

THE ROLE OF HUMAN RESOURCES IN THE IMPLEMENTATION OF LEAN MANAGEMENT: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Purposes: It is widely recognized that inefficiencies in operational systems often lead to excessive work repetition, resulting in resource wastage, including materials and labor. Background Problems: Numerous studies have underscored the critical role of Human Resource Management (HRM) in enhancing production optimization. This study seeks to analyze the strategic role of HRM in improving organizational performance through the implementation of Lean Management principles. Novelty: This study presents a novel perspective by integrating Human Resource Management (HRM) strategies with Lean Management principles to enhance organizational performance. While previous studies have explored HRM and Lean Management separately, this research uniquely examines their synergy, particularly in improving operational efficiency, productivity, and innovation. **Methods:** Employing a qualitative descriptive approach, this research investigates the effectiveness of integrating HRM with various Lean Management methodologies, including Lean Production (LP), Total Quality Management (TQM), Just-In-Time (JIT), and Total Productive Maintenance (TPM). **Results:** The findings reveal that well-implemented HRM practices contribute significantly to enhancing operational efficiency, productivity, and organizational innovation. **Conclusion and suggestion:** However, the effectiveness of HRM is not universally applicable and is contingent upon multiple determinants, such as industrial sector, competitive environment, organizational culture, firm size, and stability. Consequently, an adaptive and context-specific HRM approach is imperative to achieving optimal organizational outcomes.

Keywords:

Efficiency, Human Resources Management, Innovation, Lean Management, Productivity

INTRODUCTION

In an increasingly competitive industrial world, operational efficiency has become a key factor in maintaining competitiveness. However, inefficiencies in operational systems often lead to excessive work repetition, ultimately resulting in a waste of resources—both material and human labor. Concurrently, various studies have shown the crucial role of Human Resource Management (HRM) in enhancing production optimization and overall organizational performance. The implementation of Lean Management principles is considered capable of reducing waste and improving productivity. However, the success of lean implementation does not rely solely on operational methods, but also on how effectively HRM strategies are executed. On the other hand, challenges arise in ensuring that investments

in HRM genuinely generate real added value for the organization. Therefore, aligning HRM strategies with sectoral needs and organizational strategies becomes essential.

Moreover, in implementing lean production, organizations also face the challenge of bridging the gap between operational efficiency demands and employee well-being. Without proper attention to labor welfare, lean initiatives risk causing excessive work pressure and reduced employee motivation, which could ultimately hinder the efficiency goals themselves. This study stems from the need to analyze how HRM strategies can be effectively integrated with Lean Management principles. Its main focus is to understand how HRM can play a strategic role in improving operational efficiency, productivity, and organizational innovation, while still maintaining employee well-being. Using a qualitative descriptive approach, this research examines the effectiveness of HRM integration with various Lean Management methodologies such as Lean Production, Total Quality Management (TQM), Just-In-Time (JIT), and Total Productive Maintenance (TPM) across different industrial contexts.

Problem Formulation

Based on the background described, the problem formulation in this study is as follows:

1. How can Human Resource Management (HRM) play a strategic role in improving operational efficiency and organizational performance through the application of Lean Management principles?
2. How can the alignment between HRM strategies and sectoral needs as well as organizational strategies support the success of lean implementation?

Research Objectives

The objectives of this research are:

1. To analyze the strategic role of HRM in enhancing operational efficiency, productivity, and organizational innovation through integration with Lean Management principles.
2. To explain the importance of aligning HRM strategies with sectoral needs and organizational strategies in the context of lean production.

LITERATURE REVIEW

The study "Integrating human resource management into lean production and their impact on organizational performance" [1] analyzes the impact of lean production on HRM policies. HRM practices examined: training, job security, promotion, remuneration. Performance indicators studied: internal quality, productivity, stock reduction, lead time, on-time delivery, minimum batch size, absenteeism rate, employee turnover. The research method used was a questionnaire for data collection from 76 ceramic manufacturing companies in Spain. Data processing in this study combined quantitative methods based on statistics, such as ANOVA and discriminant analysis, to explore the relationship between LP, HRM, and organizational performance. The limitation of this study is that it focused on a single industrial sector, namely the ceramic industry in Spain. Performance data was self-reported by respondents, which may result in subjective bias.

