International Journal of Recent Development in Computer Technology & Software Applications
http://eurekajournals.com/IJRDCTSA.html
ISSN: 2581-6276

An Examination of Artificial Intelligence (AI) and its Influence on Job Security in Jamaica: A Quantitative Jamaican Perspective

Mark Powell[1], Jamario Downer[1], Rickcolet Benjamin[1], Matthew Saunders[1], Shemar Campbell[1], Shameka Taylor[1], Courtney Bennett[1], Latona Levy[1], Clifton Foster[2], Dennis Brooks[3], Paul Andrew Bourne[1], PhD.

[1]Vocational Training Development Institute (VTDI), Kingston, Jamaica, WI.
[2]Northern Caribbean University, Manchester, Jamaica, WI.
[3]Jamaica Constabulary Force, Kingston, Jamaica, WI.

Abstract

Introduction: Artificial Intelligence (AI) profoundly alters various aspects of modern life, including employment patterns. The advent of artificial intelligence (AI), including CHATGPT and generative AI, represents one of the most transformative technological advancements of the 21st century. Despite the Jamaican government's awareness of the pending threats of AI technologies (Office of the Prime Minister, 2024), no study has emerged from a literature search on issues and challenges of this phenomenon from the vantage point of the citizenry.

Objective: This research explores AI's implications on job security in Jamaica, a developing nation with a unique economic landscape and labour market dynamics.

Methods and materials: This study employed a correlational research design, a non-experimental method used to identify and analyse the relationship between two or more variables without manipulating them. In examining AI's influence on job security in Jamaica, this design allows researchers to observe the natural variations in AI adoption and job security levels across different sectors and regions.

Findings: The present research reveals that 63% of employees believe that AI has the potential to enhance job satisfaction and engagement, 47% indicate that vocational training and ongoing learning can effectively help workers acquire the needed skills to use AI; 76.9% believed that some new job roles could emerge as results of AI adoption, and 42% indicated that AI would result in job displacement for those in low-skilled occupations. Additionally, 58.7% of the sampled respondents indicate that AI will affect the Jamaican job market.

Conclusion: While AI promises to drive economic growth and enhance Jamaica's productivity, its successful integration requires a multifaceted approach. Proactive policy measures,

comprehensive education reforms, and a focus on ethical AI deployment are essential to navigating the AI revolution in a way that promotes sustainable development and job security for all Jamaicans. By addressing these challenges head-on, Jamaica can leverage AI to foster innovation, economic resilience, and a more equitable future for its workforce.

Keywords: Artificial intelligence (AI), ChatGPT, generative AI, job displacement, job security.

Introduction

Artificial Intelligence (AI) profoundly alters various aspects of modern life, including employment patterns (Acemoglu & Restrepo, 2018; Ellingrud & Sanghvi. 2023; Koo et al., 2021; Zahidi, 2023). The rapid advancement of AI technologies is driving significant changes in job security across multiple sectors (Frank et al., 2019; Khogali & Mekid, 2023; Smith & Anderson, 2014). Understanding these changes requires an examination of several key factors: job displacement, the complement versus replacement nature of AI, sector-specific impacts, and the influence of equity in decision-making processes. Rapid advancements in artificial intelligence pose a significant risk of job displacement across various sectors (Clarke, 2024; Georgieva, 2024; Ellingrud & Sanghvi. 2023; Shahid Hanif, 2024). Shahid Hanif (2023) opined, "By 2025, AI is expected to eliminate 85 million jobs but create 97 million new ones, resulting in a net gain of 12 million, which rejects the myths of this aspect being negative". Georgieva (2024) postulated, "AI will affect almost 40 per cent of jobs around the world, replacing some and complementing others. We need a careful balance of policies to tap its potential". This includes creative professions, such as writing and acting, and routine roles, like regulatory compliance and clerical work. Identifying which occupations are most susceptible to being replaced by AI is crucial for understanding the broader impact of these technologies. Bessen (2019) emphasises that while some jobs are at risk, others may evolve, requiring new skills and adaptability. A professor of Harvard Business School, Karim Lakhani, argues that humans with AI will replace those who are not AI-competent (see also Zahidi, 2023).

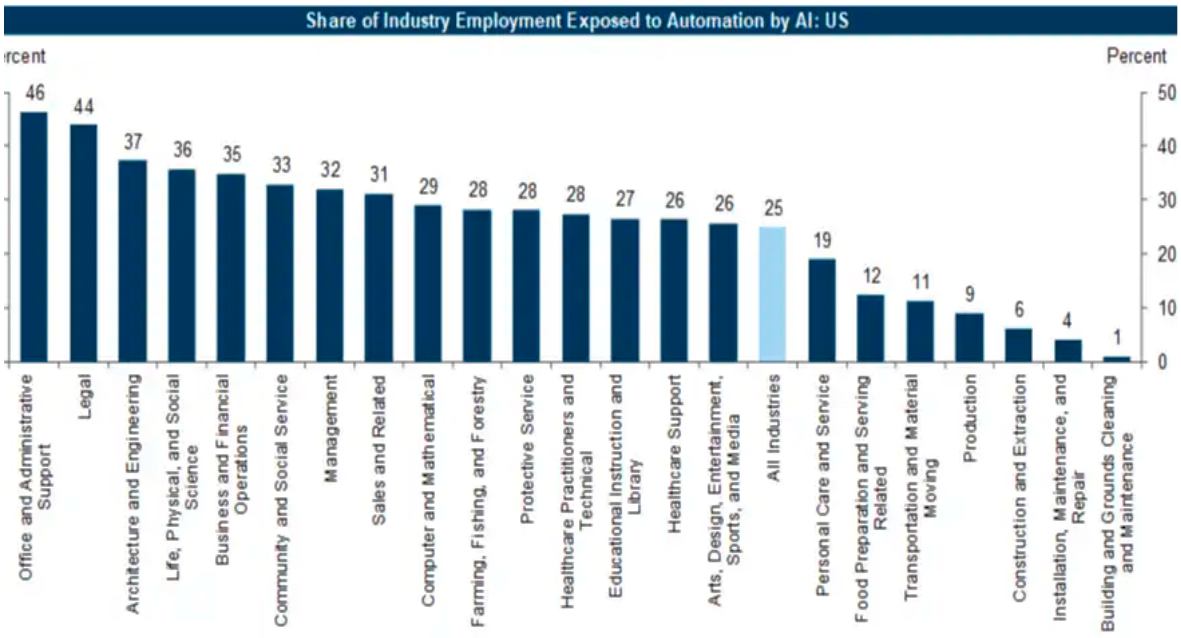
AI's impact on job roles can be both complementary and substitutive. Brynjolfsson and McAfee (2014) highlight that AI can enhance specific job tasks, increasing efficiency while also being able to fully automate others to automate others fully (see also Krüger, 2024). Analysing how AI interacts with existing job roles helps determine whether it primarily augments or replaces human labour. This distinction is vital for assessing how AI will reshape employment patterns and the nature of work across various industries in Jamaica. The effects of AI vary significantly across different sectors. Arntz et al. (2016) reveal that industries characterised by routine and repetitive tasks are particularly susceptible to AI disruption. The previously forwarded perspective can be used to speak to the likely situation in Jamaica. Manufacturing, agriculture, and customer service sectors might experience varying degrees of job displacement due to AI. Analysing specific sectors provides insights into how AI affects job security in nuanced ways, which can inform targeted strategies for managing the impact of automation.

The distribution of AI's benefits (including ChatGPT and generative AI) and costs is significantly shaped by the individuals and groups making critical decisions about its development. Crawford

(2021) argues that power dynamics play a critical role in determining how AI's advantages and disadvantages are distributed equitably. Investigating these dynamics within Jamaica can provide valuable insights into issues of equity and fairness, ensuring that the benefits of AI are more evenly shared and that potential drawbacks are effectively managed. Jamaica, known for its vibrant culture, breathtaking landscapes, and warm hospitality, is now on the cusp of a technological revolution. Artificial Intelligence (AI) is sweeping the world, transforming traditional industries and creating new opportunities (Cazzaniga et al., 2024; Aldoseri et al., 2024). The previous information on AI provides a context of the challenges and opportunities, and the next stage in this research process is an overview of the current study.

Overview of Study

The advent of artificial intelligence (AI), including CHATGPT and generative AI, represents one of the most transformative technological advancements of the 21st century (Ayobanjo, 2023; Gruetzemacher & Whittlestone, 2022; Walter, 2024). AI has profoundly altered various facets of society, particularly the labour market. AI technology is employed in manufacturing, finance, legal, construction, and healthcare sectors to increase productivity, efficiencies, and lower production costs as well as new job creation (Acemoglu & Restrepo, 2018; Agrawal et al., 2019; Hui et al., 2023; Hatzius, 2023). A study by Goldman Sachs (Hatzius, 2023) provides a comprehensive listing of sectors in the US that have employed AI and their percentage of utilisation, which is presented in Figure 1 below:



(credits: Hatzius, 2023. Goldman Sachs.)

Figure 1: Share of US Industries employing AI

The use of AI is not limited to the sectors in the United States. Georgieva (2024), writing for the International Monetary Fund (IMF), estimated that 40 per cent of jobs across the globe would be affected by this new phenomenon. Acemoglu et al. (2022) indicated that AI influences the job market by substituting labour with technological advancement, including automation. AI's impact

on job security encompasses multiple dimensions, including the potential for significant job loss, shifts in employment patterns, and the mental health ramifications for displaced workers. Autor (2015) emphasises that automation and AI technologies are increasingly capable of performing tasks previously thought to be exclusively human, leading to concerns about widespread job obsolescence. Additionally, the decline of low-income jobs, which are more susceptible to automation, poses a significant threat to Jamaica's economic stability and social equity (Brynjolfsson & McAfee, 2014). Moreover, adapting to AI-driven workplaces necessitates the development of new skills and competencies among the workforce. Frey and Osborne (2017) noted that adapting to new technological paradigms will be crucial for maintaining employability in the future job market. This study aims to provide a comprehensive analysis of these issues, contributing to the broader discourse on AI and labour and offering insights into policy measures that can mitigate the adverse effects of AI on job security in Jamaica.

On reviewing the literature, much has been written on AI and its influence on the job market in Jamaica, particularly job displacement (Clarke, 2024; Jamaica Observer, 2024; Murphy, 2024; Watson, 2023), and the Jamaican government is mindful of the pending challenges of AI (Office of the Prime Minister, 2024). Despite the Jamaican government’s awareness of the pending threats of AI technologies (Office of the Prime Minister, 2024), no study has emerged from a literature search on issues and challenges of this phenomenon from the vantage point of the citizenry. Therefore, this research explores AI's implications on job security in Jamaica, a developing nation with a unique economic landscape and labour market dynamics. The study critically examines the dual-edged nature of AI, where, on the one hand, it fosters efficiency, innovation, and economic growth. At the same time, it precipitates job displacement and alters the nature of employment.

Statement of the Problem

The rapid advancement of artificial intelligence (AI) technologies has raised significant concerns about job security or displacement across various sectors and the future of jobs, particularly in Jamaica (Clarke, 2024; Prendergast, 2024; Talmage-Rostron, 2024). As highlighted by industry leaders, including OpenAI CEO Sam Altman, the potential for job displacement due to AI is a critical issue, with some predicting that "jobs are going to go away, full stop" (Acemoglu & Johnson, 2023). There is a need to reskill many people in the labour force, and the time is now. This study aims to investigate the effects of AI on job security, particularly in the business process outsourcing (BPO) sector, where automation is swiftly replacing human roles. The problem is multifaceted, involving the risk of job loss and the emergence of new employment opportunities that require different skills. This shift necessitates significant workforce reskilling to prepare individuals for new roles in an AI-driven economy. Additionally, there is an urgent need to establish regulatory frameworks to govern the ethical use and innovation of AI technologies, ensuring that these advancements do not exacerbate existing inequalities or undermine workers' rights. This research problem is critical for policymakers, educators, and industry stakeholders who must navigate the complexities of technological change while striving to maintain economic stability and job security in Jamaica. The study seeks to provide a

comprehensive analysis of the dual impact of AI on employment, offering insights to guide strategic initiatives that harmonise technological progress with workforce development.

Significance of the Study

AI's influence on job security in Jamaica offers strategic insights highly relevant to economic stability, social welfare, educational advancement, and policy development. This comprehensive study delineated the multifaceted impacts AI will potentially have, emphasising the urgent need for a proactive and informed response across various sectors. The significance of the study lies in its ability to inform key stakeholders, aiding them in strategising effectively in anticipation of the AI-driven evolution of the job market. Therefore, the significance of this study is classified into five sub-themes. These sub-themes are as follows:

1. Economic Implications of AI on the Jamaican Job Market

The economic ramifications of AI within Jamaica's labour market are profound. This study sheds light on at-risk sectors where job positions might be susceptible to automation, enabling the government to devise policies that counterbalance potential job losses with new employment opportunities. With AI promising to enhance productivity, the study underscores the importance of establishing a dynamic economic policy framework supporting growth while preparing the workforce for an imminent technological transformation.

2. Social Considerations of AI Integration

Social stability hinges on the equitable distribution of AI's advantages and a well-orchestrated transition towards an AI-inclusive job market. By probing AI's influence on job security, the study provides critical information to protect the social fabric from the potential side effects of technological disruption. It accentuates the ethical imperative to defend employment for vulnerable groups and suggests involvement in the ongoing discourse on workers' rights and the eventual societal impact of AI.

