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Research paper

Labor cost management approaches in the industrial sector for sustainable success

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Abstract

Thailand has consistently raised the minimum wage rate, which has affected the manufacturing industry that still relies heavily on labor. This research aims to identify ways to manage labor costs and reduce their impacts in line with existing problems. It examines labor cost management approaches in the industrial sector for sustainable success and develops them into a structural equation model. The research was conducted using both quantitative and qualitative methods. The quantitative research involved surveying executives from medium, small, and large industrial businesses, using a questionnaire with 500 respondents. Descriptive statistics, reference statistics, and multivariate statistics were used for analysis. The qualitative research involved focus group discussions with 11 experts. The research findings revealed the following key strategies for Labor Cost Management Approaches in the Industrial Sector for Sustainable Success, ranked in order of im-portance, composed of 4 aspects, with the most important item in each aspect: 1) Labor Management ($\overline{X}$ = 4.33) creating a labor operations manual, 2) Skill Labor Development ($\overline{X}$ = 4.31), developing labor skills by offering opportunities to learn new skills, 3) Work process Im-provement ($\overline{X}$ = 4.30), encouraging a positive attitude toward organizational change through effective, and 4) Innovation and Technology ($\overline{X}$ = 4.23), implementing technology systems to assist in monitoring work hours. Regarding the hypothesis testing results, it was found that the strategies for managing labor costs towards sustainable success in the medium, small, and large industrial sectors did not differ significantly at the 0.05 statistical level. The results of the structural equation model analysis showed that the developed model met the evalua-tion criteria and was consistent with the empirical data, with a chi-square probability value of 0.076, a relative chi-square value of 1.138, a goodness-of-fit index of 0.958, and a root mean square error of approximation value of 0.017.

Keywords: *Industrial Business Sector; Labor Costs Management; Structural Equation Modeling.*

1. Introduction

The concept of inclusive growth and the middle-income trap is currently widely discussed. One of the key factors that can help promote broad-based growth and enable a country to achieve higher and more resilient levels of development is a population with high income, good quality of life, and adequate knowledge and skills. This is because the population constitutes the country's labor force, which is a crucial component of the primary factors of production. If employment levels are high, the labor force is skilled, and workers earn sufficient income, it will contribute to inclusive and sustainable economic growth. Wages and salaries are forms of compensation paid by employers to workers, and they play a vital role in the economic system. Wages are a primary source of income for workers, directly influencing their purchasing power. For most individuals and households, income from wages represents the most significant portion of their total income. Moreover, wages represent a cost of producing goods and services for entrepreneurs. Changes in employee wages affect production costs and business profits, as well as the competitiveness, profitability, and investment decisions of entrepreneurs. Thailand has implemented a minimum wage policy since 1972, which has been gradually developed over time. This policy aims to ensure that unskilled workers receive wages and incomes sufficient for a basic standard of living, while also considering the impact on entrepreneurs and other societal groups. Empirical data from announcements by the Wage Committee indicate a continuous upward trend in wages (Ministry of Labor, 2024). The steady increase in monthly wages tends to align with the adjustments in the minimum wage rate. The burden of rising wage expenses has increased pressure on the industrial sector, particularly in labor-intensive industries, where wages account for approximately 10–20% of total production costs, according to the 2015 Factors of Production and Output Table. Higher wages can threaten business competitiveness in an environment where companies face lower unit profits while bearing rising costs across multiple areas. This situation may also hinder the recovery of Thailand's still fragile economy (Krungthai Research Center, 2022). Moreover, the Office of Small and Medium Enterprises Promotion (2024) analyzed the impact of the minimum wage increase and found that an average wage increase of 2.9% would lead to a 14.4% rise in labor costs and a 14.4% increase in the country's gross domestic product. Data compiled by the National Economic and Social Development Board (2024) shows that the labor cost index is trending upward, reflecting the empirical effects of rising labor costs. In 2024, the International Institute for Management Development (IMD) ranked the competitiveness of 67 countries in its IMD World Competitiveness Yearbook 2024.

Studies done recently have shared different ways that economies facing similar wage pressures often manage their labor costs, pointing out key information from developed countries and ASEAN members (Foroutan Mirhosseiniet al., 2022). According to McKinsey & Company's 2023 report, Germany and the United States use specific strategies in their developed economies. Rising prices and a labor shortage put pressure on wages in all these countries. Being competitive doesn't come easily for businesses, so more and more Germans deploy AI and add automation to their processes. At the same time, American companies are making flexible work schedules available, which helps cut costs and raise employee happiness. Both countries also focus on education programs aimed at making workers more productive as older, more skilled employees add to their wage costs. In 2023, the Economic Policy Institute (EPI) published reports on how changes in the minimum wage affect costs for employers and their workers. Evidence showed that raising the minimum wage would increase labor costs for businesses and boost how much their employees can spend, which boosts the entire economy. Firms that choose to pay their employees more usually experience employees staying with them longer and being more productive, as helping staff grow can counter the extra cost spent on wage increases (Kim et al., 2022).

