



The role of automation and AI in shaping the future of employment

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Abstract

The presence of Artificial Intelligence (AI) and automation of work provides a revolution in the world of work. But at the same time, this can threaten human potential in employment. This research was conducted to see the influence exerted by AI and automation on human employment. This research will be carried out using a descriptive qualitative approach. The data used in this study comes from various research results and previous studies that still discuss the use of AI and automation in the world of work. This study found that AI and automation are currently replacing many jobs. However, some bits of intelligence belonging to humans, such as intuition and empathy, are still difficult for AI to imitate. Even though the existence of AI and automation can be a threat to humans in the workforce, with the increase in human resource skills then humans who adapt will not be replaced by machines, but there will be the integration of human-machine work, where AI and automation do not replace humans but become tools for human labor.

Keywords: Artificial Intelligence, Employment, Automation

1. Introduction

Outstanding progress in artificial intelligence (AI) and automation has been made over the past twenty years. In terms of artificial intelligence, this technology is advancing quickly and is anticipated to transform operations globally. AI refers to hardware or software designed to exhibit intelligent behaviors similar to those of humans. The purpose of developing AI is to enable computing systems to replicate human intelligence to carry out specific tasks autonomously. Despite the advantages of increased ease and efficiency that this technology offers, surveys in the human resources sector reveal significant apprehension among the workforce regarding this technological shift. Employees are worried about the effects of automation on the job market and overall productivity. However, certain economists argue that this technological advancement will generate new employment opportunities, as there is a constantly growing demand for skilled individuals capable of managing and maintaining increasingly advanced AI and automation systems.

1.1 AI and Automation

The ability of machines, particularly computers and robots, to carry out tasks that normally call for human intelligence is known as artificial intelligence (AI). Problem-solving, judgement, language comprehension, pattern recognition, and experience-based learning are some of these activities. AI-powered systems may evaluate data, make judgements, and enhance their performance without needing to be explicitly programmed for every task, in contrast to conventional machines or software that adhere to predetermined instructions.

Because of this, they are very helpful in a variety of industries, including customer service, healthcare, banking, and transportation. Intelligent automation is the result of combining automation and artificial intelligence. By itself, automation is the use of technology to carry out tasks without the need for human involvement. Usually, these are ordinary or repetitive jobs.

A simple automation system might, for instance, fill out forms or categorise emails. By adding AI capabilities, intelligent automation goes one step further and enables systems to do more than just carry out tasks; they can also learn from them, adjust to changing circumstances, and make wise decisions. This indicates that as time passes, the system's efficiency increases. For example, a standard chatbot in customer service may react to consumer enquiries by following a script. However, a chatbot driven by AI is able to comprehend the context of queries, tailor answers, and even draw lessons from previous exchanges to enhance subsequent discussions. Similar to this, intelligent automation in manufacturing may identify product flaws and make real-time process adjustments to prevent failures. Automation and artificial intelligence (AI) are revolutionising sectors by boosting output, decreasing errors, and facilitating quicker decision-making.

These systems are anticipated to manage increasingly complicated jobs as they develop, further boosting productivity and creativity across industries. But along with technology advancements, society must also confront issues like employment displacement and ethical dilemmas brought on by their emergence.

1.2 Can AI and automation work together?

The use of software to reduce human effort isn't new news for the business community. Artificial Intelligence ^[6] on top of it has opened a whole new possibility. Automation is provided for a very limited range of reducing human work. But by combining artificial intelligence with automation, one will be able to reduce not just human effort but also totally remove the need for such intervention altogether. This kind of combination in artificial intelligence in automation is known as automation continuum (or intelligence, Robotic Process Automation)

2. Literature review

I. Artificial Intelligence (AI)

According to Jogiyanto, artificial intelligence (AI) refers to a machine or intelligent device, typically a computer, capable of executing tasks that would normally require human intelligence. As per Kusumadewi, AI is a branch of computer science that enables machines (computers) to perform tasks similar to those accomplished by humans. In Suparman's view, AI is a specialized area within computer science aimed at developing software and hardware that can closely replicate certain functions of the human brain. (Nahavandi *et al.*, 2022). According to John McCarthy, artificial intelligence (AI) is both a field of study and a method for designing intelligent machines, along with sophisticated computer programs or applications. AI represents a progression toward the creation of computers, robots, or applications that operate intelligently, similar to human behavior. (Cioffi *et al.*, 2020)