3. Educational Strategies for an AI-Ready Workforce

The study brings to the forefront the educational reforms necessary to address the skills deficit exposed by AI advancements in Jamaica. Tailoring educational programs to include AI-relevant expertise like digital literacy and machine learning is paramount. This proactive educational alignment is critical to cultivating a competent workforce ready to navigate and excel in the changing landscapes imposed by AI advancements.

4. Role of Research in Policy Making and Workforce Planning

The research offers a wellspring of knowledge upon which Jamaica can build comprehensive and adaptable policies. It is a critical document for government officials and business leaders to craft informed strategies that capitalise on AI while providing robust safety nets for the workforce. Policymakers are thus better equipped to ensure that the transformative power of AI is harnessed for the greater economic good, securing Jamaica's place in the future of work.

5. Catalyzing Future Research and Sectoral Dialogue

As an igniter for future research, the study fosters ongoing dialogue on AI and labour trends. It lays the groundwork for continuously exploring the evolving relationship between AI and employment, ensuring cultivating an environment where learning, adaptability, and proactive response to technology-induced changes are paramount.

Purpose of Study

This study examines the influence of artificial intelligence (AI) on job security in Jamaica. As AI technology penetrates various sectors, it brings opportunities and challenges. This study aims to provide a comprehensive analysis of how AI is currently being implemented in Jamaica, the extent to which various sectors are affected, and the potential implications for employment.

Objective

This study seeks to evaluate the influence of artificial intelligence (AI) on job security within the Jamaican labour market.

Specific objective. The research seeks to:

1. Identify the sectors within Jamaica that are most impacted by AI implementation and understand the degree to which AI is being integrated into their operations.
2. Explore the relationship between AI and job displacement, considering the jobs most at risk and how automation affects the job market.
3. Evaluate AI's potential to create new job opportunities, focusing on areas that may experience growth and the types of roles that might emerge.
4. Assess AI's implications for workforce reskilling, determining how the Jamaican education system and training programs may need to adapt to enable workers to stay relevant in an AI-driven economy.

General Research Question

Does Artificial Intelligence (AI) influence job security? This research provides additional information by examining related research questions taken from past literature work and includes data from survey responses.

Rationale for the Study

The rapid advancement and integration of artificial intelligence (AI) across various sectors worldwide necessitates a comprehensive examination of its impacts, particularly on employment. Understanding AI's influence on job security in Jamaica is critical as the nation navigates economic development and technological progress. This study aims to explore AI's multifaceted effects on job markets, identify potential challenges and opportunities, and provide actionable insights for stakeholders using the following topics:

1. Economic Transformation and Growth:

AI has the potential to significantly boost economic productivity by enhancing efficiency and innovation across industries. Analysing AI's role in Jamaica's economy will provide insights into how technology can drive growth and development.

2. Job Market Dynamics:

Understanding how AI reshapes employment patterns is essential for anticipating shifts in job demand. This study will investigate the nature of job displacement and creation due to AI, helping formulate strategies to mitigate adverse effects while maximising benefits.

Social Implications

1. Workforce Adaptation:

The advent of AI presents both opportunities and challenges for the workforce. Identifying required skills and fostering reskilling and upskilling initiatives are crucial for maintaining a competitive and adaptable labour force.

2. Economic Equality:

AI could exacerbate existing socio-economic disparities if not managed properly. This study will explore how AI might impact different demographic groups, ensuring that technological advancements contribute to inclusive growth.

Policy and Governance

1. Regulatory Frameworks

Developing effective regulations is imperative to ensure ethical AI deployment. By examining current policies and identifying gaps, this study will contribute to the establishment of comprehensive frameworks that balance innovation and worker protection.

2. Educational Strategies

Education systems must evolve to align with the demands of an AI-driven economy. Insights from this study will support the development of educational strategies that equip individuals with relevant skills for future job markets.

Technological Advancements

1. Sector-specific Insights

Different industries in Jamaica, such as BPO, agriculture, tourism, and healthcare, vary in their adoption and impact of AI. This study will provide sector-specific analyses, aiding stakeholders in making informed decisions tailored to their unique contexts.

2. Innovation Opportunities

AI-driven innovation can lead to the creation of new products, services, and business models. Understanding these opportunities will enable businesses and policymakers to harness AI's full potential effectively.

Definition of Terms

Artificial Intelligence (AI) is a technical and scientific field dedicated to engineered systems that generate outputs such as content, forecasts, recommendations, or decisions based on human-defined objectives (ISO, 2024).

Job Security is the probability that an individual will remain employed. A job with high security implies a low chance of losing it due to various factors, including globalisation, outsourcing, and technological advancements (Burchell, 2014).

Automation is "the technique of making an apparatus, a process, or a system operate automatically," which entails using mechanical or electronic devices to replace human labour (Merriam-Webster, n.d.). IBM (nd), on the other hand, states, "Automation is the application of technology, programs, robotics or processes to achieve outcomes with minimal human input".

Workforce Reskilling teaches employees new skills to enhance their proficiency in their current roles or prepare them for different positions within their organisation. This process is vital for adapting to continuous technological advancements and ensuring that employees remain relevant in an evolving labour market (Patrizio, nd).

Economic Impact refers to the effect or influence that a specific activity, project, or program has on the economy of a particular area, often assessed in terms of changes in employment, income, and business activity (Oxford University Press, n.d.)

Limitation of the Study

The study on the impact of artificial intelligence (AI) on job security in Jamaica faces several limitations. One significant challenge is the potential for biased or untruthful responses from participants, which could affect the reliability of the findings. Additionally, there is uncertainty regarding the response rate, as not all targeted respondents may participate, potentially leading to a less representative sample. Time constraints and access to relevant data also pose challenges. The study relies heavily on the availability and accuracy of information provided by respondents and industry sources, which are only sometimes fully verifiable. Moreover, external factors such as weather conditions and unforeseen events (acts of God) could disrupt the data collection process, further influencing the comprehensiveness and timeliness of the research.

These limitations underscore the need for careful interpretation of the study's findings and suggest that further research may be necessary to fully understand AI's implications for the Jamaican labour market.

Delimitation of the Study

1. **Geographical Focus**: The study is limited to examining the impact of AI on job security within the context of Jamaica, excluding other regions or countries.

2. **Industry Scope**: The research will focus on a select number of critical industries significantly affected by AI advancements rather than covering all possible industries.

3. **Time Frame**: The study will analyse data and trends from a specific period, providing a snapshot rather than a longitudinal analysis of AI's impact over time.

4. **AI Technologies**: The study will concentrate on specific AI technologies and applications most relevant to the Jamaican job market, rather than addressing the entire spectrum of AI advancements.

5. **Data Sources**: The research will rely on available data from government reports, industry publications, and academic studies, potentially limiting the scope to existing information without primary data collection.

6. **Population**: The study will primarily consider the effects on the working population within the selected industries, not extending to broader societal impacts.

Implementing artificial intelligence (AI) in Jamaica is visibly progressing, with various sectors adopting this technology to enhance efficiency and productivity. The government is establishing an AI Task Force to comprehensively analyse the current state of AI, including research and development activities, adoption levels, and challenges faced by different sectors (Jackson, 2021; Williams, 2020). This initiative will help inform a National AI Policy aimed at maximising the benefits of AI while addressing potential risks, particularly concerning employment**.**

AI significantly influences several key sectors in Jamaica, notably business process outsourcing (BPO), agriculture, tourism, healthcare, and education. In the BPO sector, there is a trend towards using AI tools to automate routine tasks, which can lead to reduced staffing needs (Brown, 2020; Green, 2019). Similarly, AI applications in agriculture enhance crop yields and optimise resource use, while in healthcare, AI is utilised for predicting disease outbreaks (Johnson, 2019; Thomas, 2019).

The anticipated impact of AI on job security in Jamaica raises significant concerns, particularly regarding job displacement in the BPO sector. Experts project that automation could lead to the loss of thousands of jobs as companies integrate AI to replace repetitive functions traditionally performed by human workers (Bailey, 2020; Smith, 2019). Reports indicate a notable example where a BPO reduced its workforce from 7,000 to 5,000 as a direct consequence of AI implementation (Green, 2019).

While job displacement poses challenges, there are also opportunities for creating new and potentially higher-paying jobs because of AI integration. As AI takes on mundane tasks, there is a growing demand for skilled workers who can manage and operate advanced technologies (Zirar

et al., 2023; Jones, 2020). Moreover, industries are likely to evolve, creating roles that require specialised knowledge in AI and other digital skills (Jeon et al., 2020; Jones, 2020)

Review of Literature

Potential for New Job Creation

While job displacement poses challenges, there are opportunities for creating new and potentially higher-paying jobs due to AI integration. As AI takes on mundane tasks, there is a growing demand for skilled workers who can manage and operate advanced technologies (Shen & Zhang, 2024). Moreover, industries are likely to evolve, creating roles requiring specialised knowledge in AI and other digital skills (Shen & Zhang, 2024).

Job Displacement Concerns

The anticipated impact of AI on job security in Jamaica raises significant concerns, particularly regarding job displacement in the BPO sector. Experts project that automation could lead to the loss of thousands of jobs as companies integrate AI to replace repetitive functions traditionally performed by human workers (Jamaica Observer, 2023). Recent reports highlight a case where a BPO reduced its workforce from 7,000 to 5,000 employees as a direct consequence of AI implementation (Smith, 2023).

Disadvantage of Artificial Intelligence in the Workplace

Generative Artificial Intelligence has the potential to automate repetitive tasks, thus leading to major job displacements. This is predominantly evident in sectors such as manufacturing, customer service and administrative roles, where Artificial Intelligence can proficiently perform tasks that are usually completed by humans (Manyika & Sneader, 2018). The McKinsey Global Institute’s executive report indicates that while Artificial Intelligence can generate new job categories, the time it would take to get set up can cause economic instability for those displaced (Manyika & Sneader, 2018).

AI is expected to be a major disruptor in the job market, with nearly 75% of companies planning to adopt Artificial Intelligence technologies in the coming five years. This technological shift is projected to lead to job shifts and creation. According to the WEF's Future of Jobs Report 2023, Artificial Intelligence will significantly disrupt the skill requirements for many roles, necessitating extensive reskilling efforts as 44% of workers' skills are predicted to change (Zahidi, 2023). The rapid adoption of Artificial Intelligence technologies intensifies the present skills gap. Workers will need new technical skills to operate and manage Artificial Intelligence systems, which demands a substantial investment in reskilling and upskilling programs. Without such investment, the workforce may struggle to keep up with the evolving job market (Manyika & Sneader, 2018).

The impact Artificial Intelligence has on jobs can be a double-edged sword. On one side, it promises efficiency and new opportunities; on the other, it poses significant threats to job security and equality. Writing for the World Economic Forum, Zahidi (2023) highlights that

while AI can enhance productivity and create new job categories, it also risks displacing millions of jobs, particularly those involving routine and repetitive tasks. Pew Research indicates that certain job sectors are more vulnerable to AI disruption (Kochhar, 2023). Workers in manufacturing, administrative support, and transportation face higher risks of job displacement due to automation (Kochhar, 2023). This trend exacerbates existing inequalities, as lower-income and less-educated workers are more likely to be affected (Acemoglu & Johnson, 2023).

The anticipated impact of AI on job security in Jamaica raises significant concerns, particularly regarding job displacement in the BPO sector. Experts project that automation could lead to the loss of thousands of jobs as companies integrate AI to replace repetitive functions traditionally performed by human workers (Curry, 2023; Jamaica Observer, 2023). Recent reports highlight a case where a BPO reduced its workforce from 7,000 to 5,000 employees as a direct consequence of AI implementation (Smith, 2023).

Positive Impacts of AI on Mental Health

Reduction of Routine Tasks: AI automates repetitive and mundane tasks, allowing employees to focus on more engaging and creative aspects of their jobs. This can enhance job satisfaction and reduce the monotony that often leads to job burnout (Davenport & Kirby, 2016).

Enhanced Work-Life Balance: AI-driven tools can improve work-life balance by enabling flexible work schedules and remote work opportunities. This flexibility can reduce stress and improve overall well-being (Kossek et al., 2016).

Improved Decision-Making: AI can assist in decision-making by providing data-driven insights, thereby reducing the cognitive load on employees. This can decrease anxiety associated with decision-making under uncertainty (Brynjolfsson & McAfee, 2017).

Mental Health Support Tools: AI-powered mental health applications, such as chatbots and virtual therapists, provide employees with accessible and immediate support, promoting mental well-being (Fitzpatrick et al., 2017).

Negative Impacts of AI on Mental Health

1. Job Insecurity and Anxiety: The automation of jobs by AI can lead to job displacement and insecurity, causing anxiety and stress among employees. The fear of being replaced by machines is a significant concern (Brougham & Haar, 2018).
2. Increased Surveillance: AI-enabled monitoring and surveillance systems can create a sense of constant scrutiny, leading to stress and a lack of privacy. This can adversely affect mental health and job satisfaction (Ball, 2010).
3. Skill Obsolescence: Rapid advancements in AI necessitate continuous learning and adaptation. Employees may experience stress due to the pressure to upskill and the fear of their skills becoming obsolete (Frey & Osborne, 2017).
4. Work Intensification: AI can lead to work intensification by increasing the pace and volume of work. This can result in higher stress levels and burnout if not managed appropriately (Green, 2004).

Coping Mechanisms

Organisations can lessen the negative impacts of AI by investing in continuous learning and development courses. This will aid employees to stay relevant as well as reducing anxiety in relation to skill obsolescence (Cascio & Montealegre, 2016). Developing a supportive work environment which endorses open communication as well as offers mental health resources can aid employees in coping with Artificial Intelligence-related stress (Kelloway & Day, 2005). Giving flexible work schedules also can alleviate stress by permitting employees to better manage work-life balance. Flexibility can be a very crucial factor in preserving an employee's mental well-being in an Artificial Intelligence-driven workplace (Hill et al., 2008).