The aim is to increase productivity by using technology, rather than just increasing how much employees are paid. Programs such as Skills have launched these studies. Upcoming programs will focus on keeping skills sharp, preparing workers for new changes in their field. Also, grants for productivity are made available to companies that introduce innovative technology, promoting an environment where investment in productivity is valued (Abad-Segura et al., 2020) or select personnel with financial and language skill to analyze and forecast the volatility of the Thai Baht, as it well affect the organization's sustainability.(Temritkulchai, Silpcharu & Wattanakomol., 2023). According to the study, well-executed labor cost management involves technology investments, putting workers' welfare ahead, and making sure employers and official institutions cooperate to set up lasting wage rules**.** Which is consistent with the research of Toothong, Theanruechai, and Wattanakomol (2023), improving work processes through the use of technology, proactive planning, and efficient resource allocation can help organizations adapt to rising labor costs in a stable and sustainable manner. Managing labor costs is difficult across the world, and the ways countries handle them vary. Countries with strong economies incorporate technology and flexible rules, compared to ASEAN nations, which aim to boost workforce skills and adapt to changes in the regional sphere. Since labor costs are increasing everywhere, maintaining and improving industrial growth and economic stability calls for modern and smart management practices.

Thailand's productivity ranking declined by four positions compared to 2023, indicating a growing lack of competitiveness in the modern global economy. Furthermore, from the above discussion, it is evident that wage increases have multifaceted impacts. If industrial businesses are unable to absorb the higher wages mandated by law, they may shift the burden to consumers by raising product prices, leading to increased costs of goods. However, if wages cannot be increased, it may result in business closures, layoffs, and rising unemployment. Therefore, this study explores strategies for managing labor costs in the industrial sector to achieve sustainable success.

1.1. Research objectives

1) To study the structure and characteristics of labor cost management in the industrial business sector.
2) To study the components of labor cost management approaches in industrial businesses aimed at achieving sustainable success.
3) To develop a structural equation model for labor cost management in the industrial sector aimed at achieving sustainable success.

2. Methodology

This research generates new knowledge through inductive research using a mixed-methods approach, consisting of three parts: qualitative research with the in-depth interview technique, quantitative research with the survey research technique, and qualitative research with the focus group discussion technique to confirm the validity of the research model.

2.1. Population and samples

The qualitative research involved in-depth interviews with 9 experts selected through purposive sampling based on criteria from the Doctor of Business Administration Program at King Mongkut's University of Technology, North Bangkok. The experts included 3 entrepreneurs/executives, 3 government representatives, and 3 academics. For the quantitative research, a sample size of 500 was determined using Survey Research Techniques, with a population of 1,512 individuals from the Personnel Management Association of Thailand. The Multi-Stage Sampling method was used, including Cluster Sampling and Probability Sampling with the Lottery Method. Additionally, 11 experts from the industrial business sector were selected for qualitative research validation using Purposive Sampling 8. References.

2.2. Variables used in quantitative research

1) The independent variables are large industrial business establishments and medium- and small-sized industrial business establishments.
2) Dependent variables include the structure and characteristics of labor cost management in the industrial business sector, presented in the form of a Checklist, as well as the guidelines for labor cost management in the industrial business sector aimed at sustainable success. These are measured using a Rating Scale, which can be classified into two types as follows:

2.2.1. The observed variable is derived from data collected on labor cost management practices in industrial businesses aimed at sustainable success

2.2.2. Latent variables are variables that are derived from data collected from observational variables. They are divided into two types: 1) exogenous latent variables, which include skill labor development 2) endogenous latent variables include innovation and technology, work process improvement, and labor management

Qualitative research involved experts selected by the Executive Committee of the Doctor of Business Administration Program at King Mongkut's University of Technology, North Bangkok. Quantitative research included entrepreneurs managing labor costs, surveyed through interviews, mailed, and electronic questionnaires. Cluster Sampling and probability random sampling (Lottery Method) were used. The data collection for the quantitative research was conducted from November 2023 to January 2024.

2.3. Research hypothesis

H1: The Skill Labor Development component directly influences the Innovation and Technology component.
H2: The Skill Labor Development component directly influences the Work Process Improvement component.
H3: The Skill Labor Development component directly influences the Labor Management component.
H4: The Innovation and Technology component directly influences the Work Process Improvement component.
H5: The Work Process Improvement component directly influences the Labor Management component.
H6: There is no difference in the importance level of labor cost management approaches in the industrial business sector towards sustainable success when classified by business size.

