

LABOR MARKET CHANGES IN THE ERA OF AI

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ABSTRACT

The rise of Artificial Intelligence (AI) is transforming labor markets across the globe, ushering in a new era of work characterized by increased efficiency, productivity, and innovation. However, these technological advancements also pose significant challenges, particularly in terms of workforce displacement, skill gaps, and the redefinition of job roles. This conceptual research examines the profound impact of AI on the labor market, focusing on the shifting demand for labor, the emergence of new job categories, and the evolving skills required for success in this new environment. The research explores the dynamics of automation in various sectors, such as manufacturing, finance, and customer service, where AI is increasingly performing routine tasks traditionally done by humans. It also investigates the potential for AI to complement human workers, enhancing productivity and creating new opportunities for collaboration. Furthermore, the study addresses the social and economic implications of these shifts, particularly the risks of rising inequality, job displacement, and the need for continuous learning and reskilling. Finally, the paper suggests possible policy responses, including the promotion of lifelong learning, targeted reskilling programs, and social safety nets to support workers affected by automation. The findings highlight the need for businesses, governments, and educational institutions to work together to navigate the evolving landscape of work, ensuring that the benefits of AI are broadly shared across society.

Keywords: Artificial Intelligence (AI), Labor Market Transformation, Skill Gaps

INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) technologies is transforming industries, economies, and societies worldwide. The shift towards in workplaces, coupled with the rise of AI, is reshaping the labor market in profound and complex ways. While these technologies have the potential to increase productivity, efficiency, and innovation, they also raise critical questions about the future of work, workforce displacement, and the evolving nature of job roles.

However, the impact of AI on the labor market is not one-dimensional. On one hand, there is the potential for these technologies to create new industries, professions, and job categories, particularly in areas related to data science, machine learning, and the development and maintenance of AI systems. On the other hand, there is a growing risk that many traditional jobs especially those that involve manual, repetitive, or routine tasks could be displaced, leading to significant economic and social.

This research explores the fundamental shifts in the labor market brought about by AI technologies, with a focus on the changing nature of work, the skills required, and the potential consequences for both workers and employers. By examining the dynamics of job displacement, the rise of new employment opportunities, and the evolving role of human workers, this study aims to contribute to a deeper understanding of the future of work in the context of AI.

OBJECTIVE

1. Study changes in required workforce skills.
2. Study the impact of AI on changes in the labor market.
3. Study methods for developing and training new skills for workers.

METHODOLOGY

The conceptual research is conducted with the methodology as follows; Gathering data from literature, theories, documents, research, and related academic articles as secondary sources, using a conceptual framework and objectives, this research also uses theoretical analysis to interpret the data, using various theories such as Technology Development Theory and Economic Displacement Theory to understand the relationship between technology development and changes in the labor market.

RESULTS

The results from this study on the impact of AI on the labor market provide insights into key changes in required workforce skills, the effects of AI on labor market shifts, and methods for developing and training new skills for workers

The study found that the required skills in the labor market are shifting significantly due to the rise of AI. Industries that heavily adopt automation technologies demand more workers with higher-level technical skills. The growing importance of data analytics, machine collaboration, and digital literacy is evident, while jobs requiring routine manual labor or simple repetitive tasks are increasingly at risk of being replaced by machines. Key skills in demand include:

1. **Data Science:** It involves the use of statistical models, machine learning, and computer science to analyse and understand complex data sets. Data scientists work with large data sets to identify patterns, make predictions, and inform decision-making.
2. **Machine Learning:** Is a subset of artificial intelligence that involves the development of algorithms that can learn and improve from experience. Machine learning algorithms are used to solve a wide range of problems, including image recognition, natural language processing, and fraud detection.
3. **Natural Language Processing (NLP):** Is used in applications such as chatbots, virtual assistants, and speech recognition software. NLP involves developing algorithms that can understand human language and generate responses.
4. **Robotics:** Is a field that involves the design, development, and operation of robots. Robotics is used in various applications, including manufacturing, healthcare, and military operations.
5. **Cybersecurity:** As the use of AI increases, the threat of cyber attacks also becomes more significant. Therefore, cybersecurity has become an essential AI skill. Cybersecurity involves developing strategies and techniques to protect computer systems from unauthorised access, theft, and damage.