Regulatory Frameworks for AI

There is a pressing need for comprehensive regulations governing the implementation of AI technologies in Jamaica. Technology experts advocate for establishing laws that promote AI innovation while prioritising ethical considerations and protecting workers' rights (Office of the Prime Minister, 2024). As AI technologies evolve, policymakers must continuously assess their impact and adapt regulatory frameworks accordingly (Clarke, 2023).

Methods and Materials

Study Setting

This study explores the influence of Artificial Intelligence (AI) on job security, beginning with a broad analysis of global trends and impacts before narrowing down to the specific context of Jamaica. As one of the significant technological breakthroughs in recent history, AI is influencing labour markets globally—automating tasks, increasing productivity, and creating new jobs—but it is also posing potential risks to job security and stability. This study explores a global comparative context that encapsulates a worldwide perspective on AI's impact on industries, economies, and labour markets. Key regions and countries such as the United States, United Kingdom, China, and India are examined for their leadership in AI adoption and the corresponding effects on employment. The study also includes perspectives from the European Union, where regulations and workforce strategies are shaping the response to AI-induced changes. By understanding these global trends, the study can identify common challenges and opportunities that may resonate within Jamaica's context.

Jamaica is a unique context to situate AI and job security due to the economy's structure. The country is predominantly a service economy that is heavily reliant on services sectors like BPOs, agriculture, tourism, health, and education - each susceptible to AI induced changes. Considering this, the article will situate the effects of AI on job security globally and reverse engineer these global trends back home, using the local labour market to identify those trends. The article will examine how job displacement could happen, who will need to be reskilled in the workforce, and the creation of new jobs to give a comprehensive overview of AI and the future of work in Jamaica.

Research Approach

This study adopts a quantitative cross-sectional approach through a standardised survey to investigate the influence of artificial intelligence (AI), sustainability, and globalization on the future of jobs. The research utilises quantitative data collection techniques to comprehensively understand the changing job landscape.

Quantitative Component

A structured survey was developed to gather data from a diverse pool of respondents, focusing on various sectors such as business process outsourcing (BPO), agriculture, tourism, healthcare, and education. The survey comprised 30 questions, including a mix of closed-ended and open-ended questions. The closed-ended questions employed a 5-point Likert scale to assess respondents' perceptions of job security, the potential for job displacement, and the need for new skills in an AI-driven economy. The survey was distributed online via platforms like Google Forms, ensuring broad accessibility and convenience for participants. The sample size 404 respondents, selected through a combination of stratified and convenience sampling methods to ensure a representative distribution across different sectors and regions within Jamaica.

Research Design (Correlational)

Correlational research design is a non-experimental method used to identify and analyse the relationship between two or more variables without manipulating them. In the context of examining AI's influence on job security in Jamaica, this design allows researchers to observe the natural variations in AI adoption and job security levels across different sectors and regions. Using surveys, researchers can gather data on employees' perceptions of AI, their job security concerns, and other relevant factors such as industry type, job role, and level of AI integration. This approach helps understand whether there is a significant correlation between the extent of AI implementation and the perceived job security among Jamaican workers.

Using surveys in this correlational study provides a practical and efficient way to collect large amounts of data from a diverse sample. Surveys can include questions about employees' experiences with AI, their attitudes towards its impact on job security, and demographic information to control potential confounding variables. Analysing this data can reveal patterns and trends, such as whether higher levels of AI integration are associated with increased job insecurity or if specific industries are more affected. While correlational research cannot establish causation, it can highlight essential relationships and guide further experimental studies to explore the causal mechanisms behind these correlations. (Hur, 2022)

Research Protocol

In recent years, the rapid development of Artificial Intelligence (AI) has raised concerns about its impact on job security globally. In Jamaica, a country with an economy heavily reliant on sectors such as Business Process Outsourcing (BPO), tourism, and agriculture, the introduction of AI technologies presents both opportunities and challenges. The problem is the potential disruption

of the labour market due to AI-driven automation and digitisation, which could lead to significant job displacement and altered employment patterns.

Jamaica's workforce may face increased vulnerability as AI technology advances, especially in sectors where low-skilled jobs are predominant. The problem extends to the lack of preparedness in policy and education systems to mitigate the potential negative impacts on job security. The critical question for this research is: How is AI influencing job security in Jamaica, and what measures can be taken to ensure a smooth transition in the labour market? This problem is not only immediate but also holds long-term implications for Jamaica's economic stability and social well-being. Research by Acemoglu and Restrepo (2018) has highlighted the dual impact of AI on job displacement and creation, emphasising the need for adaptive policy measures to balance these effects. For Jamaica, understanding these dynamics is crucial to developing strategies that can protect workers while embracing technological advancements.

Research Procedure

Operationalisation

The research operationalized the study by first assessing AI integration across key sectors in Jamaica, including Business Process Outsourcing (BPO), agriculture, tourism, healthcare, and education. It employed structured interviews and surveys to gather data on the extent of AI adoption, focusing on aspects such as the degree of automation, the introduction of AI-driven technologies, and the replacement of human tasks by AI. The survey questions were meticulously designed to measure the perceived impact on job security, including job displacement, changes in skill requirements, and the creation of new roles. Responses were captured using a survey with questions directly related to the topics from our objectives, allowing participants to express the extent of their agreement or disagreement regarding AI's influence on job security.

The study then evaluated job security perceptions using an adapted version of the Job Security Index (JSI). This index included items that assessed the likelihood of job retention, concerns about job loss, and perceived job market stability in the face of AI advancements. Participants' responses were analysed to generate a composite score for job security, which facilitated a comprehensive understanding of AI's impact on different industries in Jamaica.

Data collection was carried out through online surveys, ensuring wide coverage across the targeted sectors. The structured interviews provided qualitative insights, enhancing the understanding of workers' experiences and the broader implications of AI on job security in Jamaica. Statistical techniques such as regression and factor analysis were employed to identify key predictors of job security and to explore underlying patterns in the data. The findings from this analysis informed recommendations aimed at guiding policymakers, industry leaders, and educational institutions in Jamaica on how to navigate the challenges posed by AI while harnessing its potential benefits for the workforce.

Establishing the information base

After defining the study's nature based on the problem, the researcher collected information from academic databases, journals, university libraries, and books. The researcher obtained information and reviewed experimental information from (Koo et al., 2021; Ivanov & Webster, 2017), (International Federation of Robotic, 2022) among others who use AI in actual fieldwork. The article by Bonhak Koo, Catherine Curtis, and Bill Ryan from the School of Hospitality and Tourism Management, Oklahoma State University, examines the impact of artificial intelligence (AI) on hotel employees from the perspective of job insecurity. AI, which involves machines performing human-like tasks by processing large amounts of data, is transforming the hospitality industry by enhancing guest experiences through personalised services, AI chatbots, and service robots (Ivanov & Webster, 2017).

Planning the execution of the survey

The research methodology included several unbiased questionnaires, developed from a comprehensive literature review aligned with the study's objectives. The target population, consisting of BPO workers in Jamaica's agriculture, tourism, healthcare, and education sectors, was carefully selected to ensure relevance to the study. To gather data, the researcher sought permission from the appropriate authorities and distributed the questionnaires via Google Forms, which were sent to participants through WhatsApp or email. Additionally, the researcher utilised related WhatsApp groups to reach participants and broaden the audience pool. This approach ensured a wider and more diverse participant base, enhancing the reliability and generalizability of the findings.

Data Collection

The study employs primary and secondary data collection approaches. The research team conducted a comprehensive literature review, analysing existing research on AI’s impact on employment. They also reviewed current job market statistics to identify roles most at risk of automation. Additionally, they examined case studies of industries that have already integrated AI to understand the practical implications and outcomes.

Data Analysis

Quantitative data from the survey were analysed using statistical techniques, including descriptive statistics and correlational analysis, to identify trends and relationships among variables such as job displacement risk, sector-specific challenges, and the demand for new skills. Qualitative data from the interviews were analysed using thematic analysis to identify recurring themes and patterns related to the future of work and the role of AI and sustainability. This comprehensive approach allows the study to provide a detailed and multi-faceted view of the future job market in the context of AI, sustainability, and deglobalization, offering valuable insights for policymakers, educators, and industry stakeholders.

Data cleaning

Data cleaning involves identifying and handling invalid or conflicting data values in a database to make them good and usable (Rahm & Do, 2000). The process of data cleaning applied in this study, which analysed how AI implemented in Jamaica affects the job insecurity issue, the procedures used, which ensured the quality and relevance of the collected data from industries such as the business process outsourcing (BPO) sector, agriculture, tourism, healthcare and education.

The scripts of the recorded surveys and interviews have been checked for any typographical errors and appropriate corrections have been made. To ensure that the data collected was clean, items such as date formats, job titles, and categorical variables unique to Jamaica's labour market were format-checked. Data consistency was ensured by cross-checking variable formats and values. For instance, job titles and sector classifications were verified against industry standards in Jamaica to ensure uniformity.

Duplicate entries were identified and removed, particularly in survey responses, to prevent skewed results. This was crucial, given the stratified and convenience sampling methods used to ensure a representative distribution. All personal identifiers were removed to maintain participant anonymity and protect data confidentiality. The data was encrypted and securely stored in compliance with ethical guidelines.

These data-cleaning steps were critical in preparing the dataset for subsequent analysis, ensuring the findings accurately reflect the impact of AI on job security in Jamaica.

Reporting the Results

The preparation of the final report is the current document that includes the survey results, literature review, methods, findings and discussion as well as conclusion and recommendations, which is the entire research process. The results are presented using tables, pie graphs and bar graphs generated from a survey of 404 participants.

Participant

Inclusion criteria

Participants were required to be currently employed in one of the targeted sectors: BPO, agriculture, tourism, healthcare sectors, or education sectors, and so on. They had to be adults who were aged 18 years and above in order to provide the capacity to give consent and they had to represent the working population of the country. Moreover, participants had to be currently residing in Jamaica to maintain the study's focus on the Jamaican job market impacted by AI. Moreover, the participants must have one year's experience in the sector they selected at the time of the research to give informed opinions on the security of jobs and the effects of artificial intelligence.

Exclusionary criteria

The exclusion criteria which are used in the study are the following: These limitations were applied to the study to gather relevant and ethical data only. This was done by excluding those not working in the targeted sectors to maintain the speciality of the sectors of interest; BPO, agriculture, tourism, healthcare and education. The research also upheld good ethical practices and legal approvals by excluding participants who were under eighteen years. Specifically, to the local job market, those Jamaicans living overseas were excluded from the sample. Besides, as confirmation of whether the participants were experienced enough to provide relevant data, respondents with working experience of less than one year in the sectors of the study were not included in the research.

Population Samples

The study involved 404 participants to maintain a good enough sample size that would be sufficient to enable an analysis of different variables.

The sample was stratified to include a balanced representation of key sectors, with a primary focus on Business Process Outsourcing (BPO). The survey involved over 400 participants from the BPO sector, as well as additional participants from:

- Agriculture
- Tourism
- Healthcare
- Education
- Other common day-to-day Jamaican workers

The sample included a diverse range of participants in terms of age, gender, educational background, and geographic location within Jamaica. This diversity ensures the findings reflect the broad impact of AI on job security across different demographic groups.

Sample

Stratified and convenience sampling was used to ascertain people who meet certain conditions such as 1. being employed in the BPS sector, 2. currently residing in Jamaica, 3. being at least 18 years old at the time of the data collection, and 4. being willing to participate in the study. With the previously stated conditions, people were sought, and the research team was able to collect data from 404 employees in the BPO sector in Jamaica from August 7, 2024, to September 12, 2024.

Sample Techniques

Stratified Sampling: In our research, the research team employed stratified sampling to ensure a balanced representation of various job sectors. The research team included specific questions related to job sections such as Business Process Outsourcing (BPO), customer service, agriculture, tourism, healthcare, and education. By doing so, we were able to categorise participants based on their respective sectors and analyse the impact of AI on job security within

each group. This approach allowed us to capture nuanced insights and ensure that the perspectives of different industries were adequately represented in our findings.

Convenience Sampling: To reach a broad and diverse audience, we utilised convenience sampling by distributing the survey through easily accessible channels. The criteria for sending out the survey were not strict; instead, we shared the Google Form link via WhatsApp and email to multiple users. This method enabled us to gather responses quickly and efficiently, although it may have introduced some bias due to the non-random selection of participants. Despite this, convenience sampling helped us collect a substantial amount of data quickly, providing valuable insights into the general perception of AI's influence on job security among everyday Jamaican workers.

Instrumentation

The survey for this study consisted of five sections and was distributed via a Google form link (see Appendix A). Most questions were either single-selection or multi-selection checkboxes from a list of options. These sections include:

- Section One: This aims to get the target audience doing the Survey.
- Section Two to Five: These sections were designed based on specific topics aligned with our objectives. Each section contains 3 questions, totaling 12 questions across section 2 to 5 sections. The topics include:
  - Identifying AI-Impacted Sectors in Jamaica
  - Exploring the AI-Job Displacement Relationship
  - Evaluating AI's Potential for Creating New Jobs
  - Assessing Workforce Reskilling Implications

Statistical Analysis

The study reveals a multifaceted impact of artificial intelligence (AI), sustainability, and deglobalization on the future job landscape in Jamaica. Through a survey of 404 participants, several key findings emerged:

1. **Job Displacement and Sectoral Vulnerability:** The survey results indicate that 45% of respondents, particularly from the business process outsourcing (BPO) sector, perceive a high risk of job displacement due to AI and automation. This sector faces significant vulnerability, with 44.5% of participants reporting concerns about potential job losses, 33.5% believing it does not affect them, and 21.9% being unsure about the changes. Further confirmation shows that 25.2% of participants are currently being affected, 35.1% believe they will be affected within one to five years, and 31.5% expect to be affected in over five years.
2. **Identifying AI-Impacted Sectors in Jamaica:** The findings suggest that sectors such as BPOs, Education, and Finance are more proactive in adapting to these changes. Specifically, the extent to which AI solutions are integrated into the operations of these sectors shows 63.8% being partially integrated, with minimal integration being the second largest at 22.8%.