2.4. Research tools

Structured in-depth interviews were conducted with a defined interview guide consisting of four components: Skill Labor Development, Innovation and Technology, Work Process Improvement, and Labor Management. The questionnaire is divided into 4 sections:

1) General status of industrial business organizations
2) Structure and characteristics of labor cost management
3) Guidelines for managing labor costs towards sustainable success
4) Opinions and suggestions on approaches to managing labor costs

Qualitative Research was conducted using the Focus Group Discussion technique with a discussion record as the research tool.

2.5. Instrument quality control

The researcher developed an expert interview form with four components: Skill Labor Development, Innovation and Technology, Work Process Improvement, and Labor Management, each with five sample questions. The form was reviewed by five experts to assess item-objective congruence (IOC) values ranging from 0.60 to 1.00. A try-out with 30 participants tested the questionnaire, with item discrimination power ranging from 0.48 to 2.33 and a correlation coefficient between 0.36 and 0.85. The questionnaire's reliability was confirmed with a Cronbach's Alpha value of 0.98 for the rating scale questions. Qualitative research was conducted through focus group discussions, and a research report was prepared and reviewed by experts before the meeting.

2.6. Data analysis

In-depth interviews were conducted to summarize guidelines for managing labor costs in the industrial sector for sustainable success. The research utilized a survey research technique, employing descriptive, inferential, and multivariate statistics with SPSS and AMOS programs. Descriptive statistics were used to analyze checklist questionnaire data, while inferential statistics examined relationships between variables. Bivariate correlations were tested for significance levels of 0.001, 0.01, and 0.05. The Pearson Chi-square test was used to analyze the relationship between the structure and characteristics of labor cost management. Differences in labor cost management approaches based on business size were tested using the t-test with a significance level of 0.05.
Structural Equation Model (SEM) Analysis was conducted using the advanced statistical software AMOS to examine the relationship between labor cost management strategies and sustainable success in the industrial business sector. The model was adjusted iteratively to ensure alignment with empirical data, with latent variables adjusted based on observed variables collected through a 5-level rating scale. The consistency and completeness of the model were evaluated through hypothesis testing to validate the research findings.
Assessment of consistency between the developed model and empirical data: In model analysis, there are commonly used criteria to assess the consistency between the theoretical model and empirical data. These consist of four indices of consistency, as follows: 1) Chi-square Probability Level (CMIN–P), 2) Relative Chi-square (CMIN/DF), 3) Goodness of Fit Index (GFI), 5) Root Mean Square Error of Approximation (RMSEA), 3. Focus Group Discussion Technique: Content analysis is used to summarize the opinions and suggestions obtained from the group discussion.

3. Results

3.1. Qualitative research results from in-depth interviews

The results of the analysis of the approach to labor cost management in the industrial business sector towards sustainable success, using the in-depth interview technique with experts, revealed that the components of this approach consist of four key components: Innovation and Technology, Work Process Improvement, Skill Labor Development, and Labor Management.

3.1.1 Innovation and technology components

It emphasizes the use of automation, ERP, IoT, and data-driven systems to promote efficiency and accuracy while integrating clean energy, ESG practices, and immersive technologies like VR/AR to foster sustainability, safety, and long-term development in industrial operations. Furthermore, it seeks to enhance productivity through advanced systems and collaborative online platforms that lower costs and boost efficiency. Technologies such as Blockchain ensure transparency and help mitigate corruption, while AI and Big Data analytics optimize energy consumption and operational performance. Automation tools like OMS streamline sales, inventory, and order tracking, while time-tracking systems help deter misconduct. Flexible organizational structures and dedicated innovation teams bolster technological adaptation, with training programs and internal knowledge databases improving staff capabilities. Collaboration with government and academic institutions is encouraged to drive innovation, alongside efforts to develop modern IT systems for data connectivity and promote sustainability through 3R (Reduce, Reuse, Recycle) technologies.

3.1.2 Work process improvement components

It emphasizes streamlining production for efficiency by eliminating redundancy, balancing production lines, and promoting teamwork over individual tasks. Specific manuals, checklists, and scheduled maintenance minimize disruptions, while mass production methods and

controlled yield systems improve consistency. Moreover, principles like SPC, Six Sigma, and Lean Management are applied to optimize performance and minimize waste. Furthermore, continuous production planning, real-time monitoring, and risk management prevent errors, while defined KPIs ensure alignment with organizational goals. Supportive work environments, effective communication, and regular meetings reinforce progress tracking. Enhancing coordination, providing proper equipment, and assigning satisfactory personnel all contribute to workplace safety and productivity. In addition, establishing international quality systems and encouraging a mindset focused on reducing unnecessary costs further strengthens organizational success.

3.1.3. Components of skill labor development

This supports workers in advancing their education, participating in field-related training and observation, and promoting cross-functional learning within the organization to address sudden labor shortages. Moreover, emphasis is placed on enhancing English proficiency to improve the ability to read manuals and operate machinery accurately, encouraging the achievement of professional qualifications to reduce dependency on external consultants, and organizing training programs that enable workers to work effectively with automation systems.