Computer science, biology, psychology, language, mathematics, and engineering are among the fields that contribute to artificial intelligence. The ability to reason, learn, and solve problems is a crucial step in the development of artificial intelligence-related computers. Though not yet flawless or accurate, AI's methods for problem-solving involve structuring knowledge and information such that users can readily access and comprehend it. These methods can also be readily adjusted to fix mistakes and be useful in a variety of scenarios. (Nozari & Sadeghi, 2021).

From the various paragraphs above, it is clear that artificial intelligence is a technique for giving a computer intelligence and the capacity to think like a human in order to solve problems and break down these thought processes into crucial steps. (Hoffmann, 2022).

II. Automation

Automation (which translates to "self-study" in Greek), robotization, industrial automation, or numerical control is the process of replacing human operators with control systems like computers to operate industrial machinery and process controls. A significant reduction in human needs as sensors and work mentality results from industrialisation, which is a stage in the implementation of mechanisation where humans carry out the concept of permanent mechanisation of industrial machines as operators by placing machines as assistants following physical work demands. (Paško *et al.*, 2022).

The meaning of automation in order to increase productivity, efficiency, and flexibility, automation is a technology that

combines the application of mechanics, electronics, and computer-based systems through processes or procedures that are typically organised according to an instruction program and combined with automatic control (feedback) to ensure whether all instructions have been carried out correctly. Fords in Detroit were the first to adopt the term automation. This phrase refers to machine tools and mechanical devices that are utilised to create a continuous manufacturing line. (Wang *et al.*, 2022).

According to Santoso, automation is the process of automatically regulating a tool's operation, which can take the position of humans in observation and decision-making. There is relatively little human intervention in controlling because the current control system is beginning to transition to automation (Santoso *et al.*, 2020). Because it is more thorough, safe, and efficient than a manual method, an autonomously controlled equipment system is much more convenient. Ghifari then made the case that automation is a scientific discipline that necessitates the replacement of manual machines with automated ones in order to streamline current living processes. (Mehmood *et al.*, 2020).

III. Employment

According to the traditional perspective, people have the biggest impact on a country's ability to succeed. This is because if there are no human resources to digest nature (land) in a way that is beneficial to life, then nature is worthless. In this case, Adam Smith's classical theory acknowledges that economic growth is driven by the effective utilisation of human resources. To sustain economic growth after it has begun, more (physical) capital accumulation is needed.

To put it another way, economic advancement depends on the effective use of human resources (Javanmardi *et al.*, 2023). Thomas Robert Malthus is considered a classical thinker who made a significant contribution to the development of economic principles, second only to Adam Smith. Malthus's *Principles of Population* is his best-known work. Even though Malthus was a supporter of Adam Smith, the book makes clear that not all of his beliefs aligned with Smith's. On the one hand, Smith believes that specialisation and the division of labour will always benefit human welfare. Malthus,

however, had a gloomy outlook on humanity's future (Blanco, 2020). It is measurable that one of the main components of production is land. In many cases, the construction of highways, factories, and other structures has reduced the amount of land that can be used for agriculture. Malthus believed that in order to meet human needs, the population of humans increased significantly faster than agricultural production. Malthus thought that population control was required because he did not think that technology could grow more quickly than the population. This is a moral constraint, according to Malthus (Zhou *et al.*, 2021). Classical economic theory states that an economy based on market power equilibrium will always be reached by the mechanism. All available resources, including labour, will be fully utilised in a balanced posture. Therefore, unemployment does not exist in a system that is based on market dynamics. If there are no jobs, people will rather labour for less money than not get paid at all.

Employers will be encouraged to hire more of these people because of their willingness to take a lower salary (Kretschmer *et al.*, 2022). A critique of the classical system by John Maynard Keynes was that it lacked an automatic adjustment mechanism that would guarantee the economy would reach equilibrium at full employment. In reality, the labour market does not operate according to the traditional notion mentioned above.