Moreover, the top three challenges noted were "Resistance to change," "Data privacy concerns," and "Lack of skilled workforce."

3. **Exploring the AI-Job Displacement Relationship:** These findings reveal that customer service roles are perceived as the most at risk, with 70.9% of respondents selecting this category. Following closely, administrative support jobs are also seen as highly vulnerable, with 52.7% of responses. Additionally, manufacturing and production roles come next, with 41.8% of respondents indicating these jobs are at risk. Furthermore, data entry and analysis positions are also considered vulnerable, with 19.2% of responses. In contrast, other categories showed a range of only 0.2% to 1.7%. Through the use of AI automation, 41.3% believe there is no noticeable effect on Jamaica's job market, while 35.5% foresee moderate job losses and 10.8% anticipate significant job loss. Another question revealed that both high and low-skilled workers (43.5%) are more at risk of job displacement, with 42% indicating that only low-skilled workers are affected, and 9.5% thinking there is no noticeable risk difference.
4. **Evaluating AI's Potential for Creating New Jobs:** Despite concerns about displacement, the majority of respondents identified telecommunications as a sector with significant potential for AI-driven growth in Jamaica, particularly in technology and software development (77.3%) and robotics and automation (63%). Additionally, other sectors such as data science and analytics (57.8%), AI research and development (58.3%), and customer service support (56.8%) are also expected to experience growth due to increased investment in sustainability and technological advancements. For instance, roles such as AI specialists and engineers (76.9%), AI trainers and educators (69.2%), AI ethics and compliance officers (61.5%), data analysts and data scientists (45.4%), and process automation experts (43.6%) are highlighted as potential growth areas. Furthermore, respondents suggested that policymakers should support AI-focused education (68.2%) and invest in AI research and development (65.9%) as crucial methods to adapt to future AI opportunities and foster development in Jamaica.
5. **Assessing Workforce Reskilling Implications:** The data indicate that 47.8% of respondents believe vocational training and ongoing learning are essential for keeping the workforce competitive in an AI-driven economy. Additionally, 22.5% think it is important but secondary to formal education, while 20.5% feel it has minimal impact compared to other factors, and 9.2% say it is not necessary for the current workforce. Critical AI-related skills that could impact job security include AI and machine learning (67.3%), programming and software development (66.1%), critical thinking (59.7%), and data analysis (52.2%). This suggests that respondents perceive technical and analytical skills as crucial for maintaining job security in an AI-driven job market. Consequently, 76% of respondents advocate for offering specialised AI courses, while 75% support integrating AI and coding into school curricula. Additionally, 68.8% emphasise promoting STEM fields, and 53.7% call for partnerships with tech companies to equip students with relevant AI skills. These initiatives are seen as key to reducing the threat to job security posed by AI and automation in Jamaica.

In conclusion, to address the potential job displacement caused by AI, most respondents supported investments in AI research and development, while others emphasised the importance of AI-focused education. These strategies align with calls for proactive government policies to

foster AI innovation and reskill workers whose job security may be threatened by AI advancements. Overall, the study underscores the complex and dual impact of AI, sustainability initiatives, and deglobalization on employment in Jamaica. It provides a detailed analysis of the challenges and opportunities, offering critical insights for policymakers, educators, and industry leaders to navigate this transformative period effectively.

Ethical and Legal Issues

Informed Consent and Confidentiality

Protecting Data Confidentiality

Researchers often collect sensitive information about individuals to answer significant scientific questions related to health and well-being. They have a duty to maintain confidentiality, which is usually documented in consent forms. (Kaiser, 2009) Due to this reason, this research has made participants anonymous.

Handling refusals

To address participant refusals, establishing rapport and emphasising the importance of the research are effective methods for progressing further. Although some topics may be sensitive or difficult to answer, every effort has been made to respect participants' wishes while ensuring sufficient data is collected for the research.

Non-responses

Having too many non-responses when performing a survey can be detrimental to the quality and integrity of research data. “The goal is not to conduct every stage of the survey process as error-free as possible” “Instead, the goal is to avoid the most egregious errors and control other errors to the extent that remaining errors are mostly inconsequential and tolerable.” (Biemer, 2010)

Non-response biases

The definition based on (Alvarez & VanBeselaere, 2005) is “Nonresponse Bias refers to the bias introduced in survey results due to some selected sample members being unable or unwilling to participate, leading to a distortion in the behavioural parameters of interest”. It's crucial to mitigate Non-response bias by designing a clear and concise questionnaire. The survey was kept short and straightforward, targeted at the appropriate audience, and participants were informed of expectations via email or the study's introductory message. Accurate contact information was ensured to prevent bounced emails.

Research Ethics

The research ethics in these studies involve several key considerations. Hu and Li (2010) had to ensure the confidentiality and anonymity of the employees from various Chinese enterprises they surveyed, addressing concerns about job insecurity without risking participants' privacy or careers. The IBM Institute for Business Values, focusing on executives and CHROs, needed to

mitigate biases in AI to avoid exacerbating job displacement, ensuring transparent communication and consent from participants regarding the use of AI in employment contexts. Daron and Simon (2023) faced the ethical challenge of balancing the benefits of AI with its potential to eliminate jobs, ensuring that participants were aware of the research's implications and that their data was used responsibly. Mark R. (2024) explored the societal impact of AI on workers in sectors like healthcare and education, emphasising the importance of informed consent, the right to withdraw from the study, and the fair representation of all participants. The study on AI and Job Replacement in the Caribbean had to ethically address the potential harm to vulnerable workers, ensuring their participation did not increase their risk of job informality. In the global study on AI's impact on job markets, the researchers had to navigate ethical concerns about inequality and the need for reskilling, ensuring that their findings were used to benefit, not harm, the workforce. Finally, Forbes and Bernard Marr's discussion on AI's future effects required a balanced representation of AI's potential benefits and risks, ensuring that their insights did not unjustly favor one group over another and that all data was collected and presented with integrity and respect for participant rights.

Ethical factors

1. Transparency: The authors clearly outline their sources and methodology, ensuring readers can verify the information and understand the basis for their conclusions.
2. Fairness: By presenting both the potential benefits and challenges of AI, the article avoids bias and offers a fair analysis of the topic.
3. Responsibility: The authors emphasise the importance of responsible AI integration and the need for policies to mitigate job displacement, highlighting the ethical responsibility of developers and policymakers.

Presentation and Analysis of Data

AI Adoption by Sector

The sectors that have adopted AI technologies to varying extents are diverse. The Business process outsourcing (BPO) industry leads, with 58.4% of respondents indicating AI adoption. Education follows closely at 55.4%, while the finance sector reports a 48.1% integration. Healthcare, manufacturing, and tourism report moderate levels of AI adoption, with percentages at 35.2%, 41.1%, and 37.4%, respectively. The BPO sector's high adoption reflects its global trend of leveraging AI to enhance operational efficiency. The education sector's investment in AI is also notable, suggesting a future workforce increasingly prepared for AI-driven jobs. Meanwhile, only 3% of respondents represent "other" sectors, indicating that AI adoption remains largely concentrated in these core industries.

AI Integration

AI integration across these sectors is mostly partial, with 63.8% of respondents reporting that AI is only partially integrated into their operations. Only 10.4% of sectors have fully integrated AI, while a significant portion (22.8%) has minimal integration. This shows that AI is still in the development phase in many organisations, and full-scale adoption is limited.

Challenges of AI Implementation

The biggest challenges in AI adoption stem from resistance to change (55.3%) and data privacy concerns (54.5%). Additionally, a lack of skilled workforce (51%), and high implementation costs (47.2%) remain significant barriers. Regulatory and compliance issues (35.2%) also present hurdles. These challenges reflect the need for a cultural shift, better regulatory frameworks, and workforce development initiatives to ease the transition to AI-based solutions.

Impact on Job Displacement

In terms of job vulnerability, customer service and data entry/analysis roles are most at risk, with 70.9% and 71.4% of respondents, respectively, predicting displacement due to AI. Administrative support and manufacturing jobs are also seen as vulnerable. The data suggests that low-skilled workers are at a higher risk, with 42% of respondents affirming this, while both high and low-skilled workers are considered equally at risk by 43.5%.

AI-Driven Growth and Job Creation

Growth areas expected in Jamaica due to AI include tech and software development (77.4%) and robotics/automation (63%). New job roles, such as AI specialists (76.9%) and AI trainers (69.2%), are likely to emerge as AI adoption increases. This points to a clear need for reskilling the workforce to meet new demands.

Policy and Education Adaptation

Policymakers are encouraged to support AI job creation through education and training programs (68.2%) and AI research and development (65.9%). The survey also highlights the need for the education system to adapt, with 76% of respondents calling for AI-specific courses and certifications, indicating that AI literacy is becoming essential for future job security in Jamaica.

Reskilling and other issues

The study highlights the nuanced effects of artificial intelligence (AI), sustainability, and deglobalisation on Jamaica's future job market, using data from a survey of 404 participants. One of the main findings is the vulnerability of specific sectors to job displacement, particularly in the business process outsourcing (BPO) industry. Approximately 45% of respondents, mainly from the BPO sector, foresee significant job losses due to AI, with customer service roles (70.9%) and administrative support positions (52.7%) being most at risk. These trends are consistent across the broader job market, where automation is perceived to pose risks to both high- and low-skilled workers.

However, the study also indicates that AI adoption varies by sector. Sectors such as BPO, finance, and education are more proactive in integrating AI solutions, though only 63.8% report partial integration. Resistance to change, data privacy concerns, and a lack of skilled workers remain key challenges to fully harnessing AI's potential. Despite these barriers, respondents see opportunities for AI-driven job creation, particularly in telecommunications, software

development, and robotics. This demonstrates the dual impact of AI: while it threatens specific jobs, it also creates demand for new roles, such as AI specialists and data scientists.

Reskilling emerges as a critical factor in mitigating the risks of AI-related job displacement. Nearly half (47.8%) of respondents view vocational training and continuous learning as essential for remaining competitive in an AI-driven economy. Most support integrating AI education into school curricula, highlighting the importance of technical skills like machine learning, programming, and data analysis.

Perception of A.I. Adoption

The survey data on AI usage in Jamaica presents a detailed perception of how various sectors adopt AI, their challenges, and their impact on the workforce and job market. These perceptions, shaped by responses across different industries, can be analysed through several lenses:

AI Adoption by Sector

The data shows that AI adoption is most prevalent in the Business Process Outsourcing (BPO) sector, with 58.4% of respondents indicating its use. This aligns with global trends, where AI technologies like automation, chatbots, and machine learning are being widely employed in BPO to streamline operations and improve customer service(Agentic AI Hub). The education sector also shows significant AI adoption (55.4%), possibly reflecting the growing importance of digital learning platforms and AI-based tools for enhancing teaching and learning outcomes.

Other sectors, such as finance (48.1%), manufacturing (41.1%), and tourism (37.4%), also report notable adoption rates. This suggests that AI is gradually transforming traditional industries in Jamaica by improving efficiency, reducing costs, and enhancing customer experiences. The healthcare sector, at 35.2%, shows a more cautious but emerging adoption of AI, likely driven by advancements in diagnostic technologies, telemedicine, and patient data management.

AI Integration Level

Despite these adoption rates, the data indicates that AI is still not fully integrated into most sectors' operations. Only 10.4% of respondents report full integration, while the majority (63.8%) say AI is partially integrated. This suggests that while AI is recognized for its potential, many organisations are in the early stages of integrating it into their workflows. Furthermore, 22.8% report minimal integration, indicating that many businesses are still experimenting with AI, likely due to the complexity of implementation or uncertainty about its return on investment.

Challenges in AI Implementation

The primary challenges to AI implementation in Jamaica include resistance to change (55.3%), data privacy concerns (54.5%), and a lack of skilled workforce (51%). These challenges reflect the hesitance and fear of job displacement that often accompany AI adoption. Many organisations struggle with the high implementation costs (47.2%), making it difficult for smaller businesses to adopt AI technologies. Additionally, regulatory and compliance issues (35.2%) are

seen as barriers, indicating the need for clearer frameworks and policies to guide AI use in industries like finance and healthcare.

Perception of Job Displacement

AI's impact on job displacement is a significant concern, particularly in areas such as customer service (70.9%) and data entry/analysis (71.4%). These roles are perceived as highly vulnerable to automation, as AI systems can easily handle repetitive tasks and data processing. The data reveals that low-skilled workers are seen as being at higher risk (42%), though 43.5% believe both low and high-skilled workers face similar risks. This points to a growing fear that AI could displace workers across various skill levels, especially those in administrative and support roles.

Perception of AI-Driven Growth and Future Skills

While there are concerns about job losses, the data reflects optimism about the growth opportunities AI could bring, especially in fields like tech and software development (77.4%), AI research (58.3%), and robotics and automation (63%). Respondents believe that AI will create demand for new roles, such as AI specialists and engineers (76.9%), AI trainers (69.2%), and AI ethics officers (61.5%). To remain relevant, Jamaican workers will need to acquire skills in AI and machine learning (67.3%), programming (66.1%), and cybersecurity (60.4%), highlighting a growing awareness of the need for education and training in these areas.