3.1.4. Labor management components

Setting clear performance indicators to ensure transparent and fair evaluations, instilling entrepreneurial attitudes and loyalty among workers to protect organizational interests, and analysing work processes to determine appropriate staffing levels. The organization should use outsourcing for other activities, such as freight transport and security, and concentrate on retaining skilled workers long-term to enhance efficiency and reduce overall labor costs.

3.2. Analysis of data on the general status of the organization

1) The results of the analysis of data on the size of business organizations showed that business organizations were evenly divided into two categories. Medium and small business organizations, with several employees not exceeding 200, accounted for 50.00 percent. Large business organizations, with several employees exceeding 200, also accounted for 50.00 percent.
2) The analysis of data on business duration found that most businesses had been operating for 11-20 years, accounting for 25.00 percent. The second largest group had been in operation for 40 years or more, accounting for 24.60 percent.
3) Regarding the characteristics of industrial businesses, the most common sector was real estate and construction, which accounted for 18.40 percent, followed by the agriculture and food industry, which made up 17.60 percent.
4) The analysis of data on shareholder structure revealed that most businesses were owned entirely by Thai shareholders, accounting for 78.00 percent. The second-largest group consisted of businesses with a higher proportion of Thai shareholders, making up 11.80 percent.
5) The analysis of location data showed that most businesses were in Bangkok and its surrounding provinces, including Nonthaburi, Pathum Thani, Samut Prakan, Samut Sakhon, and Nakhon Pathom, accounting for 70.80 percent. The remaining 29.20 percent were in other provinces.

The objective of Research Item 1 is to study the structure and characteristics of labor cost management in the industrial business sector aimed at achieving sustainable success. The results are presented in Items 3–4.

3.3. Results of data analysis on the structure and characteristics

Analysis of the organization's product distribution characteristics revealed that 49.40% focused on domestic sales, while 46.40% engaged in both domestic and international sales. Regarding the production system, 63.80% used a mix of automation and labor, and 19.00% relied solely on labor. In terms of labor management, 46.40% required skilled workers, and 28.60% used skilled labor with machinery. The key factors influencing automation implementation success were personnel knowledge (28.60%) and investment budget (23.60%). Business organizations mostly adopted a hybrid management style (50.60%) and emphasized product/service excellence (46.00%). Labor cost management priorities included labor potential (39.20%) and wages (24.40%). Common labor issues were a lack of specialized skills (59.00%) and mismatched knowledge/skills (22.60%). Strategies for increasing production included adjusting labor levels (31.60%) and using subcontractors (27.60%). Challenges in managing labor costs included skilled labor shortages (45.20%) and technological changes (25.40%).

3.4. Results of data analysis on the structure and characteristics

The study found that the characteristics of product distribution and use of automation systems in production lines varied based on business organization size. Medium and small businesses primarily sold domestically (58.80%) and used partial automation systems (58.80%), while large businesses sold domestically and internationally (52.80%) and used partial automation systems (68.80%). Labor management practices also differed, with medium and small businesses relying on skilled labor (44.00%) and large businesses using skilled labor with machines (48.80%). Factors affecting the success of automation implementation and management style were not dependent on business organization size.

The analysis of data on operational excellence and labor cost management in organizations showed that these factors are not dependent on the size of the business organization, with statistical significance at the 0.05 level. Additionally, the study found that labor problems, production increase, appropriate labor policies, and challenging factors in managing labor costs are also not influenced by the organization's size. The research aims to explore the components of labor cost management in the industrial business sector for sustainable success, categorized into an overall picture, four aspects, and 100 items. The results are as follows: Items 5-8.

3.5. Results of the importance level components analysis

To manage labor costs in the industrial business sector towards sustainable success are as follows: the results of the analysis of the importance level of the components of the approach to managing labor costs in the industrial business sector towards sustainable success found that the overall importance is at a very high level, with an average value of 4.29. When the importance level is analyzed in each aspect, it is found that all aspects are at a very high level of importance. The results of the analysis of the importance level of the components of the approach to managing labor costs in the industrial business sector towards sustainable success, in terms of labor management (Labor

Management), showed that overall, labor management is very important, with an average value of 4.33. When considering each item, the average value ranged from 4.39 to 4.23.
The results of the analysis of the importance level of the components of the approach to managing labor costs in the industrial business sector towards sustainable success, in terms of labor skill development, showed that overall, it is at a high level of importance, with an average value of 4.31. When considering each item, the average value ranged from 4.37 to 4.17. The results of the analysis of the importance level of the components of the approach to managing labor costs in the industrial business sector towards sustainable success, in terms of improving work processes (Work Process Improvement), showed that overall, it is at a high level of importance, with an average value of 4.30. When considering each item, the average value ranged from 4.36 to 4.22. The results of the analysis of the importance level of the components of the approach to managing labor costs in the industrial business sector towards sustainable success, in terms of innovation and technology (Innovation and Technology), showed that overall, it is at a high level of importance, with an average value of 4.23. When considering each item, the average value ranged from 4.34 to 4.04.