Wage rates will be reduced wherever there is a labour union in order to safeguard the interests of the workforce (Dimand, 2020). The income level of the populace may decline even if the wage rate is reduced. People's purchasing power will decrease when some members of society experience a drop in income, which will ultimately lead to a loss in overall consumption levels.

3. Research methodology

a) Objectives of the study

- To identify the role of automation and AI in shaping the future of employment
- To identify which job sectors are most affected by automation.

b) Methods of data collection

This research will be carried out using a qualitative approach. Research data will be analysed using descriptive methods. The data used in this research are derived from mixed results of

previous studies and those that remain relevant to the content of this research.

c) Source of data collection

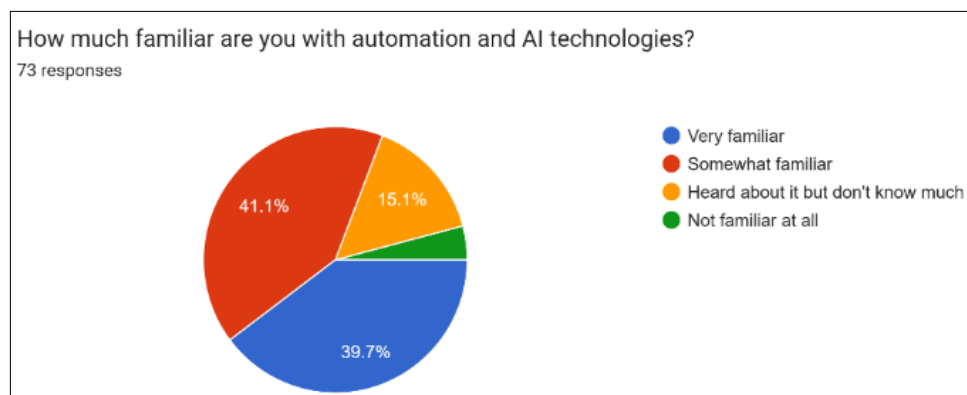
The research data was collected from primary sources, and we prepared a questionnaire consisting of 10 questions and 74 responses.

d) The following are sample Questions

- Name?
- Email ID
- Occupation?
- Industry/ Field of work?
- How familiar are you with automation and AI technologies?
- Do you believe AI and automation will significantly affect your industry in the next 5–10 years?
- In your opinion, what is the biggest benefit of AI in the workplace?
- Which skills do you believe will be the most valuable in an AI-powered future?
- Which job sectors are most affected by automation?
- Do you believe that AI will create more jobs than it eliminates in the long term?

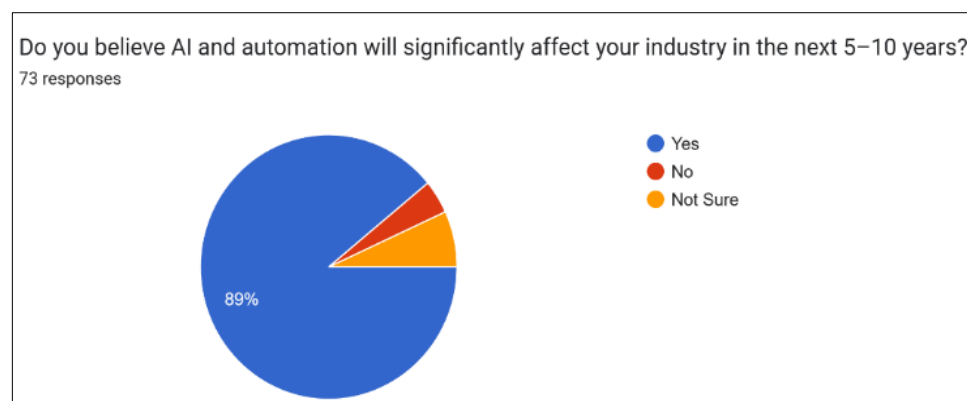
4. Data collection (Responses to the questionnaire)

A) How familiar are you with automation and AI technologies?