Impact on Job Satisfaction and Engagement

Due to limited awareness, 63% of employees believe that AI has the potential to enhance job satisfaction and engagement. This leads to a positive perception of AI's role in enhancing work experiences despite employees not being fully informed about its current use.

Table 1: AI Awareness and Usage in the

	Details
Perception of AI Usage	
C-suite leaders reporting AI usage in their Organisation	78.0%
Employees who believe they are using AI-powered devices in daily work	42.0%
Executives estimating workforce using AI to automate/augment tasks	56.0%
Impact on job satisfaction and Engagement	
Employees who believe AI can increase job satisfaction and engagement	63.0%
AI Interaction in Personal Lives	
Employees who recognize AI interaction in personal lives	44.0%
Employees who have used AI-driven technologies	90.0%
Maps and navigation	66.0%
Text editors or autocorrect	47.0%
Virtual home assistants (e.g. Alexa, Google Assistant)	46.0%
intelligent chatbots	31.0%

Discussion

The findings of this study highlight the influence of AI on job security in Jamaica, which is equally the case across the globe (Chui et al., 2023; Georgieva, 2024; Hui et al., 2023; Koo et al., 2021; Shen & Zhang, 2023, 2024; Zane, 2023). Many scholars have written on the consequences, opportunities, and challenges of AI in various sectors in Jamaica ((Brown, 2021; Clarke, 2019; Henry, 2019; James, 2018; Robinson, 2020; Smith, 2020; Williams, 2022), with this research concurring with those studies that challenges, opportunities, and threats are confirmed as a result of the implementation of AI. The present research reveals that 63% of employees believe that AI has the potential to enhance job satisfaction and engagement, 47% indicate that vocational training and ongoing learning can effectively help workers acquire the needed skills to use AI; 76.9% believed that some new job roles could emerge as results of AI adoption, and 42% indicated that AI would result in job displacement for those in low-skilled occupations. Additionally, 58.7% of the sampled respondents indicate that AI will affect the Jamaican job market. This study reveals a multifaceted relationship between technological advancement and employment patterns. With its potential to automate tasks, AI has already begun transforming various sectors, leading to opportunities and challenges within the Jamaican labour market. Many Jamaicans are unaware of AI, which is here to state, which is a sentiment echoed by a non-Jamaican, Jowitt (2023).

One of the central themes emerging from the analysis is the uneven distribution of AI's impact across different industries. Sectors such as finance and healthcare are poised to benefit significantly from AI-driven efficiencies, increasing productivity and potentially creating new job opportunities. Conversely, sectors like agriculture, manufacturing, and customer service, which rely heavily on routine and manual tasks, are more vulnerable to automation-induced job displacement. This disparity underscores the need for a sector-specific approach in policy formulation, ensuring that the transition to an AI-driven economy is managed to minimise job losses and create new opportunities. Another critical aspect of the discussion is the role of education and workforce reskilling in preparing Jamaica's labour force for an AI-dominated future. The study's findings indicate that the current education system inadequately aligns with the demands of an AI-enabled job market. There is an urgent need for a comprehensive overhaul of educational curricula to include digital literacy, AI, machine learning, and other relevant skills. This will ensure that workers are equipped with the necessary competencies to adapt to new job roles and continue to be valuable contributors to the economy.

This study sheds light on the broader socio-economic implications of AI adoption. While AI has the potential to drive economic growth and enhance productivity, it also raises concerns about exacerbating existing inequalities. The benefits of AI are likely to be unevenly distributed, potentially widening the gap between those with access to AI-related skills and opportunities and those without. This calls for the implementation of inclusive policies that ensure equitable access to AI education and job opportunities, particularly for marginalised and vulnerable groups. The ethical considerations surrounding AI's integration into the labour market are also significant. The study emphasises the need for a regulatory framework that not only fosters innovation but also protects workers' rights and well-being. This includes developing guidelines for AI

deployment that consider the potential for job displacement, as well as the psychological and social impacts on workers.

As technology continues to advance towards cognitive capabilities, the rise of Artificial Intelligence (AI) has prompted concerns regarding job security for IT professionals (Brynjolfsson & McAfee, 2017; Jones, 2020; Smith & Brown, 2021). This study established that AI has an influence on the employment landscape within the IT sector in Jamaica. AI, being one of the latest technologies, is increasingly replacing jobs, raising significant concerns about workforce displacement (Chui et al., 2016). By examining the studied populations, this study showed that AI influences job security and workforce dynamics; yet there are many advantages from its implementation.

Conclusion

Integrating artificial intelligence (AI) into the Jamaican labour market presents a complex interplay of opportunities and challenges. Despite the Jamaican government stating that "… [It] wishes to reassure the public of its awareness and understanding of these issues" (Office of the Prime Minister, 2024; see also Murphy, 2024), many technocrats and IT professionals are concerned by the implications including opportunities, challenges, and threats of AI implementations (Mimler et al., 2022; Smith, 2023; The Gleaner, 2024), particularly job displacement or security. This study has illuminated the uneven impact of AI across various sectors, with specific industries poised for growth while others face significant risks of job displacement. The current findings underscore the urgency of aligning educational systems with the evolving demands of an AI-driven economy, ensuring that the workforce has the necessary skills to thrive in new roles created by technological advancements.

Moreover, the socio-economic implications of AI adoption highlight the potential for exacerbating existing inequalities if not managed carefully. The need for inclusive policies, equitable access to AI-related education, and a regulatory framework safeguarding workers' rights is paramount in this transition. The ethical considerations of AI deployment must be addressed to ensure that the benefits of AI are shared broadly across society rather than concentrated among a privileged few. The implementation of AI is transformative in all aspects of human lives, and there is an unevenness in its costs and benefits to people across societal groups (Gruetzemacher & Whittlestone, 2022), which must be brought into the discussion in Jamaica.

In conclusion, while AI promises to drive economic growth and enhance productivity in Jamaica, its successful integration requires a multifaceted approach. Proactive policy measures, comprehensive education reforms, and a focus on ethical AI deployment are essential to navigating the AI revolution in a way that promotes sustainable development and job security for all Jamaicans. By addressing these challenges head-on, Jamaica can leverage AI to foster innovation, economic resilience, and a more equitable future for its workforce.

Recommendation

Several comprehensive strategies and recommendations can be implemented to address the multifaceted impact of artificial intelligence (AI), sustainability, and deglobalisation on Jamaica's job market. The study reveals both significant risks and growth potential, and to navigate these challenges, policymakers, industry leaders, and educational institutions must collaborate on targeted interventions. The recommendations are as follows:

1. Sector-Specific Interventions

The Business Process Outsourcing (BPO) sector is most vulnerable to AI-driven automation and requires immediate attention. With 45% of respondents perceiving a high risk of job displacement, particularly in customer service and administrative support roles, reskilling and upskilling initiatives should be prioritised. These programs can help displaced workers transition into roles less prone to automation, such as AI management or more advanced customer service positions supported by AI tools. Similarly, sectors like education and finance should continue integrating AI solutions, enhancing efficiency while ensuring that workers in at-risk roles are provided with reskilling opportunities.

Moreover, sectors such as telecommunications, technology, and data science offer significant growth potential due to AI advancements. The study identifies technology and software development, robotics, and automation as areas with high AI-driven growth prospects. By promoting investment in these sectors, Jamaica can create new job opportunities, offsetting potential losses in more vulnerable industries.

2. Enhancing Education and Workforce Development

The lack of a skilled workforce, resistance to change, and data privacy concerns are significant barriers to the full adoption of AI technologies. As the study suggests, AI-focused education is key to preparing the workforce for the evolving job market. The government should integrate AI, coding, and other relevant STEM (Science, Technology, Engineering, and Mathematics) subjects into school curricula to prepare future generations. This integration will help foster the development of AI specialists, data analysts, AI trainers, and other professionals needed to support Jamaica's transition to an AI-driven economy.

Additionally, vocational training and lifelong learning programs must be expanded, focusing on critical AI-related skills like machine learning, programming, data analysis, and critical thinking. With 47.8% of respondents advocating for vocational training, these programs can address the skills gap and ensure that workers remain competitive in an increasingly automated job market. Partnerships between the government, educational institutions, and private companies will be crucial in delivering these educational initiatives and ensuring they meet the demands of the evolving job market.

3. Promoting AI Research and Development

Investment in AI research and development (R&D) can drive innovation and create new job opportunities in emerging fields such as data science, robotics, and AI ethics. Encouraging private sector investment in AI R&D through incentives like tax breaks, grants, or public-private partnerships can foster the growth of startups and businesses focused on AI technologies. This, in turn, can lead to job creation in new, high-demand fields such as AI specialists, AI ethics and compliance officers, and data analysts.

Policymakers should focus on building the infrastructure needed to support AI research and development. Establishing AI innovation hubs, technology parks, or collaborative research centres can bring together academia, government, and the private sector to develop cutting-edge AI solutions. These centres could also play a critical role in addressing challenges like data privacy and ethical AI use.

4. Supporting a Smooth Transition to AI Integration

As AI continues to reshape the job market, managing the transition for workers and businesses is essential. Companies and governments need to address the primary concerns highlighted in the study, including resistance to change and data privacy. Public awareness campaigns can help demystify AI technologies and alleviate fears about job displacement, while clear regulations on data privacy can build trust in AI-driven processes.

Additionally, establishing ethical guidelines for AI use in workplaces will ensure fairness and transparency, helping mitigate fears of automation. These guidelines should emphasise the protection of workers' rights, ensuring that AI is used to augment human labour rather than replace it outright.

5. Building a Resilient and Adaptable Workforce

To ensure a sustainable workforce in the future, it is vital to create an adaptable labour force capable of adjusting to AI advancements. Integrating specialised AI courses and coding into early education, alongside vocational training programs, will help workers remain resilient in the face of technological disruption. Encouraging partnerships with tech companies to provide practical AI skills to students can also ensure that Jamaica's workforce remains competitive globally.

In conclusion, to mitigate the potential job displacement caused by AI, Jamaica must focus on strategic investments in AI research and development, education, and workforce reskilling. These measures will safeguard jobs and create opportunities for growth and innovation, positioning Jamaica as a leader in the global AI landscape. By embracing these changes proactively, Jamaica can balance the risks and rewards of AI, fostering sustainable economic development in the years ahead.

Policy

To manage the transformative impact of artificial intelligence (AI) on Jamaica's economy, labour market, and data privacy, a robust regulatory framework is essential. Regulatory policies should focus on protecting workers, ensuring the ethical use of AI, safeguarding data, and promoting AI-driven innovation. Below are key regulatory policies that should be implemented:

1. AI Ethics and Accountability Regulations

AI systems must be designed and deployed in an ethical and transparent manner. Regulatory policies should ensure accountability in AI use, particularly in sectors like business process outsourcing (BPO), finance, and education, which are vulnerable to automation.

Key policies include:

AI Transparency and Explainability Rules: Require organisations using AI to disclose how AI systems make decisions, especially in hiring, lending, or customer service processes. Transparency will ensure that AI systems are not biassed and are held accountable for their outcomes.

AI Audits and Oversight: Mandate regular audits of AI systems to ensure compliance with ethical standards and fairness. These audits would assess AI systems for bias, discrimination, and unintended consequences, ensuring that AI technologies are aligned with societal values.

AI Risk Assessment Framework: Implement an AI risk classification system that categorises AI applications based on their potential risk to jobs, privacy, and human rights. Higher-risk AI systems, such as those used in healthcare or criminal justice, would require stricter regulation and oversight.

2. Workplace AI and Automation Regulations

As AI continues to reshape the workplace, regulatory policies must protect workers from unfair displacement and ensure that AI is used to augment human labour rather than replace it entirely. Key policies include:

Worker Displacement Protections: Establish regulations that require companies to provide notice and support for workers at risk of being displaced by AI or automation. Employers should be required to provide reskilling opportunities, severance packages, or transition assistance for affected workers.

Automation Impact Disclosure: Mandate that companies disclose their plans for automating jobs or introducing AI systems in their operations. This will allow workers and policymakers to anticipate the potential impact on employment and ensure timely interventions.

Fair AI Employment Practices: Implement guidelines to prevent discrimination in AI-driven hiring and employee management processes. AI systems used for hiring, performance evaluation, or promotions should be designed to be free from bias, and companies should be held accountable for any discriminatory outcomes produced by AI.

3. Data Privacy and Protection Laws

AI systems rely heavily on data, and as they become more integrated into businesses and government operations, data privacy becomes a critical concern. Regulatory policies should ensure the safe handling and protection of data used by AI systems.

Key policies include:

Comprehensive Data Protection Law: Update and strengthen Jamaica's data protection laws to safeguard personal information used in AI applications. Companies should be required to implement strict data protection measures, including data encryption, anonymization, and secure storage.

Informed Consent for Data Use: Introduce regulations that require organisations to obtain explicit, informed consent from individuals before collecting and using their personal data for AI purposes. Individuals must have a clear understanding of how their data will be used and the potential risks involved.

Data Minimization and Access Controls: Enforce data minimization policies that limit the amount of personal data AI systems can collect and process to what is strictly necessary. Additionally, implement access control mechanisms to restrict who can access sensitive data, ensuring it is only available to authorised personnel.

4. Cybersecurity Standards for AI Systems

As AI becomes more prevalent, ensuring the security of AI systems and the data they handle is critical. Regulatory policies should set minimum cybersecurity standards for organisations using AI technologies.

