analysis between the dependent variable Applying Lean Management and 3 independent variables including: NL (Resources); GT (Communication) and Organizational Culture (VH) by Enter method. F Sig = 0.000 test means that the research model is consistent with the survey data set.

Table 1. Multiple regression results Coefficients^a

Model	Unstandardized	Standardiz	t	Sig.	Collinearity Statistics
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	Coefficients		ed				Tolerance	VIF
	B	Std. Error	Beta					
1 (Constant)	-1,9E-016	,045		,000	,300			
NL	,630	,045	,630	15,915	,000		1,000	1,000
GT	,628	,045	,628	14,684	,000		1,000	1,000
VH	,442	,045	,442	10,434	,000		1,000	1,000

(Source: Survey data, 2019)

a. Dependent Variable: AD

The results of regression analysis show that the intercept of the regression equation has the value Sig = 0.300 > 0.05, so the intercept is not statistically significant. The variables Resources (NL), Communication (GT) and Organizational Culture (VH) have a Sig value less than 0.05, so they are statistically significant.

We have regression equation between the independent variables and the dependent variable as follows:

$$AD = 0.630 NL + 0.628 GT + 0.442VH$$

From the above equation we see that applying Lean Management at Quang Nam University is related to resource factors (leadership and management, staff and financial capacity), communication, organizational culture and relationships. This system is positive (Beta coefficients normalize the independent variables are > 0).

With the standardized Beta coefficient of 0.630, the highest compared to the standardized Beta coefficient of the remaining variables, the Resource factor has the strongest influence on the application of Lean Management at Quang Nam University. Next is Communication (beta = 0.628) and finally Organizational Culture (beta = 0.442).

4. Conclusion

Researching on the factors affecting the application of Lean Management to determine the conditions for applying Lean Management at Quang Nam University in particular and Vietnam's universities in general has meaning. importance. Through this study we can identify the factors affecting the application of Lean Management at Quang Nam University including: Resources (leadership and management, staff, financial capacity), Communication and Organizational culture. Thereby, to apply Lean Management at Quang Nam University, it is necessary to have the following conditions:

- It's necessary to have the commitment and support of leadership and management
- It's necessary to have the active participation of employees
- It's necessary to promote and focus on the role of training activities
- It's necessary to have an appropriate incentive and rewarding policy
- Lean Management group should be formed
- Do well in school communication
- Building a culture of continuous improvement in the school.

This is the necessary condition for the effective application of Lean Management at Quang Nam University in particular and Vietnamese universities in general, contributing to certain successes.

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