Figure 1: Top 5 Indispensable Skills in the New Era of AI

Impact of AI on Changes in the Labor Market

Jobs that involve repetitive, manual, or simple tasks, particularly in sectors like manufacturing, logistics, and customer service, are more likely to be automated. Examples include product sorting, driving, and customer interaction roles being replaced by machines and AI systems. Employment opportunities in sectors related to technology, healthcare, and digital services are likely to grow. AI-driven industries such as data science, cybersecurity, and machine learning are expected to see a surge in demand for skilled workers. The labor market may experience greater economic inequality, with high-skill jobs (in tech and healthcare) growing, while low-skill, low-wage jobs may disappear. This could lead to a divide between those with the skills to work alongside AI.

Methods for Developing and Training New Skills for Workers

A different training methods, including traditional instruction-led learning, eLearning experiences, and hands-on training, to identify the more effective employee training methods for corporate learning, List of the most common employee training methods that organizations can choose from depending on their requirements and goals:

1. eLearning
2. On-the-Job training
3. Instructor-led learning
4. Role playing
5. Coaching
6. Simulation training
7. Collaborative training
8. Video training
9. Cross-training
10. Job shadowing
11. Case studies
12. Peer-to-peer learning
13. Spaced learning
14. Gamification
15. Mobile learning

16. Blended learning
17. Microlearning
18. Adaptive learning

Training methods refer to the various approaches and techniques used to develop employees' skills, knowledge, and competencies. These methods are designed to enhance performance, improve efficiency, and promote career growth within the organization.

Conclusion and Future Work

The Artificial Intelligence (AI) is fundamentally reshaping the labor market, creating both opportunities and challenges. While AI promises increased efficiency, productivity, and the potential for innovation, it also introduces significant disruptions, particularly in terms of workforce displacement, evolving skill requirements, and the emergence of new job roles. The impact of automation is particularly evident in sectors where AI is gradually taking over tasks traditionally performed by humans. However, this shift also opens up new possibilities for collaboration between humans and machines, fostering new industries and improving workplace efficiency.

Looking ahead, future research should focus on understanding the long-term effects of AI and automation across different industries, as well as identifying the best methods for integrating AI into the workforce without exacerbating inequality.

While the rise of AI presents a transformative shift in how work is performed, it also calls for a concerted effort to equip workers with the skills they need to thrive in the new economy. By fostering collaboration and lifelong learning, we can create a future of work that is more inclusive, productive, and equitable for all.

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THE RESEARCH ANALYSIS ABOUT FOOD WASTE MANAGEMENT BY FOOD AND BEVERAGE BUSINESSES: THE APPROACHES FOR REDUCING ENVIRONMENTAL IMPACTS

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ABSTRACT

From the literature review, it was found that knowledge and understanding of food waste management in the context of Thailand is still limited. Therefore, this research aims to 1) analyze and synthesize knowledge from such research to create knowledge and understanding for entrepreneurs and to apply it to society. This research uses a documentary research methodology by collecting data from the TCI and Google Scholar academic databases and using content analysis and descriptive statistics to analyze and present the data. The research results found that 1) For the analysis and synthesis of knowledge on food waste management in food and beverage businesses in Thailand, it can be divided into 4 issues: (1) Causes of food waste in the business sector (2) Food waste management problems in the business sector (3) Waste management or waste and (4) Guidelines for reducing food waste problems. Food and beverage business operators may apply the knowledge from this research to their business operations to reduce the impact on the environment.