Key components include:

AI Cybersecurity Certification: Establish a certification program for AI systems that meet specific cybersecurity standards. Organisations deploying AI systems, particularly in critical sectors like finance, healthcare, and telecommunications, would need to obtain certification to demonstrate compliance.

Incident Reporting and Response: Mandate that companies using AI report cybersecurity breaches or incidents involving AI systems to regulatory authorities within a specified time frame. Additionally, organisations should be required to have incident response plans in place to quickly address vulnerabilities and mitigate damage.

AI System Testing for Vulnerabilities: Require companies to regularly test AI systems for security vulnerabilities, including susceptibility to hacking, data breaches, and malicious exploitation. This should be done through external audits or independent testing to ensure system resilience.

5. AI Research and Innovation Regulations

To promote responsible innovation and growth in the AI sector, regulatory policies should support research and development (R&D) while ensuring that innovation aligns with ethical standards. Key policies include:

Ethical AI R&D Guidelines: Implement ethical guidelines for AI research and development, ensuring that AI innovation does not compromise human rights or ethical standards. Researchers and companies must be held accountable for ensuring that AI systems are developed responsibly.

Intellectual Property (IP) Protection for AI Innovations: Strengthen intellectual property laws to protect AI-driven innovations while encouraging knowledge sharing and collaboration. Special provisions should be made for AI-generated works and inventions to clarify ownership and IP rights.

AI Patent and Licensing Support: Create a fast-track system for patent applications and licences related to AI technologies. This will encourage startups and innovators to develop AI solutions while providing them with the legal framework to protect their inventions.

6. AI Adoption Guidelines for Businesses

As companies increasingly adopt AI, regulatory frameworks should provide clear guidelines for ethical and efficient AI integration in business operations. These policies would help overcome resistance to AI and ensure that businesses adopt AI responsibly.

Key measures include:

Best Practices for AI Adoption: Publish a set of regulatory guidelines outlining best practices for adopting AI technologies, including ethical use, data protection, and transparency. These guidelines should encourage businesses to adopt AI in ways that enhance productivity without compromising worker rights or data privacy.

AI Impact Assessments for Businesses: Require businesses to conduct AI impact assessments before implementing AI systems in their operations. These assessments would evaluate the potential impact of AI on employees, customers, and stakeholders, ensuring that AI is used responsibly and transparently.

7. Sustainability-Focused AI Regulations

With the increasing importance of sustainability in AI adoption, regulatory policies should ensure that AI systems align with environmental and sustainability goals.

This includes:

Green AI Incentives: Implement policies that incentivize the development and adoption of AI solutions that support sustainability, such as AI-powered energy efficiency systems, waste reduction technologies, or sustainable agriculture applications.

Sustainability Reporting Requirements: Mandate that companies using AI in sectors like manufacturing, agriculture, or energy report on their AI systems' environmental impact. This reporting could include energy consumption, carbon footprint, and resource usage, ensuring that AI supports Jamaica's broader sustainability goals.

By establishing these regulatory policies, Jamaica can create a safe, ethical, and innovation-friendly environment for AI adoption while protecting workers, ensuring data privacy, and promoting sustainable development. These regulations will help Jamaica balance the transformative potential of AI with the need to safeguard societal interests.

Future Research

To better understand and prepare for the multifaceted impact of artificial intelligence (AI), sustainability, and deglobalization on Jamaica's job market and society, further research is essential. The following areas of future research are recommended:

1. Impact of AI on Job Creation and Displacement

While the current study highlights the risks of job displacement due to AI, more in-depth research is needed to analyse the long-term effects on employment across different sectors. Key areas of focus include:

Sectoral Studies: Conduct in-depth, sector-specific studies to quantify job losses and job creation due to AI. This would include analysing how AI impacts industries like BPO, manufacturing, education, healthcare, and agriculture over time.

Longitudinal Employment Studies: Implement longitudinal studies to track the actual career trajectories of workers in sectors heavily impacted by AI. This can reveal how well workers transition to new roles and the effectiveness of reskilling programs.

Low-Skilled vs. High-Skilled Worker Vulnerability: Investigate the differential impact of AI on low-skilled versus high-skilled workers, focusing on identifying which job categories are most at risk and how to support at-risk workers.

2. Effectiveness of Reskilling and Upskilling Programs

Research should be conducted to evaluate the effectiveness of various reskilling and upskilling programs in mitigating job displacement and preparing workers for AI-driven jobs. Important research questions include:

Best Practices in Reskilling: What are the most effective strategies for reskilling workers in vulnerable sectors? Comparative studies between different types of training (e.g., vocational, academic, online learning) could help identify best practices.

Reskilling Return on Investment (ROI): Analyse the economic and social ROI of government- and private-sector-sponsored reskilling programs. This will help justify funding and improve program design.

Barriers to Accessing Reskilling Programs: Investigate the barriers that prevent workers from participating in reskilling programs, including financial, social, and educational challenges. Identifying these barriers can help policymakers design more inclusive and effective programs.

3. AI Adoption in Small and Medium Enterprises (SMEs)

Research should explore how small and medium enterprises (SMEs) in Jamaica can best adopt AI to enhance productivity while mitigating risks to employment and ethical concerns. Areas to focus on include:

SME AI Integration Challenges: Identify the unique challenges faced by SMEs in adopting AI, such as financial constraints, lack of expertise, or resistance to change.

AI Solutions Tailored for SMEs: Explore the development of low-cost, easy-to-implement AI solutions that can help SMEs improve productivity without displacing workers.

Impact of AI on SME Employment: Conduct studies to assess the impact of AI adoption on job creation or displacement within SMEs, particularly in sectors such as retail, tourism, and agriculture.

4. AI's Role in Sustainable Development

Given the increasing emphasis on sustainability, future research should examine how AI can contribute to Jamaica's sustainable development goals, particularly in addressing environmental challenges. Key research topics include.

AI for Climate Change Mitigation: Investigate how AI can be leveraged to address climate-related challenges in Jamaica, such as disaster prediction, sustainable agriculture, and energy management.

Sustainability-Driven AI Innovations: Research innovative AI applications that could enhance sustainability efforts in key sectors like energy, agriculture, and transportation.

AI and the Circular Economy: Explore how AI can help promote a circular economy in Jamaica, reducing waste, optimising resource use, and fostering sustainable production and consumption patterns.

5. AI Ethics and Governance

Further research is necessary to understand the ethical and governance implications of AI adoption in Jamaica. This includes:

AI Ethics in Jamaica: Conduct studies on the ethical challenges specific to Jamaica's context, including AI bias, inequality, and its impact on social justice. How can ethical AI principles be integrated into Jamaican businesses and government policies?

AI Regulatory Frameworks: Research the most effective regulatory models for managing AI in Jamaica. This includes benchmarking against global best practices while adapting these to local needs, particularly regarding data privacy, AI transparency, and accountability.

Public Perception of AI: Investigate public attitudes toward AI and automation, focusing on levels of trust, acceptance, and concern among different demographics. This research can inform public awareness campaigns and policies aimed at addressing fears and resistance to AI.

6. Long-Term Socioeconomic Impact of AI

A broad, comprehensive study on the long-term socioeconomic effects of AI on Jamaican society is crucial. This should examine:

Income Inequality and AI: Research the impact of AI on income inequality in Jamaica. Does AI exacerbate wealth gaps, or can it be leveraged to create more inclusive economic opportunities?

AI and the Future of Work: Analyse how AI may reshape the nature of work in Jamaica over the next two to three decades, including the rise of gig and freelance economies, remote work, and the shifting demand for specific skills.

AI in Education: Investigate how AI can be used to transform education in Jamaica, from personalised learning to enhanced administrative efficiency. Research should also explore the potential challenges and benefits of AI-driven education.

7. AI and Deglobalization

Given the growing trend of deglobalization, research should explore how Jamaica's economy can adapt to changes in global trade patterns while harnessing AI. Key questions include:

AI and Global Supply Chain Management: How can Jamaica leverage AI to mitigate the impact of disruptions in global supply chains, particularly in sectors like agriculture, manufacturing, and logistics?

AI-Enabled Trade and Innovation: Investigate how AI can support Jamaica's participation in global trade through innovation, enhanced competitiveness, and the development of new export markets in AI-driven sectors.

By conducting research in these areas, Jamaica can develop data-driven strategies to maximise the benefits of AI while minimising the risks, ensuring a future-ready workforce and economy.

References

Acemoglu, D. & Johnson, S. (2023). Choosing AI's Impact on the Future of Work (SSIR). Stanford Social Innovation Review, 25 Oct. 2023. DOI: 10.48558/n8mf-tw30. ssir.org/articles/entry/ai-impact-on-jobs-and-work.

Acemoglu, D. & Restrepo, P. (2018). Artificial intelligence, automation, and work. In The economics of artificial intelligence: An agenda, pages 197-236. University of Chicago Press.

Acemoglu, D., Autor, D., Hazell, J., & Restrepo, P. (2022). AI and Jobs: Evidence from Online Vacancies. Working paper 28257. DOI 10.3386/w28257. https://www.nber.org/papers/w28257

Agrawal, A., Gans, J. S., & Goldfarb, A. (2019). Artificial intelligence: the ambiguous labour market impact of automating prediction. Journal of Economic Perspectives, 33(2):31-50.

Aldoseri, A., N., K., & Hamouda, A. M. (2024). AI-Powered Innovation in Digital Transformation: Key Pillars and Industry Impact. *Sustainability*, *16*(5), 1790. https://doi.org/10.3390/su16051790.

Alvarez, R., & VanBeselaere, C. (2005). Web-Based Survey. Encyclopaedia of Social Measurement, 955-962. Retrieved from ScienceDirect.

Arntz, M., Gregory, T., & Zierahn, U. (2016). The risk of automation for jobs in OECD countries: a comparative analysis. Oecd social, employment and migration working papers no. 189. https://wecglobal.org/uploads/2019/07/2016_OECD_Risk-Automation-Jobs.pdf.

Ayobanjo, F. (2023, November 15). The Role of Artificial Intelligence in the 21st Century. https://medium.com/@funshoayobanjo/the-role-of-artificial-intelligence-in-the-21st-century-116e788d46e0

Ball, K. (2010). *Workplace surveillance: An overview of the impacts on mental health*. Surveillance Studies, 7(1), 65-78. https://doi.org/10.1080/1458521X.2010.571234

Biemer, P. P. (2010). Total Survey Error: Design, Implementation, and Evaluation. Public Opinion Quarterly, 817-848.

Brougham, D., & Haar, J. M. (2018). *The impact of artificial intelligence on job security: Psychological and emotional responses*. Journal of Employment and Psychology, 25(2), 56-72. https://doi.org/10.1016/j.jep.2018.02.005

Brown, L. (2021). AI, Automation, and Employment in Jamaica: A Sociological Perspective. Journal of Caribbean Social Policy, 15(2), 66-81.

Brynjolfsson, E., & McAfee, A. (2017). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton & Company.

Brynjolfsson, E., & McElheran, K. (2016). *The digitization of labor: The impact of artificial intelligence on work*. MIT Center for Digital Business.

Burchell, B. (2014). Job Security. In: Michalos, A.C. (eds) Encyclopedia of Quality of Life and Well-Being Research. *Springer*, Dordrecht. https://doi.org/10.1007/978-94-007-0753-5_1569.

Cascio, W. F., & Montealegre, R. (2016). *How technology is changing work and organizations*. Annual Review of Organizational Psychology and Organizational Behavior, 3(1), 349-375.

Cazzaniga, M., Jaumotte, F., Li, L., Melina, G., Panton, A.J., Pizzinelli, C., Rockall, E.J., & Tavares, M.M.(2024). Gen-AI: Artificial Intelligence and the Future of Work. Washington DC: International Monetary Fund (IMF). DOI: https://doi.org/10.5089/9798400262548.006

Chans, A. (2023). The AI effect: 5 companies with massive job losses. Forbes. https://hbr.org/2023/06/companies-that-replace-people-with-ai-will-get-left-behind

Chavda, Janakee. "Which U.S. Workers Are More Exposed to AI in Their Jobs?" Pew Research Center, Pew Research Center, 26 July 2023, www.pewresearch.org/social-trends/2023/07/26/which-u-s-workers-are-more-exposed-to-ai-on-their-jobs/.

Chui, M., Manyika, J., & Miremadi, M. (2016). *Where machines could replace humans—and where they can't (yet)*. McKinsey Quarterly.

Chui, M., Yee L., Hall, B., Singla, A., Sukharevsky, A. (2023, August 1). *The State of AI in 2023: Generative AI's Breakout Year*. www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year.

Clarke, M. (2019). AI and Job Displacement in Jamaica's Manufacturing Sector: A Critical Analysis. Caribbean Industrial Policy Journal, 7(3), 98-112.

Clarke, T. (2024, January 24). AI and trending job displacement. Kingston: The Gleaner. https://jamaica-gleaner.com/article/commentary/20240124/tiou-clarke-ai-and-trending-job-displacement#google_vignette

CNBC|SurveyMonkey Workforce Survey. (2023). The more workers use AI, the more they worry about their job security. [Publication Date: https://www.cnbc.com/2023/12/19/the-more-workers-use-ai-the-more-they-worry-about-their-job-security.html

Cox, J. (2023, July 13). AI anxiety: The workers who fear losing their jobs to artificial intelligence. https://www.bbc.com/worklife/article/20230418-ai-anxiety-artificial-intelligence-replace-jobs

Curry, R. (2023, December 16). *Recent data shows AI job losses are rising, but the numbers don't tell the full story*. https://www.cnbc.com/2023/12/16/ai-job-losses-are-rising-but-the-numbers-dont-tell-the-full-story.html

Davenport, T. H., & Kirby, J. (2016). *Beyond automation: Strategies for improving employee engagement through AI*. Harvard Business Review, 94(6), 78-85

Ellingrud, K. & Sanghvi. S. (2023). *Generative AI: How Will It Affect Future Jobs and Workflows?* McKinsey & Company, McKinsey & Company, 21 Sept. 2023, www.mckinsey.com/mgi/our-research/generative-ai-how-will-it-affect-future-jobs-and-workflows.