3.6. Results of the importance level components analysis approach

Managing labor costs in the industrial business sector for sustainable success varies by organization size. In small and medium-sized businesses, all aspects of labor cost management are considered very important, with an average value of 4.31. Similarly, in large organizations, all aspects are also rated very highly, with an average value of 4.27. When analyzing the importance of labor management components, small and medium-sized businesses rate it as very important, with an average value of 4.33. Large organizations also consider it very important, with an average value of 4.32.
The analysis of labor cost management in the industrial sector for sustainable success in skill development revealed that small and medium-sized businesses rated it very important, with an average score of 4.33. Large businesses also rated it very important, with an average score of 4.29. In terms of specific components, small and medium-sized businesses rated work process improvement as highly important, with an average score of 4.32. The results of the analysis of the importance level of the components of the approach to managing labor costs in the industrial business sector towards sustainable success in innovation and technology (Innovation and Technology) showed that, overall, medium and small business organizations place a high level of importance, with an average value of 4.27. The results of considering each item range from an average value of 4.40 to 4.08.

3.7. Comparison results of the differences in the importance levels

The components of the labor cost management approach in the industrial business sector for sustainable success are classified by business type as follows: Labor Management, Skill Labor Development, Work Process Improvement, and Innovation and Technology. The comparison of the importance levels of these components showed no statistically significant difference at the 0.05 level when classified by business type. However, in the analysis, two items showed significant differences: Skill Labor Development, where medium and small businesses placed more importance on creating a culture of continuous learning and supporting workers to learn new skills, and Innovation and Technology, where medium and small businesses valued using computer software technology for tracking sales and inventory more than large businesses.

3.8. The results of the hypothesis testing

The difference in the importance level of the labor cost management components in the industrial business sector towards sustainable success, overall, when classified by business type. H6: The importance level of the components of labor cost management guidelines in the industrial business sector towards sustainable success, overall, when classified by business type, is not different. The results of the hypothesis testing found that the overall P-value = 0.16.

3.9. Results of the analysis of the structural equation model before improving the model

The results of the structural equation model analysis of the labor cost management approach in the industrial business sector towards sustainable success in the Unstandardized Estimate mode and the Standardized Estimate mode before model improvement are shown in Figures 1 and 2.

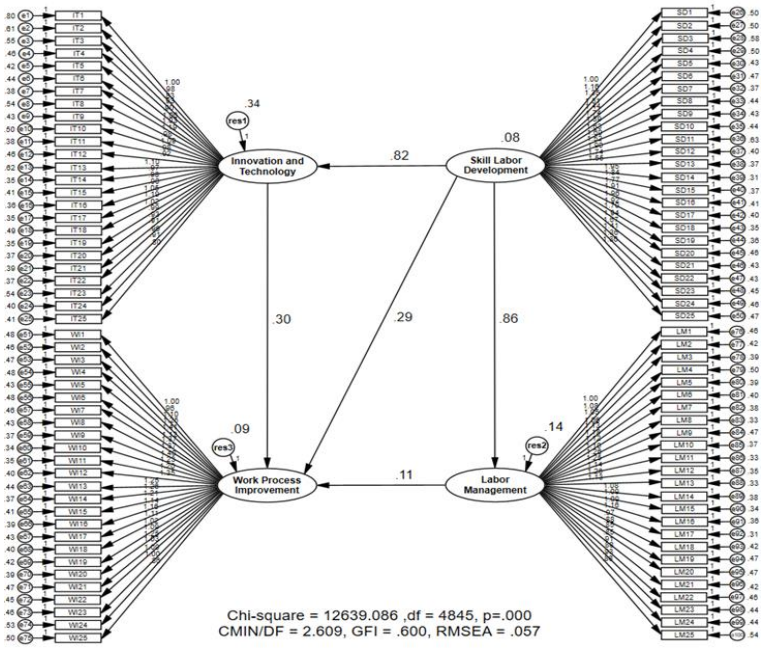

Fig. 1: Structural Equation Model of the Labor Cost Management Approach in the Industrial Business Sector Towards Sustainable Success in the Unstandardized Estimate Mode Before Model Improvement.