keywords: food waste management, food and beverage business, environment

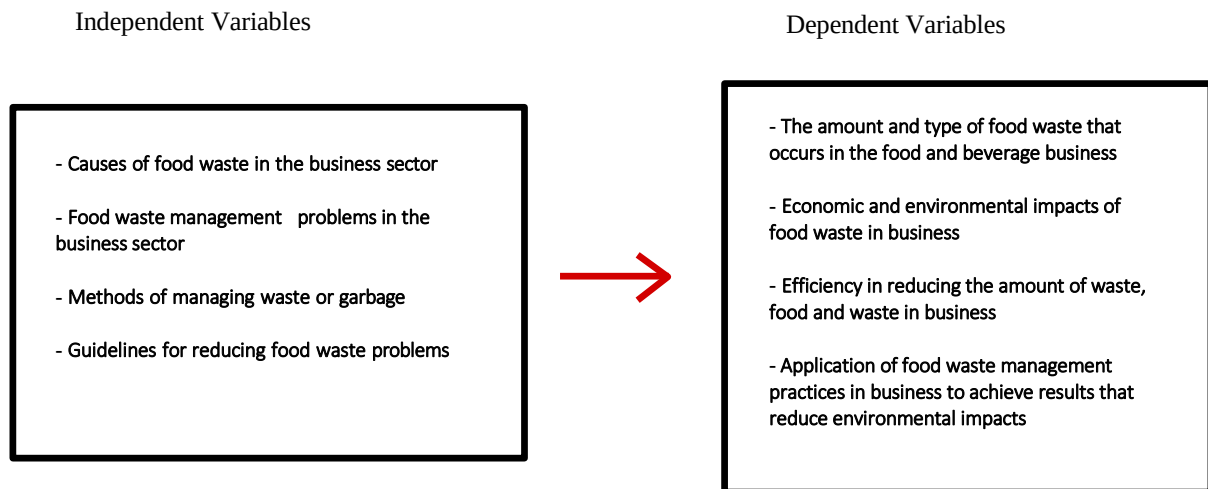
INTRODUCTION

In the food and beverage business, which is a problem that affects both the economy and the environment. In terms of economy, food waste resulting from improper management represents an unnecessary waste of resources. In terms of environment, food waste disposed of by landfill releases greenhouse gases such as methane, which causes global warming and consumes natural resources. In Thailand, knowledge about food waste management is still limited. This research aims to create guidelines for entrepreneurs to use in managing food waste effectively and reduce environmental impacts, focusing on studying various types of businesses, such as restaurants, food shops, and hotel food services.

OBJECTIVE

1. To analyze and synthesize knowledge from research studies on food waste management in the food and beverage business to compile as guidelines for entrepreneurs to apply.

Research Framework



METHODOLOGY

Content analysis (content analysis) by analyzing key words or important points from research results/research proposals, research results/focus on categories or important points to synthesize knowledge that is useful for food and beverage business operators to use for benefits.

RESULT

The results of knowledge synthesis from research studies on food waste management in food businesses in Thailand

Synthesizing knowledge from research

1. Causes of food waste in the business sector

Many research studies have mentioned the causes of food waste in the food business. Lao children about the causes of waste and beverages. The main causes can be summarized as follows:

1.1 The growth and increase of the food and beverage business has given restaurants and consumers more choices in choosing food to consume from newly opened restaurants. At the same time, the business sector may have problems with selling food, not running out or from the problem of food that is hazardous and needs to be disposed of, resulting in food waste.

1.2 Some modern consumers have the behavior of cooking their own food, causing them to buy less food from restaurants, resulting in restaurants selling less food, some of which spoils and becomes food waste.

1.3 Many restaurants lack proper planning in producing and distributing food that exceeds market demand, resulting in leftover food, some of which spoils easily and becomes food waste.

1.4 Many hotels organize parties for various occasions for customers, and some food is not consumed every day, resulting in food waste.

2. Problems with food waste management in the business sector Food waste management in the business sector

2.1 Entrepreneurs lack knowledge and understanding of the principles of waste management, such as leftover food. Restaurant entrepreneurs have methods for managing their own waste without the help of government agencies.

2.2 Entrepreneurs lack knowledge, understanding and awareness of waste management, food waste and environmental issues, and sustainable management in the food and beverage business.

3. Guidelines for waste or waste management according to international principles

Some research has presented guidelines for waste or waste management according to international principles, which can be summarized as follows:

1. Prevention of loss by calculating the production quantity to be sufficient for market demand and customer consumption, so as not to have the problem of raw materials or products exceeding demand and being thrown away.

