THE ROLE OF ORGANIZATIONAL CULTURE IN THE IMPLEMENTATION OF LEAN TOOLS TOWARDS OPERATIONAL PERFORMANCE IN AN AEROSPACE COMPANY

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A thesis submitted in fulfillment of the requirement for the degree of Master of Science in Technology Management

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2023

DECLARATION

I declare that this thesis titled "The Role of Organizational Culture in The Implementationof Lean Tools Towards Operational Performance in An Aerospace Company" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in the candidature of any other degree.

Signature : 

Name : FARAH NADHIRAH BINTI MD LAZI

Date : 25 OCTOBER 2023

APPROVAL

I hereby declare that I have read this thesis, and in my opinion, this thesis is sufficient in terms of scope and quality for the award of Master of Science in Technology Management.

Signature : 

Supervisor Name : DATIN DR. SURAYA BINTI AHMAD

Date : 25 OCTOBER 2023

DEDICATION

This work is wholeheartedly dedicated to My Life and My Syurga, Siti Zawiyah Jaffar, and Md Lazi Jamaludin. Also, My Subang Family and My Perak Family have been giving me strength when I thought of giving up who continually provided their moral, spiritual, emotional, and financial support.

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And lastly, I dedicated this work to the Almighty God. Thank you for the guidance, strength, power of mind, protection, and skills and for giving me a healthy life. These,I offer to you.

ABSTRACT

The global marketplace has undergone a significant transition that characterizes industry in the twenty-first century. Delivering high-quality products quickly drives manufacturers to optimize their operations, manufacturing processes, and all potential supply chain nodes. This is due to intense global competition, quick technological change, advances in manufacturing and information technology, and discerning customers. To obtain a competitive edge, the pursuit of this optimization has increased the need for faster product creation, more flexible production, waste reduction, better process control, effective workforce use, and worldwide reach. The purpose of this research is to investigate the role of organizational culture in the implementation of lean tools toward operational performance in an aerospace company. The study is based on a survey conducted and data collected from an aerospace company located in Melaka. 346 targeted respondents from the aerospace company ranging from the executive to non-executive levels familiar with lean wereinvolved in this study. Then, structural equation modeling is used to test all the hypotheses.The findings of the data analysis indicate that lean tools implementation has a positive relationship with operational performance. The second finding, lean tools implementation, has a positive relationship with organizational culture, but the third finding states that organizational culture does not have a relationship with lean tools and operational performance. Researchers find the implementation of that lean tool can maximize cost reduction in any organizational culture setting but requires a supportive organizational culture to maximize quality, delivery, and flexibility improvements. Future research is necessary for a more diverse context to confirm the generalization of the results. Future research may be extended to investigate the effects of lean tools implementation and organizational cultural aspects on measures of financial, social, and environmental performance. There is a scarcity of research on the cultural aspects of organizations related to lean tool implementation. This research is an attempt to fill that gap. The results obtained would help managers to understand better the linkage between lean tools implementation and operational performance, considering the aspect of cultural change management in an organization. The outcome of this research provides useful indications of how organizations can work to sustain the philosophy of lean within their workplace. This study could expand the boundary of the existing literature and contributes to the body of knowledge related to the effect of lean tool implementation theoretically and methodologically.