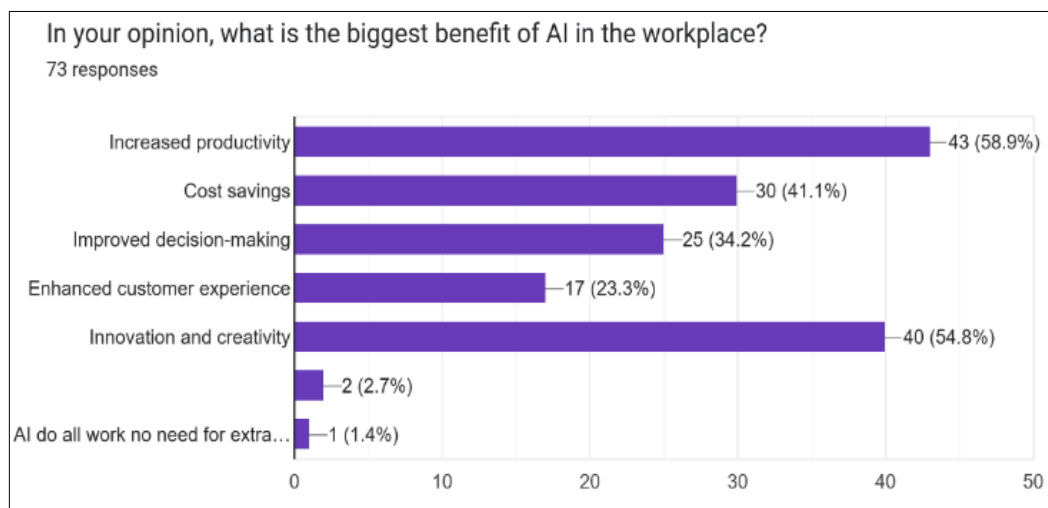
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B) Do you believe AI and automation will significantly affect your industry in the next 5–10 years?



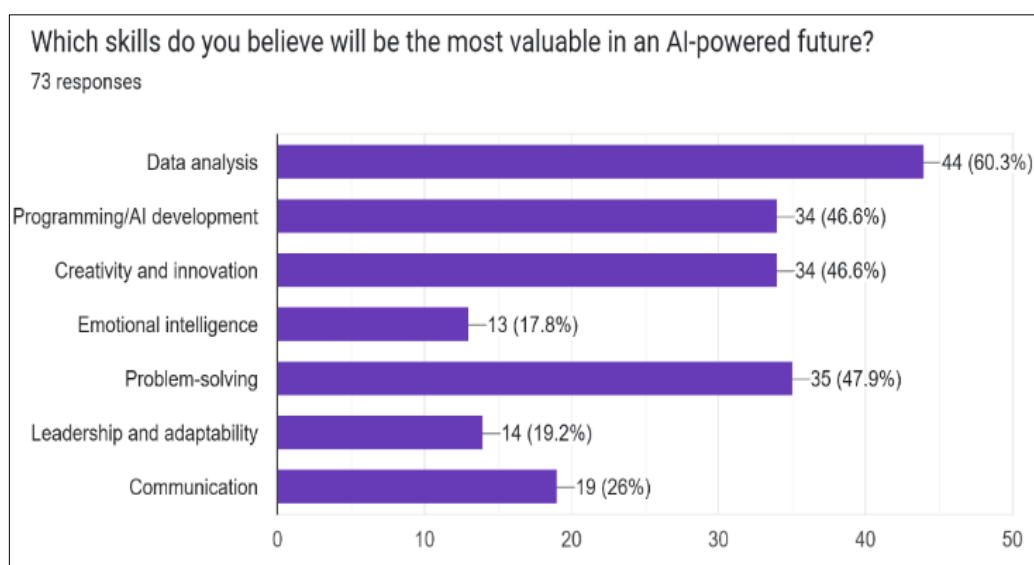
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C) In your opinion, what is the biggest benefit of AI in the workplace?