2. Optimization by donating excess food to people in need (Redistribution to people) or using it as animal feed.

3. Recycling by making fertilizer and using it for other benefits.

4. Energy production by burning (Recovery)

5. Disposal, such as incineration or landfill.

6. Processing food waste in various forms, or using it to feed animals or compost it.

4. Guidelines for reducing food waste problems

Several research studies have proposed approaches to reduce food waste problems from food and beverage businesses, which can be summarized as follows:

4.1 The public and private sectors campaign to raise public awareness about the problem of food waste and promote wise food consumption to reduce environmental problems caused by food waste.

4.2 Restaurant operators should send their employees to receive training in cooking so that they have knowledge and understanding of cooking and are aware of the importance of food, including developing their cooking skills from

Leftover ingredients can be used as other types of food menus, including government agencies. They should promote cooperation with local restaurant businesses to reduce waste problems in communities. In addition, cooperation between the government and restaurants will increase

Income for businesses to reduce food waste and reduce the impact on the environment.

4.3 The private sector cooperates with foundations or associations to take leftover food from restaurants, food shops or hotels to foundations or associations to distribute to the poor or disadvantaged in society.

CONCLUSION AND FUTURE WORK

Conclusion:

The food and beverage industry in Thailand faces significant challenges with food waste, which impacts both economic efficiency and environmental sustainability. The causes of food waste in this sector range from increased consumer choices and changing consumer behaviors to insufficient planning in food production. Specific challenges include entrepreneurs' limited knowledge of sustainable waste management and a lack of coordinated waste management strategies, often leaving businesses to manage waste independently without comprehensive support from government agencies.

Research highlights several approaches to improve waste management, including optimizing production, redistributing excess food, recycling food waste into fertilizers, and, in some cases, incinerating waste for energy. Additionally, raising awareness and improving cooperation among public, private, and community organizations can significantly reduce food waste.

Future Work:

Future research should focus on:

1. **Sector-Specific Strategies:** Future research should focus on developing tailored waste management guidelines for specific types of food businesses (restaurants, hotels, and catering companies) to create practical, impactful solutions.
2. **Policy Initiatives:** Working with policymakers to develop regulations and incentives that support sustainable practices in the food and beverage industry. This could include tax incentives, subsidies for eco-friendly initiatives, and awareness campaigns.
3. **Technological Advancements:** Promoting digital tools and technologies that help businesses track and optimize food production, manage inventory, and predict demand accurately to minimize waste.
4. **Community Engagement and Education:** Increasing public awareness through campaigns on food waste reduction, wise food consumption, and the environmental impact of food waste, fostering an environmentally conscious community.
5. **Public-Private Partnerships:** Encouraging collaboration between government agencies, private sector businesses, and nonprofits for waste redistribution, composting programs, and other waste management initiatives that support both community welfare and environmental sustainability.

Through these combined efforts, Thailand's food and beverage sector can adopt more sustainable practices, reducing food waste and its associated environmental footprint, while also benefitting economically from more efficient resource use.

Research Suggestions

1. Suggestions for applying the research results

From the research results, it was found that the number of research studies on food waste management of food and beverage business operators in the Thai context is still limited. Therefore, those interested in sustainability management or environmental management, especially researchers in educational institutions nationwide, may study more on the aforementioned issues to expand knowledge to society and the business sector in creating awareness of the impact of food waste and study ways to reduce the waste problem more. They may choose to study various types of food and beverage business operators, such as general restaurants/restaurants, buffet restaurants, hotel restaurants, fast food restaurants, or modern restaurants located in shopping malls, etc.

For food and beverage business operators, they may use the knowledge from the synthesis to manage the food waste problem to reduce the impact on the environment. There should be a management plan, such as planning food production, employee training, food waste management, and cooperation with various agencies to reduce the food waste problem that may affect the environment.

2. Suggestions for future research

Since this research is an analysis of research studies on food waste management of food and beverage business operators in the context of Thailand, the next research may expand the scope of the research by studying the Thai context and comparing it with other countries to see the knowledge in a broader context and may apply the knowledge in the foreign context to be a guideline for food waste management of business operators in Thailand.

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