PERANAN BUDAYA ORGANISASI DALAM PELAKSANAAN PEMBUATAN KEJAT KE ARAH PRESTASI OPERASI DALAM SYARIKAT AEROANGKASA

ABSTRAK

Pasaran global telah mengalami peralihan ketara yang mencirikan industri pada abad kedua puluh satu. Menyampaikan produk berkualiti tinggi dengan pantas mendorong pengeluar untuk mengoptimumkan operasi, proses pembuatan dan semua nod rantaian bekalan yang berpotensi. Ini disebabkan oleh persaingan global yang sengit, perubahan teknologi yang cepat, kemajuan dalam teknologi pembuatan dan maklumat, dan pelanggan yang arif. Untuk mendapatkan kelebihan daya saing, mengejar pengoptimuman ini telah meningkatkan keperluan untuk penciptaan produk yang lebih pantas, pengeluaran yang lebih fleksibel, pengurangan sisa, kawalan proses yang lebih baik, penggunaan tenaga kerja yang berkesan dan jangkauan seluruh dunia. Tujuan penyelidikan ini adalah untuk menyiasat peranan budaya organisasi dalam pelaksanaan pembuatan kejat ke arah prestasi operasi dalam syarikat aeroangkasa. Kajian ini berdasarkan tinjauan yang dijalankan dan data yang dikumpul daripada sebuah syarikat aeroangkasa yang terletak di Melaka. 346 responden sasaran daripada syarikat aeroangkasa terdiri daripada peringkat eksekutif hingga bukan eksekutif yang biasa dengan kurus terlibat dalam kajian ini. Kemudian, pemodelan persamaan struktur digunakan untuk menguji semua hipotesis. Dapatan analisis data menunjukkan bahawa pelaksanaan pembuatan kejat mempunyai hubungan yang positif dengan prestasi operasi, dapatan kedua; pelaksanaan pembuatan kejat mempunyai hubungan yang positif dengan budaya organisasi, tetapi dapatan ketiga menyatakan bahawa budaya organisasi tidak mempunyai hubungan dengan pembuatan kejat dan prestasi operasi. Penyelidik mendapati pelaksanaan pembuatan kejat itu boleh memaksimumkan pengurangan kos dalam mana-mana tetapan budaya organisasi tetapi memerlukan budaya organisasi yang menyokong untuk memaksimumkan peningkatan kualiti, penyampaian dan fleksibiliti. Penyelidikan masa depan adalah perlu untuk konteks yang lebih pelbagai untuk mengesahkan generalisasi keputusan. Penyelidikan masa depan boleh dilanjutkan untuk menyiasat kesan aspek budaya pembuatan kejat dan organisasi terhadap ukuran prestasi kewangan, sosial dan alam sekitar. Terdapat kekurangan penyelidikan mengenai aspek budaya organisasi yang berkaitan dengan pelaksanaan pemebuatan kejat. Penyelidikan ini adalah percubaan untuk mengisi jurang itu. Keputusan yang diperoleh akan membantu pengurus untuk memahami dengan lebih baik kaitan antara pelaksanaan pembuatan kejat dan prestasi operasi, dengan mengambil kira aspek pengurusan perubahan budaya dalam sesebuah organisasi. Hasil penyelidikan ini memberikan petunjuk berguna tentang cara organisasi boleh bekerja untuk mengekalkan falsafah kurus di tempat kerja mereka. Kajian ini dapat meluaskan sempadan literatur sedia ada dan menyumbang kepada badan pengetahuan berkaitan kesan pelaksanaan pembuatan kejat secara teori, praktikal dan metodologi.

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LIMA	-	Langkawi International Maritime and Aerospace Exhibition
OEM	-	Original Equipment Manufacturer
SME	-	Small and Medium-sized Enterprise
CTRM	-	Composite Technology Research Malaysia
UMW	-	United Motor Works
MRO	-	Maintenance, Repair, and Overhaul
DSD	-	Department of Skills Development
MITI	-	Ministry of International Trade and Industry's
NAICO	-	National Aerospace Industry Coordinating Office
MIDA	-	Malaysia Investment Development Authority
MATRADE	-	Malaysia External Trade Development Corporation
TPS	-	Total Productive System
JIT	-	Just in Time
TPM	-	Total Productive Maintenance
5S'	-	Seiri, Seiton, Seiso, Seiketsu and Shutsuke
VSM	-	Value Stream Mapping
TPS	-	Toyota Generation Frameworks
MUDA	-	7 Types of Wastes
OEE	-	Overall Effectiveness of Equipment
UAI	-	Uncertainty Avoidance Index
SPSS	-	Statistical Package for Social Science
SEM	-	Structural Equation Modelling

AMOS	-	Analysis of Moments Structure
PLS	-	Partial Least Square
IV	-	Independent Variable
DV	-	Dependent Variable
AVE	-	Average Variance Extraction
CR	-	Composite Reliability
TIMWOOD	-	Transportation, Inventory, Motion, Waiting, Overprocessing, Overproduction, Defects

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter discusses the research background, problem statement, research objective, research questions, research scope, the definition of key terms, the structure of the thesis, and chapter summary. It underlines the need for more empirical research on lean tools implementation, operational performance, and organizational culture and will examine the effectiveness that may help the company gain more profit and reduce waste for a better environment. The thesis outline is presented at the end of this chapter.

1.1 Research Background

Lean is important to the well-being of organizations owing to its ability to encourage shared leadership and obligation; its stance to instill continuous improvement which guarantees that each employee contributes to the advancement process. This approach acts as a guide to building an effective and strong organization that is always advancing, recognizing genuine issues, and settling them. According to Simbanegavi and Qutieshat (2022), lean is a significant approach to business as it safeguards competition and achieves better performance. Today the implementation of lean tools inside the delivering scene has been amazingly gathered inferable from its dynamite control in creating burn-through and time interim decrease (Hossain, 2015).

Lean will be depicted to the procedure used in the creating technique to help adequacy for the proceeded with the disposal of each sort of waste. Lean includes a key task to carry out in new advancement and the improvement of an existing item and the improvement of an existing item, just as plan creation, style for production, gathering, and check, quick prototyping, item portfolio the board, market, hazard the board, deals foreseeing, setting key routine pointers and value examination to downsize the cost of existing item (Gobinath, Elangovan, and Dharmalingam, 2015).

Lean is the possibility of viable generation and exercises that rose inside the mid-twentieth century from the Toyota Production System. It bolstered the way of thinking of procedure cost from the customer and perpetually up the methodology cost is conveyed by disposing of any utilization of assets that is inefficient or doesn't add to the value objective (Skhmot, 2017). Lean tools implementation on keeping up cost with less occupation, with the final word target of giving the customer the perfect cost through a method for making perfect cost with zero-squander. This is regularly cultivated by enabling each specialist to understand their total potential along these lines making the most significant commitment potential.