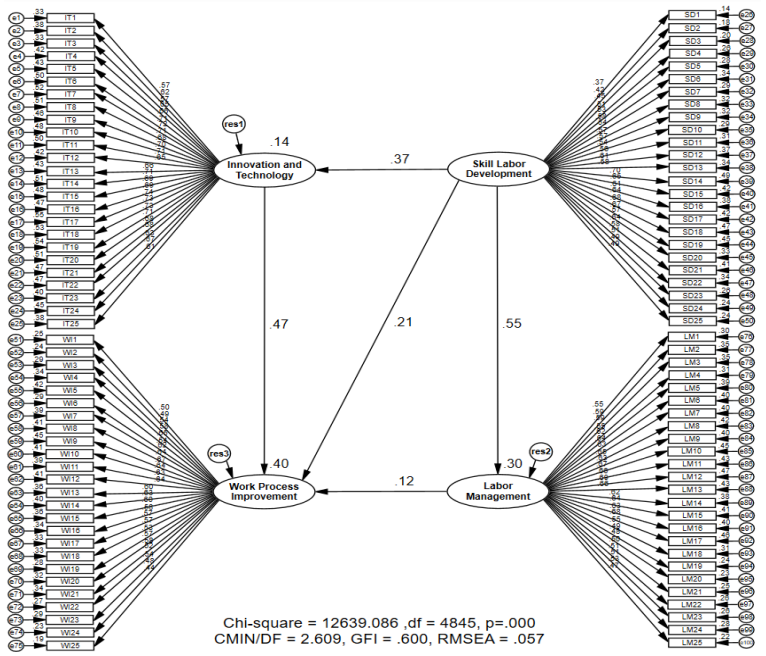

Fig. 2: Structural Equation Model of the Labor Cost Management Approach in the Industrial Business Sector Towards Sustainable Success in the Standardized Estimate Mode Before Model Improvement.

3.10. The results of the structural equation model analysis after model improvement

In both the Unstandardized Estimate mode and the Standardized Estimate mode, shown in Figure 3

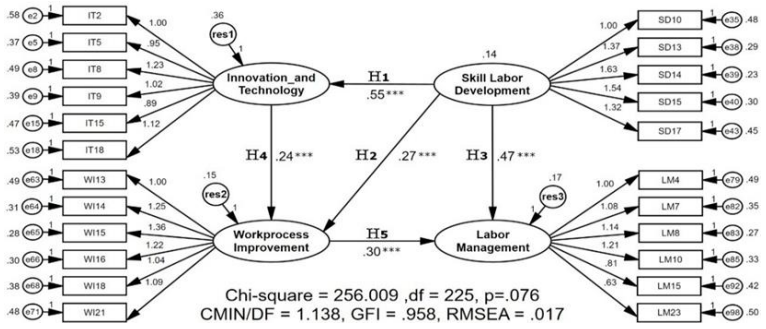

Fig. 3: Structural Equation Model of the Labor Cost Management Approach in the Industrial Business Sector Towards Sustainable Success, Unstandardized Estimate Model After Model Improvement.

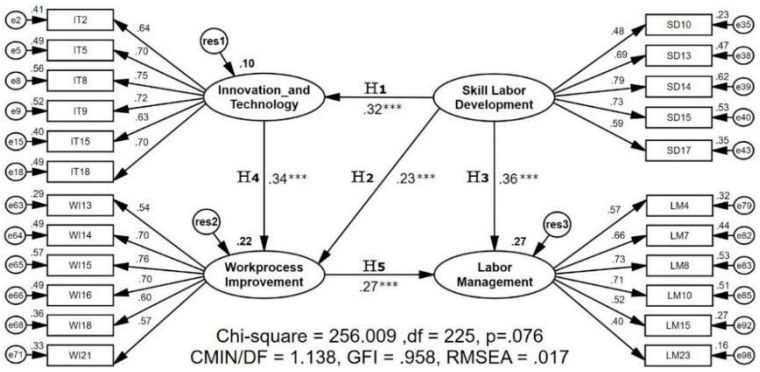

Fig. 4: Structural Equation Model of the Labor Cost Management Approach in the Industrial Business Sector Towards Sustainable Success, Standardized Estimate Model After Model Improvement

From Figures 3 and 4, it is found that the structural equation model of the labor cost management approach in the industrial business sector towards sustainable success, after the model improvement, consists of:

1) The components of Skill Labor Development directly influence the component of Innovation and Technology with a Standardized Regression Weight of 0.32, showing statistical significance at the 0.001 level, a multiple correlation coefficient (R^2) of 0.10, and a variance of 0.36. It also directly influences the component of Work Process Improvement with a Standardized Regression Weight of 0.23, showing statistical significance at the 0.001 level, a multiple correlation coefficient (R^2) of 0.22, and a variance of 0.15. Furthermore, it directly influences the component of Labor Management with a Standardized Regression Weight of 0.36, showing statistical significance at the 0.001 level, a multiple correlation coefficient (R^2) of 0.27, and a variance of 0.17
2) The Innovation and Technology component directly influences the Work Process Improvement component with a standardized regression weight of 0.34, statistically significant at the 0.001 level, a multiple correlation coefficient (R^2) of 0.22, and a variance of 0.15.
3) The Work Process Improvement component directly influences the Labor Management component with a standardized regression weight of 0.27, statistically significant at the 0.001 level, a multiple correlation coefficient (R^2) of 0.27, and a variance of 0.17.