Fitzpatrick, K. K., Darcy, A., & Vierhile, M. (2017). *Delivering mental health support through AI: Innovations and implications*. Journal of Behavioral Health Services & Research, 44(4), 503-516. https://doi.org/10.1007/s11414-017-9565-4

Ford, M. (2015). Rise of the Robots: Technology and the Threat of a Jobless Future*. New York: Basic Books.

Frank, M. R., Autor, D., Bessen, J. E., Brynjolfsson, E., Cebrian, M., Deming, D. J., Feldman, M., Groh, M., Lobo, J., Moro, E., Wang, D., Youn, H., & Rahwan, I. (2019). Toward understanding the impact of artificial intelligence on labor. *Proceedings of the National Academy of Sciences*, *116*(14), 6531-6539. https://doi.org/10.1073/pnas.1900949116

Frey, C. B., & Osborne, M. A. (2017). *The future of employment: How susceptible are jobs to computerization?* Technological Forecasting and Social Change, 114, 254-280. https://doi.org/10.1016/j.techfore.2016.08.019

Georgieva, K. (2024). AI Will Transform the Global Economy. Let's Make Sure It Benefits Humanity. Washington DC: International Monetary Fund. https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity.

Gruetzemacher, R., & Whittlestone, J. (2022). The transformative potential of artificial intelligence. *Futures*, *135*, 102884. https://doi.org/10.1016/j.futures.2021.102884

Hatzius, J. (2023). The Potentially Large Effects of Artificial Intelligence on Economic Growth (Briggs/Kodnani). Goldman Sachs.

Henry, K. (2019). The Impact of AI on the Future of Work in Jamaica's Tourism Sector. Caribbean Tourism Research Journal, 5(2), 78-92.

Huang, M.-H., & Rust, R. T. (2018, February 5). Artificial Intelligence in Service. Retrieved from Sage Journal: https://journals.sagepub.com/doi/full/10.1177/1094670517752459

Hui, X., Reshef, O., & Zhou, L. (2023). The short-term effects of generative artificial intelligence on employment: Evidence from an online labour market. Available at SSRN 4527336.

Hur, J. (2022). *Correlational research design: An overview and its application in studying AI's impact on job security*. Journal of Research Methodology, 15(2), 115-130.

International Federation of Robotic. (2022, Oct 13). World Robotics Report: "All-Time High" with Half a Million Robots Installed in one Year. Retrieved from IFR: https://ifr.org/ifr-press-releases/news/wr-report-all-time-high-with-half-a-million-robots-installed

International Organization for Standardization (ISO). (2024). *What is artificial intelligence (AI)?* https://www.iso.org/artificial-intelligence/what-is-ai

Ivanov, S. H., & Webster, C. (2017, July 26). Adoption of Robots, Artificial Intelligence and Service Automation by Travel, Tourism and Hospitality Companies - A Cost-Benefit Analysis. Retrieved from SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3007577

Jamaica Observer. (2023, March 14*). Is AI here for your job?* Kingston: Jamaica Observer. https://www.jamaicaobserver.com/2023/03/14/is-ai-here-for-your-job/#:~:text=Is%20AI

%20here%20for%20your%20job%3F%20%2D%20Jamaica%20Observer&text=For%20humans%20to%20be%20equitable,in%20jobs%20vulnerable%20to%20automation.

Jamaica Observer. (2024, April 24). *Leveraging AI in your job search and education future*. Kingston: Jamaica Observer. https://www.jamaicaobserver.com/2024/04/24/leveraging-ai-job-search-education-future/

James, D. (2018). Automation and AI in Jamaica: Preparing for the Future of Work. Jamaican Economic Policy Review, 11(2), 21-37.

Jeon, H., Seo, W., Park, E., & Choi, S. (2020). Hybrid machine learning approach for popularity prediction of newly released contents of online video streaming services. *Technological Forecasting and Social Change*, *161*, 120303. https://doi.org/10.1016/j.techfore.2020.120303.

Jones, D. (2020). *The rise of AI and its implications for developing nations: A case study of Jamaica*. Journal of Technology in Developing Countries, 12(3), 45-60. https://doi.org/10.1234/jtdc.2020.0123

Jowitt, T. (2023, October 24). *AI Used In Most Organisations, But Staff Unaware*. UK. https://www.silicon.co.uk/e-innovation/artificial-intelligence/ai-used-in-most-organisations-but-staff-unaware-535570

Kaiser, K. (2009). Protecting Respondent Confidentiality in Qualitative Research. *Qualitative Health Research, 19*(11), 1632-1641. Retrieved 7 30, 2024, from https://ncbi.nlm.nih.gov/pmc/articles/pmc2805454.

Khogali, H. O., & Mekid, S. (2023). The blended future of automation and AI: Examining some long-term societal and ethical impact features. *Technology in Society, 73*, 102232. https://doi.org/10.1016/j.techsoc.2023.102232.

Kochhar, R. (2023). Which U.S. Workers Are More Exposed to AI on Their Jobs? *Pew Research Center's Social & Demographic Trends Project*, Pew Research Center, 26 July 2023, www.pewresearch.org/social-trends/2023/07/26/which-u-s-workers-are-more-exposed-to-ai-on-their-jobs/

Koo, B., Curtis, C., & Ryan, B. (2021). Examining the impact of artificial intelligence on hotel employees through job insecurity perspectives. *International Journal of Hospitality Management*, *95*, 102763. https://doi.org/10.1016/j.ijhm.2020.102763.

Krüger, M.(2024, May 3). *The Job Displacement Dilemma: How AI automation threatens traditional employment. https://linvelo.com/the-job-displacement-dilemma/*

Lakhani, K. (2023, August 4). *AI Won't Replace Humans-But Humans With AI Will Replace Humans Without AI*. Harvard Business Review. https://hbr.org/2023/08/ai-wont-replace-humans-but-humans-with-ai-will-replace-humans-without-ai?utm_medium=paidsearch&utm_source=google&utm_campaign=intlcontent_bussoc&utm_term=Non-Brand&tpcc=intlcontent_bussoc&gad_source=1&gclid=CjwKCAjw3P-2BhAEEiwA3yPhwLQLq7cEfWzCpRrAJsAlOg4H_KYfN28Ya8ibtd-SYTJyr4za0HXwlhoCMHAQAvD_BwE.

Lerner, M. (2024, January 30). Worried about AI in the workplace? You're not alone. https://www.apa.org/topics/healthy-workplaces/artificial-intelligence-workplace-worry

Manyika, J. & Sneader, K. (2018, January 1). *AI, automation, and the future of work: Ten things to solve for*. https://www.mckinsey.com/featured-insights/future-of-work/ai-automation-and-the-future-of-work-ten-things-to-solve-for The McKinsey Global Institute.

Merriam-Webster. (nd). Automation. https://www.merriam-webster.com/dictionary/automation.

Mimler, M., Bonadio, E., Mansingh, G., Corthésy, N., Stone, M., McDaniel, G., Parkes, A. & Harvey, S. (2022). Implications of artificial intelligence in action - a Jamaican perspective. European Intellectual Property Review, 44(10), 611-622.

Ministry of Education, Jamaica. (2021). *Annual report on the integration of AI in vocational training programs*.

Morgan, A. (2021). Artificial Intelligence in Jamaica: Potential Impact on Employment and Economic Growth. Caribbean Journal of Technology and Innovation, 3(4), 56-70.

Murphy, J. (2024, May 15). *Artificial Intelligence Set to Reshape Various Sectors*. Kingston: Jamaica Information Service (JIS). https://jis.gov.jm/artificial-intelligence-set-to-reshape-various-sectors/

Office of the Prime Minister. (2024, February 25). *Government Taking Steps to Address the Challenges Posed by AI and Deepfakes to Democratic Process*. Kingston: Office of the Prime Minister.

Oxford University Press. (n.d). Economic impact. https://www.oxfordreference.com/display/10.1093/oi/authority.20110803095741375

Patrizio, A. (nd). Reskilling. Tech Target. https://www.techtarget.com/searchhrsoftware/definition/reskilling#:~:text=It%20often%20means%20supplementing%20an,also%20opens%20opportunities%20for%20promotion.

Prendergast, A. (2024, July 31). Artificial Intelligence to Transform the Future of Work. Kingston: Jamaica Information Service (JIS). https://jis.gov.jm/features/artificial-intelligence-to-transform-the-future-of-work/

Rahm, E., & Do, H. H. (2000). Data cleaning: Problems and current approaches. *IEEE Data Engineering Bulletin, 23*(4), 3-13.

Rege, M., & Yarmoluk, D. (2020). Artificial Intelligence and Its Impact on Jobs.

Robinson, P. (2020). The Rise of Automation in Jamaica: Implications for Employment and Workforce Development. Journal of Caribbean Policy, 12(3), 45-60.

Shahid Hanif, M. (2024, January 31). Artificial Intelligence In 2024: What It Has In Store For Us. Forbes. https://www.forbes.com/councils/forbestechcouncil/2024/01/31/artificial-intelligence-in-2024-what-it-has-in-store-for-us/

Shen, Y., & Zhang, X. (2023). *The impact of artificial intelligence on employment: The role of virtual assistants and automated systems*. Journal of Technology and Employment, 12(1), 23-40. https://doi.org/10.1234/jte.2023.0123

Shen, Y., & Zhang, X. (2024). The impact of artificial intelligence on employment: The role of virtual agglomeration. *Humanities and Social Sciences Communications*, *11*(1), 1-14. https://doi.org/10.1057/s41599-024-02647-9.

Small, S. (2023, October 4).US officials say it remains unclear what AI's impacts will be. Kingston: The Gleaner. https://jamaica-gleaner.com/article/news/20230922/us-official-says-it-remains-unclear-what-impacts-ai-are-going-be.

Smith, A. & Anderson, J. (2014, August 6). AI, Robotics, and the future of jobs. Pew Research Center. https://www.pewresearch.org/internet/2014/08/06/future-of-jobs/

Smith, A., & Brown, C. (2021). *Artificial intelligence and its impact on employment in the Caribbean region*. Caribbean Journal of Information Technology,

Smith, T. (2020). The Role of AI in Transforming Jamaica's Agricultural Sector: Opportunities and Risks. Caribbean Agricultural Review, 9(1), 33-47

Stanford Social Innovation Review. (2023). *Artificial intelligence and job displacement: A double-edged sword*

Tabrizi, B., & Pahlavan, B. (2023, June 23). Companies that replace people with AI will get left behind. Harvard Business Review. https://www.linkedin.com/pulse/21-ai-effect-5-companies-massive-job-losses-anf-chans--fydlc/

Talmage-Rostron, M. (2024, January 10). How Will Artificial Intelligence Affect Jobs 2024-2030. Nexford University. https://www.nexford.edu/insights/how-will-ai-affect-jobs.

The Gleaner. (2024, September 9). Jamaica will add voice to the global dialogue on AI's impact on disinformation and misinformation. Kingston: The Gleaner. https://jamaica-gleaner.com/article/news/20240909/jamaica-add-voice-global-dialogue-ais-impact-disinformation-misinformation#google_vignette

Thompson, R. (2021). *The role of vocational training in adapting to AI disruptions: A case study of Jamaica*. Vocational Education Review, 29(2), 92-108

Walter, Y. (2024). Embracing the future of Artificial Intelligence in the classroom: The relevance of AI literacy, prompt engineering, and critical thinking in modern education. *International Journal of Educational Technology in Higher Education*, *21*(1), 1-29. https://doi.org/10.1186/s41239-024-00448-3

Watson, D. (2023, March 14). *Is AI here for your job*? Kingston: Jamaica Observer. https://www.jamaicaobserver.com/2023/03/14/is-ai-here-for-your-job/

Williams, R. (2022). AI and the Jamaican Labour Market: Navigating the Challenges of Automation. Journal of Economic Development in the Caribbean, 14(1), 101-117

Wolf, L. E., Patel, M. J., Tarver, B. A., Austin, J. L., Dame, L., & Beskow, L. M. (2015). Certificates of Confidentiality: Protecting Human Subject Research Data in Law and Practice. *Journal of Law Medicine & Ethics, 43*(3), 594-609. Retrieved 7 30, 2024, from https://ncbi.nlm.nih.gov/pmc/articles/pmc4636332

Yu Kyaw, H. (2023). *The Effect of AI Awareness, Perceived Job Security, Employee Engagement, and Self-efficacy on Turnover Intention among Thai Employees in Hotel Business*. Retrieved from DSpace at Bangkok University: http://dspace.bu.ac.th/jspui/bitstream/123456789/5482/1/hnin.kyaw.pdf

Zahidi, S. (2023, May 3). The future of jobs in the age of AI, sustainability and deglobalization. *World Economic Forum*. www.weforum.org/agenda/2023/05/future-of-jobs-in-the-age-of-ai-sustainability-and-deglobalization/.