Simbanegavi and Qutieshat (2022) describe the relevance of lean tools implementation as a concept that safeguards competition and achieves better performance. In their discussion, they concluded that those organizations that implement lean tools tend to achieve a better inventory performance turnover than their counterparts, not embracing lean as an ideology.

1.1.1 Lean Tools Implementation

According to McLaughlin (2019), lean tools are an approach to running an organization that supports the concept of continuous improvement, a long-term approach

that systematically achieves small, step-by-step changes in the process to improve efficiency and quality.

Lean tools implementation could be a deliberate way to deal with help the cost to the customer by trademark and disposing of misuse (of time, exertion, and materials) through constant improvement, by streaming the product at the draw of the customer, in the quest for flawlessness (El Shewany et al., 2019).

Lean tools implementation is portrayed by pull-generation frameworks that produce what's requested by the customer at the necessary time and sum. Identifying with quality administration, lean tool implementation supports shared exertion between members of the UN organization endeavor for consistent improvement and nil abandons (Womack and Jones, 2003). The lean tools implementation moreover advocates for set-up time decrease that is basic in any generation framework, be it a creation of administrations or delivering (Kannan and Tan, 2005).

1.1.2 Operational Performance

Surveys of investigation on the set of the lean show that once a few associations actualize lean, they perform higher and become a great deal of rivalry since it diminishes interim and inventories and cuts inactivity costs (Sharma, Dixit, and Qadri, 2015). This can be the presentation of a company against recommended models like consistency with a guideline, squandering decrease, and profitability. It is the organization's exhibition estimated against the quality or recommended markers of strength, viability, and prohibitive consistence. It is comprehended to be an assortment of gauges acclimated to evaluate each the strength and adequacy of activities. Estimations of execution are strength, adequacy, quality, practicality, adaptability, cost, and profitability (Madiavale, 2016). Birech (2011) diagrams various execution measures among activities, which are efficiency measures, quality measures, stock measures, and cost of value.

1.1.3 Organizational Culture

Organizational culture is the prevailing ideology that people carry in their minds; it transmits a sense of identity to employees and provides nonverbal guidelines for how to get along in the organization (Cameron and Quinn, 2011). Organizational culture is characterized by its observable artifacts, espoused values, and basic assumptions (Schein, 2010). The emerging literature (Taleghani, 2010, Badurdeen et al., 2011, Ahmad, 2013, Sarhan and Fox, 2013, Ipinazar et al., 2021) highlights the critical role of organizational culture in the success or failure due to lean tools implementation and considers the lean tools implementation to have a considerable influence on the organizational culture. Lean can be a complex subject and is susceptible to failed implementations because, too often, firms concentrate on the tools and methodologies of lean, and the necessary change in the organizational culture is ignored (Alveson and Sveningsson, 2015). The implementation of lean tools has an impact on the creation of organizational culture (Tortorella et al., 2023).

Despite the increasing movement towards recognition of the great impact of organizational culture on the success or failure of lean tools implementation (Liker and Hoseus, 2008, Hogan, 2009, Atkinson, 2010, Bhasin, 2012, Ahmad, 2013, Sarhan and Fox, 2013, Mann, 2014, Pakdil and Leonard, 2015, Bortolotti et al., 2015, Dahlgaard-Park and Dahlgaard, 2021, Wong, 2021). There is still a lack of empirical studies addressing the effect of lean tool implementation on organizational culture in aerospace companies.

1.1.4 Aerospace Industry in Malaysia

The Government has distinguished Malaysia's aeronautic trade as one of the '3+2' vital parts with high development potential (Udriyah et al., 2019). In acknowledgment of its significance, the Malaysian Aerospace Industry Blueprint 2030 was propelled during Langkawi International Maritime and Aerospace Exhibition (LIMA) 2015 in Langkawi, Kedah. This Blueprint outlines the long-haul plan for the improvement of the aeronautic

trade in Malaysia until 2030. The objective is to make Malaysia the main aerospace country in Southeast Asia and be a vital piece of the worldwide market by 2030.

Malaysia is presently home to more than 200 aerospace organizations, including both global and neighborhood industry players. These incorporate 66 organizations associated with MRO exercises, 33 organizations in air producing, 25 organizations in instruction and preparing, and 11 organizations in frameworks mix, just as building and planning.

In exhibiting their abilities to satisfy worldwide OEMs' stringent needs, nearby players like SME Aerospace, Composite Technology Research Malaysia (CTRM) Aero-Composite, Airod, and UMW Aerospace, have effectively included themselves in the worldwide aerospace store network, as shown in figure 1.1. By 2030, the industry is anticipated to contribute incomes of RM20.4 billion for MRO, RM21.2 billion for air assembling, and RM13.6 billion for building and configuration administrations.

(Sources: Malaysian Investment Development Authority, 2019)

Figure 1.1: Aerospace Companies