3.11. Results of the structural equation model consistency evaluation

The structural equation model for the approach to labor cost management in the industrial business sector towards sustainable success, before and after the model improvement. It was found that the root mean square error of approximation (RMSEA) value was 0.057, meeting the assessment criteria for a good fit with empirical data. However, the Chi-Square Probability Level (CMIN-P) was 0.000, the Chi-Square Correlation (CMIN/DF) was 2.609, and the Generalized Fit Index (GFI) was 0.600, which did not meet the assessment criteria for a good fit with empirical data. After the model improvement, the Chi-Square Probability Level (CMIN-P) was 0.076, greater than 0.05, the Chi-Square Correlation (CMIN/DF) was 1.138, less than 2.00, the Generalized Fit Index (GFI) was 0.958, greater than 0.90, and the Root Mean Square Error of Approximation (RMSEA) was 0.017, less than 0.08. Therefore, it can be concluded that all four statistics passed the evaluation criteria.

3.12. Results of hypothesis testing

To analyze the causal influence between latent variables in the structural equation model of labor cost management guidelines for the industrial business sector towards sustainable success, the results are as follows:
H1: The components of Skill Labor Development have a direct influence on the components of Innovation and Technology with statistical significance at the 0.001 level, with a Standardized Regression Weight of 0.32, which is consistent with the research hypothesis. H2: The results of the hypothesis testing found that the component of Skill Labor Development has a direct influence on the component of Work Process Improvement, with statistical significance at the 0.001 level, and a Standardized Regression Weight of 0.23, which is consistent with the research hypothesis. H3: The results of the hypothesis testing found that the component of Skill Labor Development has a direct influence on the component of Labor Management, with statistical significance at the 0.001 level, and a Standardized Regression Weight of 0.36, which is consistent with the research hypothesis. H4: The results of the hypothesis testing found that the components of Innovation and Technology have a direct influence on the components of Work Process Improvement, with statistical significance at the 0.001 level, and a Standardized Regression Weight of 0.34, which is consistent with the research hypothesis. H5: The results of the hypothesis testing found that the Work Process Improvement component has a direct influence on the Labor Management component at a statistically significant level of 0.001, with a Standardized Regression Weight of 0.27, which is consistent with the research hypothesis. For both direct influence and indirect influence of the structural equation model for the labor cost management approach of the industrial business sector towards sustainable success in the Standardized Estimate mode after model improvement. It was found that the highest overall influence was on the Skill Labor Development component, which had the greatest overall influence on the Labor Management component, with a standardized regression weight of 0.45 (0.36 + 0.03 + 0.06 = 0.45). It was found that the relationship between the variables of the structural equation model for managing labor costs in the industrial business sector towards sustainable success, after model improvement, consisted of 253 pairs. These were divided into 181 pairs of variables with statistical significance at the 0.001 level, 48 pairs of variables with statistical significance at the 0.01 level, 20 pairs of variables with statistical significance at the 0.05 level, and 4 pairs of variables with no statistical significance at the 0.05 level.

4. Discussion

The research findings indicate that Labor Management received the highest mean score of 4.33, emphasizing its crucial role in labor cost management for sustainable success in the industrial sector. Effective labor management can reduce costs and enhance long-term potential.

The top-rated approach for managing labor costs was creating a labor operations manual, scoring an average of 4.39. This manual serves as a guideline for work procedures, improving efficiency, reducing errors, and ensuring workplace safety. Skilled Labor Development had the strongest influence on Labor Management, with a standardized regression weight of 0.45, highlighting the importance of skill development in enhancing personnel efficiency and effective labor management. The study found no significant differences in labor cost management approaches between small, medium, and large businesses, suggesting a common strategy for achieving sustainability.

The relationship between the variables in the structural equation model of labor cost management in the industrial business sector for sustainable success revealed that the relationship between the variable promoting labor to have morality, ethics, and social skills (soft skills) to work with others (SD14) and the variable creating a culture of continuous learning in the organization, supporting labor to always learn new skills (re-skill/up-skill) (SD15), had the highest value at 0.587. The results of this study indicate that promoting labor to have morality, ethics, and soft skills is a crucial strategy for sustainable labor cost management in the industrial sector. Laborers with teamwork skills and strong ethics help reduce conflicts, increase work efficiency, and lower costs related to labor issues. Creating a culture of continuous learning (re-skill/up-skill) enables employees to quickly adapt to new technologies and production processes, reducing the need for hiring new workers and increasing the value of investment in human resources.

Since there are significant differences in sizes, operations, and resources between businesses, managers may find that some SEM management strategies do not fit their needs. While bigger companies can handle advanced labor management strategies, SMEs are limited by their resources. The importance of statistical significance can be limited because the features of different business types may require different approaches to labor management. Due to changing labor laws and the economy in Thailand, it is complicated to generalize the findings. It is necessary to review and adjust the methods of leading an organization for SMEs and large enterprises, understanding and adjusting for their differing realities.