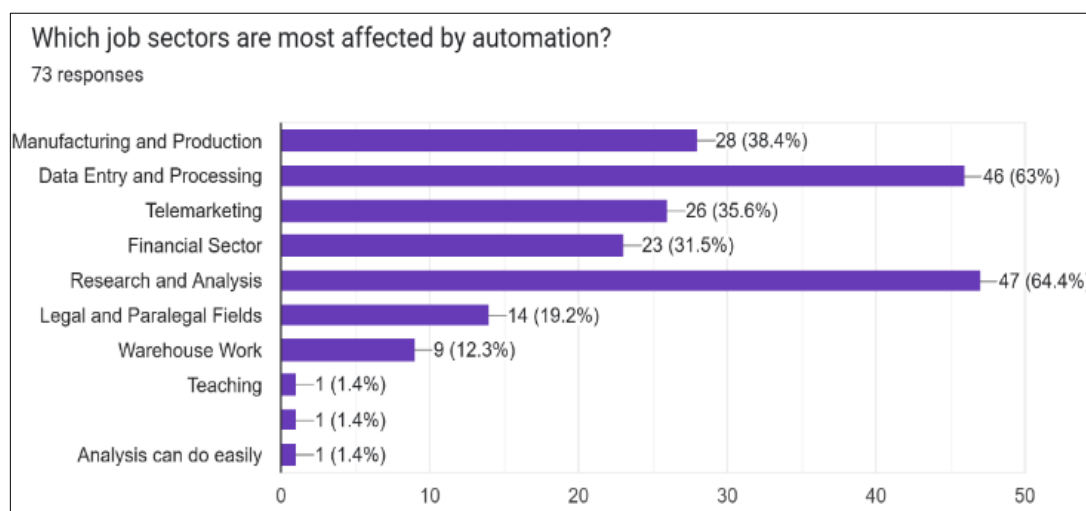
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D) Which skills do you believe will be the most valuable in an AI-powered future?



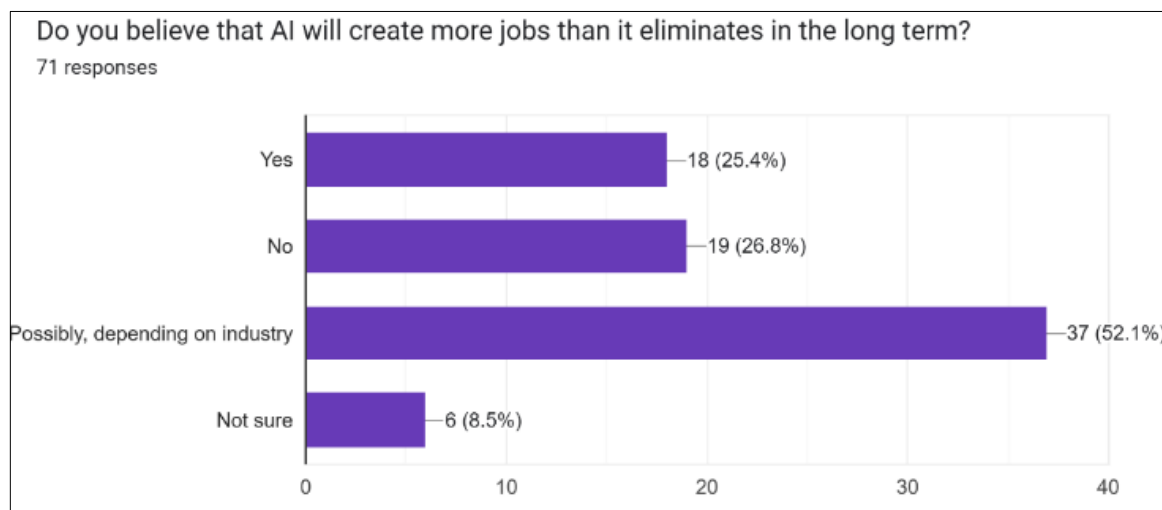
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E) Which job sectors are most affected by automation?



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F) Do you believe that AI will create more jobs than it eliminates in the long term?