Another study titled "An empirical study of lean production in ceramic tile industries in Spain" [2], determined the level of use of lean production (LP) practices in the ceramic industry in Spain. This study also analyzed the relationship between company size and LP adoption level, measuring the impact of LP implementation on company operational performance. The research method was conducted through questionnaires and direct observation in 76 ceramic companies in the Valencia region, Spain. The data processing in this study used a non-parametric statistical approach and correlation analysis to explore the implementation of LP and its impact on operational performance. The data collected was quantitative and based on direct observation, ensuring objectivity of results. Limited variable variation. Operational performance data was mostly based on subjective reports from production managers.

"Changing Employment Relations And Governance in the International Auto Industry"[3], focused on the relationship between Lean Production (LP) and changes in employment relations in the international automotive industry. Issues studied: the impact of LP on work organization, skill development and training, employment relations and employee representation, job security and labor arrangements, the influence of national context on LP adaptation. Data processing was conducted by integrating quantitative and qualitative analysis to provide a holistic picture of the impact of LP on employment relations. This research was conducted in the specific context of the international automotive industry. Much of the data was based on reports from plant managers, which may introduce subjective bias.

The study titled "Modes of theorizing in strategic human resource management: test of universalistic, contingency and configurational performance predictions" [4], explores three theoretical modes in strategic human resource management (SHRM), namely: Universalistic perspective, which proposes that there are certain human resource practices that universally improve organizational performance. Contingency perspective, which states that the effectiveness of HR practices depends on alignment with organizational strategy. Configurational perspective, which states that a unique combination of HR practices aligned with the specific organizational context can improve performance.

This study aims to test the performance predictions of each of these approaches in the context of strategic HRM. Research design: empirical study with quantitative data. Data analysis: multivariate statistical analysis was used to test the relationship between HR practices, alignment with business strategy, and organizational performance. Limitations: this study used cross-sectional data, making it difficult to draw causal conclusions between HR practices and organizational performance. In addition, the research results may not be generalizable to all sectors or industries due to the focus on a specific sample.

"Human resource management strategies and practices in just-in-time environments: Australian case study evidence"[5], focused on how HRM strategies influence the success of Just in Time (JIT) implementation in three manufacturing companies in Australia. HRM strategies studied include involvement in decision-making, multi-skilling and flexibility, communication processes, employee development, use of team structures, and employee empowerment. A combination of HRM strategies and JIT system characteristics. Data processing used thematic analysis, cross-case comparison, category development, and validity testing. Focused on companies that successfully implemented JIT. This study was based on descriptive case studies, making it difficult to ensure causal relationships between HRM strategies and the success of JIT implementation.

"The Impact of Human Resource Management on Organizational Performance" [6], this article examined the relationship between human resource management (HRM) practices and organizational performance. It explored whether and how HRM practices, such as employee training, performance management, and performance-based rewards, influence organizational outcomes such as productivity, efficiency, and profitability. Data was collected through surveys and interviews with managers and staff in various organizations from different sectors to ensure broader representation. Statistical methods such as multiple linear regression were used to analyze the relationship between HRM practices and organizational performance. The research was conducted in specific sectors or industries, so the results may not be generally applicable to all types of organizations.

"The impact of human resource management practices on performance: Evidence from a Public University" [7], used a questionnaire with 46 items covering various aspects of HRM and university performance, using a 5-point Likert scale. Correlation and regression analyses were used to examine the relationship between HRM variables and university performance. The research was conducted in only one public university, so the results may not be generalizable to other universities or the broader higher education sector. It does not allow for an understanding of long-term causal relationships between HRM practices and organizational performance.

"Influence of the sector and the environment on human resource practices' effectiveness"[8], explores how the industrial sector and the level of competition in the environment affect the effectiveness of human resource management (HRM) practices. The questionnaire consisted of four parts: company profile, outcome indicators, HRM practices, and management profile. Multivariate regression was used to examine the relationship between HRM practices and financial, strategic, and sales-per-employee performance. The data used was survey-based and relied on subjective assessments from HR managers, which may contain bias.

RESEARCH METHODS

All articles use an empirical approach, either through surveys, statistical regression, or literature review. Articles on Lean Production (LP) focus on data from specific sectors (ceramics, manufacturing), while HRM-related articles tend to be broader, such as in the education context. In their hypotheses, LP practices such as total productive maintenance, quality control, and employee training have a positive impact on productivity and stock reduction. The influence of LP on other indicators such as production time is not significant without integration with HRM strategies. The integration between LP and HRM requires the development of multifunctional skills, job security, and performance-based incentive systems to achieve optimal results.