In labor market theory, the role of wages and the labor supply and demand are studied by focusing on the relationship between workers and companies. That's why making investments in employee skills and training matters, as it leads to better productivity. With minimum wages rising, especially in businesses that use a lot of labor, companies must check the possible effects on the number of employees and total spending. It is very important for firms to understand how employees are skilled and what is happening in their industry affects their payment if they want to succeed and survive in the market. Evaluating the management of labor is largely based on CBA. When companies understand the costs and benefits of each approach to hiring, they can decide which strategy to use. Like net present value, as taught in CBA, helps businesses judge how much training or wage increases impact their future earnings. Furthermore, theories focused on how firms operate, such as principal-agent theory and transaction cost economics, can help influence employee relationships and labor-related decisions to benefit the payoff by lowering costs. Learning these economic theories allows companies to manage their workforce better as the economy keeps evolving.

This study primarily examines how minimum wage increases can improve employee satisfaction and reduce turnover, without adequately addressing the potential drawbacks of these policies. The analysis fails to acknowledge that some companies may respond to higher wages by cutting jobs, particularly affecting young and less-qualified individuals who may struggle to find employment if business costs rise. Additionally, there is no consideration given to the possibility that higher wages could prompt companies to implement automation or reduce staff to maintain profits, ultimately having no impact on overall employment levels. A more comprehensive understanding of these factors is crucial for stakeholders to recognize the trade-offs associated with minimum wage policies. Without a thorough analysis, policymakers and businesses may overlook the full implications of wage changes on the labor market.

The idea that managing labor costs works the same in all companies needs additional proof because small and medium-sized enterprises often face difficulties that influence how such strategies can be implemented successfully. Operating with less cash, a small number of employees, and old technology is common for SMEs, often making it difficult for them to adopt certain practices or invest in advanced HR systems or comprehensive training programs. As SMEs tend to be flexible and informal, new and flexible styles of labor management may be required compared to those of large companies. Since there is little evidence that these strategies are effective within the SME world, their use could be ineffective or may not address certain situations for SMEs. A detailed examination is important to ensure that strategies align with the different needs and operations of various organizations. Effective labor cost management involves recognizing wages as an investment in human capital. By investing in employee development through training and skill enhancement initiatives, businesses can improve productivity, reduce turnover, and enhance employee engagement. This strategic approach transforms labor costs from an expense into an asset that drives competitive advantage and supports sustainable success in the marketplace.

Future studies on managing labor costs need to consider both gender and regional differences, as they can greatly influence the way labor operates and the results. Examining how wage policies treat men and women may reveal factors that hinder certain individuals from obtaining employment or better jobs, leading to disparities in overall productivity. Discrepancies in regional economies, employment opportunities, and industry structures can necessitate adjustments in labor management strategies. Exploring these variations could help identify specific barriers for different groups, ultimately leading to more equitable and efficient labor policies that benefit everyone. Consequently, a deeper understanding of employment trends emerges, and more individuals are included in the economic growth.

5. Conclusion

Key recommendations align with stakeholder views on labor management in the industrial sector, emphasizing the critical issue of adjusting the minimum wage. Wage increases benefit workers but pose challenges for employers, especially small businesses and labor-intensive industries. Recommendations include basing wage adjustments on workers' potential and businesses' cost-bearing capacity, with the government urged to establish flexible and fair policies. Stakeholders advocate for participatory policy development involving various sectors. Skill development is deemed essential for competitiveness, with a focus on reskilling and upskilling to adapt to technological changes. Incorporating technology and fostering motivation and engagement are key strategies for efficient labor management. Sustainable labor cost management requires internal management and sector cooperation. These guidelines can help entrepreneurs effectively manage labor costs and enhance long-term competitiveness.

6. Suggestions

1) The Department of Industrial Promotion, Ministry of Industry, should develop policies to support labor skills training. Modern labor skills training will enhance employees' work abilities and reduce errors in the production process, leading to long-term cost reductions. The government should collaborate with the private sector to organize comprehensive and continuous training programs.

2) The Fiscal Policy Office, Ministry of Finance, should promote investment in new technologies and innovations. Investment in modern technologies, such as automation and digital technology, can help reduce labor costs and increase production efficiency. The government should implement tax policies that support investment in innovations to stimulate this change.
3) The analysis of the use of automation technology to reduce labor costs in SMEs aims to study and evaluate the effectiveness of automation and robotics technology in reducing labor costs, particularly in the production process or management within organizations. This study will help SMEs better adapt to an era where technology plays a significant role, providing them with appropriate investment guidelines to achieve sustainable results, like the research on the management of automation technology to reduce labor costs in industrial businesses.

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