Available online at: <https://forms.gle/TBkaWGZi6TSyBeHn7>

5. Data analysis and its interpretation

- Roughly 40% of respondents are very familiar with AI/automation, and 41% are somewhat familiar—combined, over 80% have at least basic familiarity, while just around 15% have heard of it but don't know much, and ~4% are not familiar at all.
- A strong majority (89%) expect AI and automation to significantly impact their industry in the next 5–10 years, with only a small minority unsure or unconvinced.
- The most cited workplace benefit of AI is increased productivity (58.9%), closely followed by innovation and creativity (54.8%).
- Other perceived benefits include cost savings (41.1%), improved decision-making (34.2%), and enhanced customer experience (23.3%).
- Looking ahead, data analysis is seen as the most valuable skill (60.3%), followed by problem-solving (47.9%), programming/AI development, and creativity/innovation (both ~46.6%).
- Communication skills are considered important by a smaller share (~26%).
- Job sectors viewed as most affected by automation include legal/paralegal fields (64.4%), research & analysis (also ~64.4%), and data entry & processing (63%).
- Others like manufacturing (38.4%) and telemarketing (35.6%) are also flagged, whereas teaching and warehouse roles are much less mentioned.
- On whether AI will create more jobs than it eliminates, 52.1% say “possibly, depending on industry,” while 26.8% say no, and 25.4% say yes, with about 8.5% unsure.

5.1 Automation

The purpose of Automation is to get the monotonous and repetitive tasks done by machines which also improves productivity and results in cost-effective and more efficient results. Many organizations use machine learning, neural networks, and graphs in automation. Such automation can prevent fraud issues in financial transactions online by using technology.

6. Conclusion and Recommendations

I. Conclusion

High awareness of AI, a vast majority of respondents (over 80%) are familiar with AI and automation—either very or somewhat familiar—indicating strong baseline awareness in the workforce. Strong expectation of Industry disruption, nearly 9 in 10 believe their industry will be significantly impacted within the next 5 to 10 years, reflecting wide anticipation of change. Primary Benefits: Productivity & Innovation enhanced productivity (59%) and boosted innovation/creativity (55%) are viewed as the leading advantages of integrating AI into workplace processes. Valued Skills for the Future Data analysis tops the list of future-critical skills (60%), followed closely by problem-solving, programming/AI development, and creative thinking, highlighting demand for both technical and creative competencies. Automation Risk Concentrated in Specific Sectors Legal/paralegal roles, research & analysis, and data entry/processing are perceived to be most vulnerable (~63–64% citing risk), with manufacturing and telemarketing also flagged, but less so. Job Creation Outlook Is Mixed. Just over half (~52%) believe AI's impact on jobs will vary by industry, while opinions are split among those who feel AI will either create more jobs (25%) or eliminate them (27%), indicating uncertainty about net employment effects.

While respondents see AI as a powerful catalyst for efficiency and creativity, they also recognize that job-related risks and opportunities will differ across fields. Emphasizing data literacy, adaptability, programming fluency, and creative problem-solving is essential for navigating this evolving landscape.

II. Recommendations

Launch Targeted Upskilling and Reskilling Programs. Provide training in data analysis, programming/AI development, and digital literacy, supporting the ~60% of respondents who see data and tech skills as essential. Focus on Human-Centric Soft Skills: Develop creativity, emotional intelligence,

communication, adaptability, and problem-solving, which respondents value highly (up to ~47%) and which AI cannot easily replicate. Address Job Displacement Risks Since roles like data entry, legal/research, and routine processing are seen as most vulnerable (~63–64%) reinforce pathways into higher-value functions or entirely new roles through role redesign and mobility. Cultivate a Culture of Continuous Learning. Encourage lifelong learning and curiosity (as Bill Gates advocates) through micro-learning, mentorships, and reverse mentoring—especially to ease concern over job obsolescence or FOMO. Embed AI Literacy and Tool Adoption. Familiarize employees with basic AI tools and workflows—like KPMG’s internal training—so they can work with AI rather than fear it, boosting productivity and innovation. Communicate Strategy and Purpose Share a clear vision about how AI will augment roles rather than replace them, alleviating anxiety and promoting trust within the workforce. Build Ethical Oversight and Governance Ensure ethical frameworks and accountability mechanisms are in place to govern AI use responsibly and maintain worker wellbeing and trust.

Plan Workforce Transition Strategically Recognize that job displacement and creation vary by sector. Facilitate redeployment opportunities and partner with educational institutions or government initiatives to support transitions. Given widespread familiarity and belief in AI’s potential, organizations should leverage these perceptions through proactive training, transparent communication, and robust human–AI collaboration strategies. This ensures the workforce can thrive in roles where uniquely human qualities like creativity and judgment add the most value.

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