HRM strategies in Just-In-Time (JIT) environments in Australia show that participative strategies, employee training, and team empowerment are key to JIT success. Companies with good HRM integration have higher productivity and more collaborative working relationships. Meanwhile, recruitment, training, employee participation, and career planning significantly improve university performance. The effectiveness of HRM based on sector and competition highlights that HRM practices are more effective in the service sector than in manufacturing,

especially in competitive environments. HRM adaptation in the automotive sector shows that the level of flexibility and multiskilling is strongly influenced by cultural context and local policies. Countries like Japan are more successful in integrating HRM with LP compared to Western countries, which show greater resistance to change.

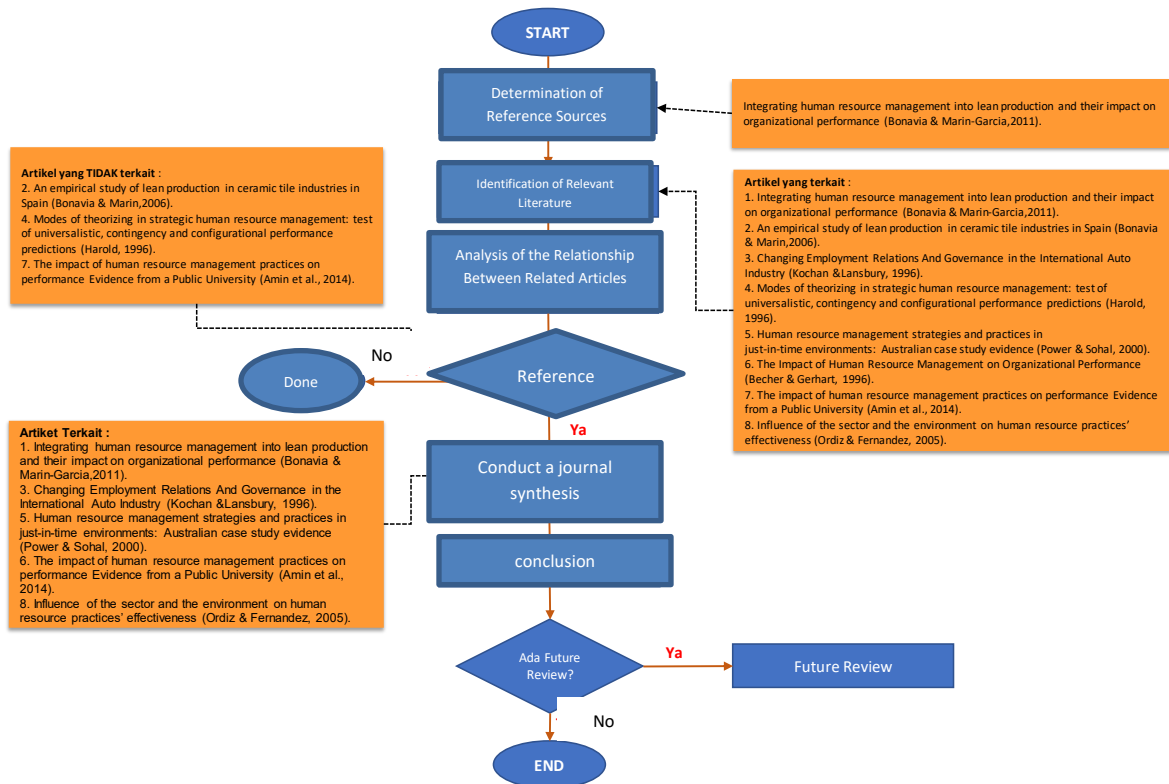


Figure 1. Flowchart Research

CONCLUSION

Effective HRM practices, whether universal or contextual, are positively associated with organizational performance, including operational efficiency, productivity, and innovation. An integrated approach between HRM and Lean Management (such as LP, TQM, JIT, and TPM) yields synergistic benefits, particularly in manufacturing contexts. Factors such as industry sector, competitive environment, and organizational culture play a crucial role in determining the effectiveness of HRM. HRM effectiveness can vary depending on context, such as industry sector, company size, and environmental stability. The integration between HRM practices and production strategies such as LP or JIT is essential for improving organizational performance. However, its effectiveness depends on:

1. The industry sector context (manufacturing vs. services),
2. External environment (competition, culture, and local policies), and
3. The level of organizational adaptation to technological changes and work structure.

4. HRM practices cannot stand alone; they must be integrated into the organization's overall strategy to achieve optimal results.

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