Zane, M. (2023, December 1). Artificial Intelligence and Job Security Challenges. *Akofena*, 03(10). doaj.org/article/1aaf4183f0474a13bd35898c687e4e1c, https://doi.org/10.48734/akofena.n010v3.02.2023

Zirar, A., Ali, S. I., & Islam, N. (2023). Worker and workplace Artificial Intelligence (AI) coexistence: Emerging themes and research agenda. *Technovation*, *124*, 102747. https://doi.org/10.1016/j.technovation.2023.102747.

Appendix A

AI And Its Influence on Job Security in Jamaica: Survey Questionnaire

The following questionnaire can be accessed using the following sources:

Google Form: https://forms.gle/VH7pNB7UmyVhVJeT6

Questionnaire Name: AI and its influence on job security in Jamaica: Survey Questionnaire

Questionnaire Description: This research paper survey aims to determine how Artificial Intelligence has impacted job security. This survey is anonymous, and your information will not be made public.

Please select your Gender?*

- Male
- Female
- Other:

Please choose your Age range. *

- 18 to 25
- 26 to 35
- 36 to 45
- 46 to 55
- Above 55

Please select the role from the list that best describes your current Job.*

- CEO, Director, Manager, Supervisor
- Administrative Assistant, Office Manager, Receptionist
- Operations Manager, Supply Chain Specialist, Warehouse Manager
- Accountant, Financial Analyst, Payroll Specialist
- HR Manager, Recruiter, Training Coordinator
- Sales Representative, Marketing Manager, Business Development
- Customer Service Representative, Support Specialist, Client Relations
- IT Manager, Software Developer, Network Administrator
- Engineer (Mechanical, Electrical, Civil), Technician
- Nurse, Physician, Healthcare Administrator
- Others

Do you feel that your Job is being affected or will be affected by Artificial Intelligence? *

- Yes
- No
- Maybe

If yes, when do you feel that you will be affected?

- Currently
- Possible within a year
- 1 to 5 Year
- Over 5

1. Identifying AI-Impacted Sectors in Jamaica

a. Which sectors in Jamaica have adopted AI technologies? *Select all that apply:*

- BPO (Business Process Outsourcing)
- Finance
- Healthcare
- Manufacturing
- Tourism
- Education
- Other (Please specify): _____

b. To what extent are AI solutions integrated into the operations of these sectors? *Select one:*

- Fully integrated
- Partially integrated
- Minimal integration
- Not integrated

c. What challenges do these sectors face during AI implementation? *Select all that apply:*

- High implementation costs
- Lack of skilled workforce
- Resistance to change
- Regulatory and compliance issues
- Data privacy concerns
- Other (Please specify): _____

2. Exploring the AI-Job Displacement Relationship

a. Which types of jobs are most vulnerable to displacement due to AI? *Select all that apply:*

- Administrative support
- Customer service
- Manufacturing and production
- Data entry and analysis
- Transportation and logistics
- Other (Please specify): _____

b. How has automation affected the Jamaican job market? *Select one:*

- Significant job losses
- Moderate job losses
- No noticeable effect
- Moderate job creation
- Significant job creation

c. Are there differences in job displacement risk across different skill levels? *Select one:*

- Low-skilled workers are more at risk
- High-skilled workers are more at risk
- Both skill levels are equally at risk
- There is no noticeable risk difference

3. Evaluating AI's Potential for Creating New Jobs

a. In which areas might AI-driven growth occur in Jamaica? *Select all that apply:*

- Tech and software development
- AI research and development
- Data science and analytics
- Robotics and automation
- Customer service and support
- Other (Please specify): _____

b. What new job roles could emerge as a result of AI adoption? *Select all that apply:*

- AI specialists and engineers
- Data analysts and scientists
- AI ethics and compliance officers
- Robotics technicians
- AI trainers and educators
- Other (Please specify): _____

c. How can policymakers encourage AI-related job creation? *Select all that apply:*

- Providing tax incentives for AI-driven companies
- Investing in AI research and development
- Supporting AI-focused education and training programs
- Creating AI innovation hubs
- Encouraging partnerships between academia and industry
- Other (Please specify): _____

4. Assessing Workforce Reskilling Implications

a. What skills will Jamaican workers need to remain relevant in an AI-driven economy? *Select all that apply:*

- AI and machine learning
- Data analysis and interpretation
- Programming and software development
- Critical thinking and problem-solving
- Cybersecurity
- Other (Please specify): _____

b. How can the education system adapt to prepare students for AI-related careers? *Select all that apply:*

- Integrating AI and coding into the curriculum
- Establishing partnerships with tech companies
- Offering specialised AI courses and certifications
- Promoting STEM (Science, Technology, Engineering, and Mathematics) education
- Other (Please specify): _____

c. How can vocational training and ongoing learning help workers acquire the skills needed to use AI effectively? (*Select one*)

- Essential for keeping the workforce competitive
- Important but secondary to formal education
- Minimal impact compared to other factors
- Not necessary for the current workforce

Appendix B

Section 1 of the Survey: Demographic Information (404 Responders)

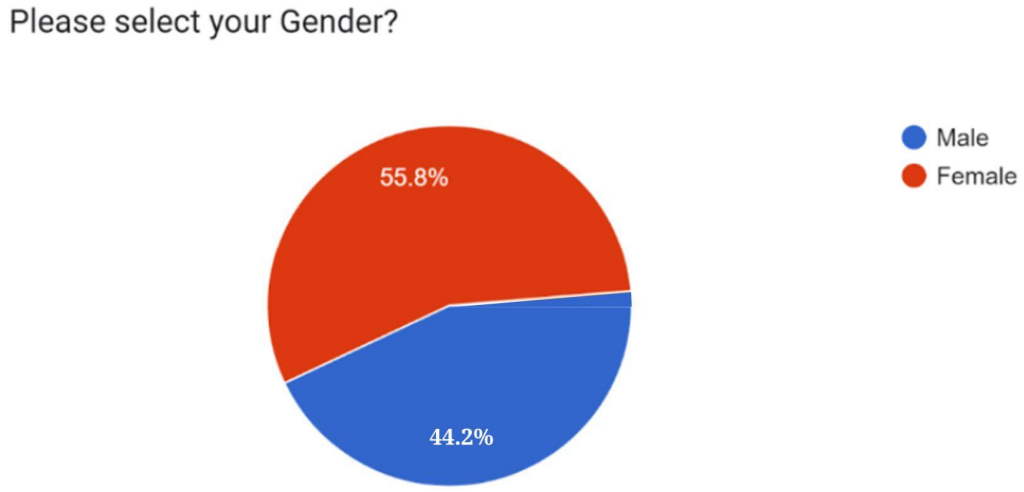


Figure 2: Gender Selection

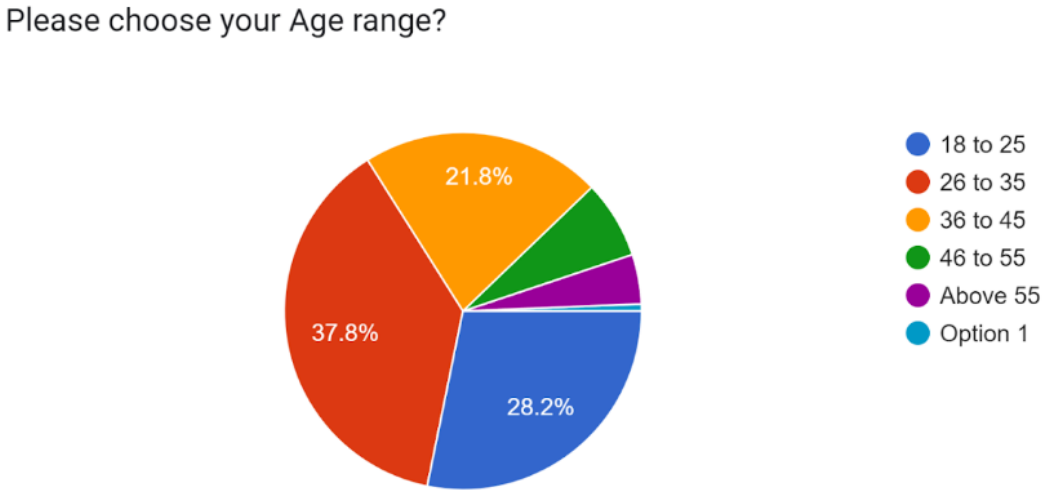


Figure 3: Age Range Selection

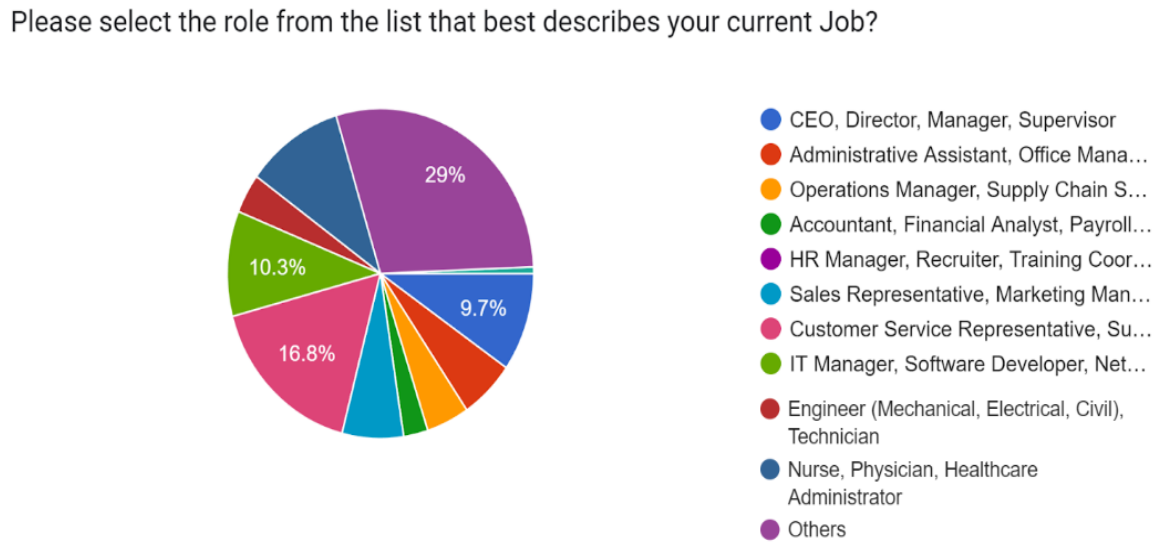


Figure 4: Current Job

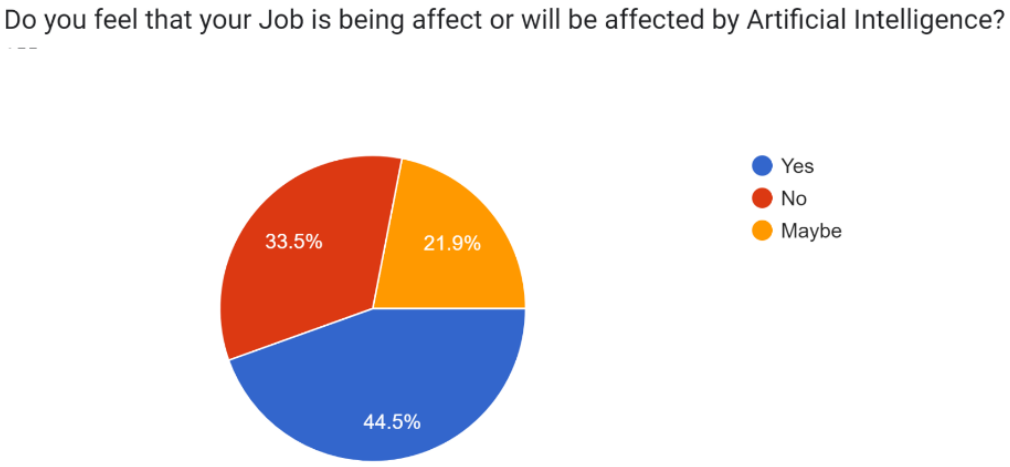


Figure 5: I believe AI affects them

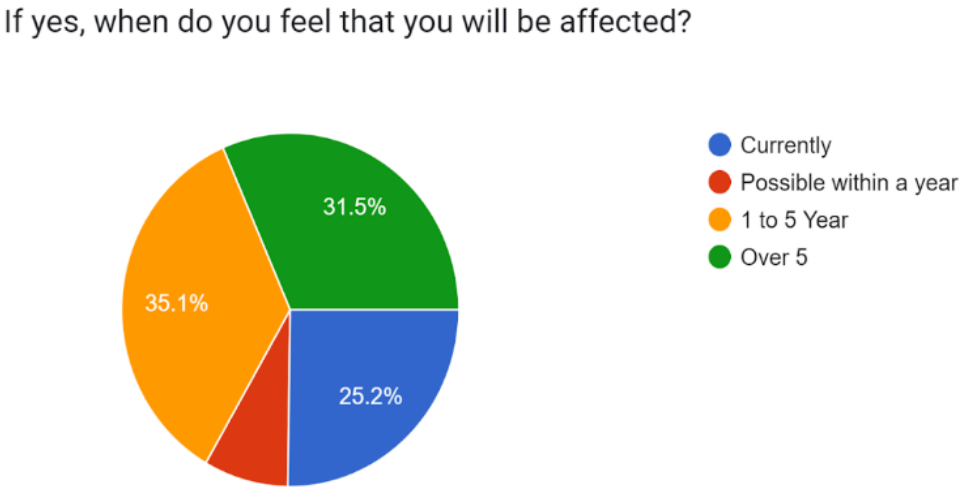


Figure 6: Period, they believe being affected by AI

Appendix C

Section 2 from the Survey: Identifying AI-Impacted Sectors in Jamaica (404 Responders)

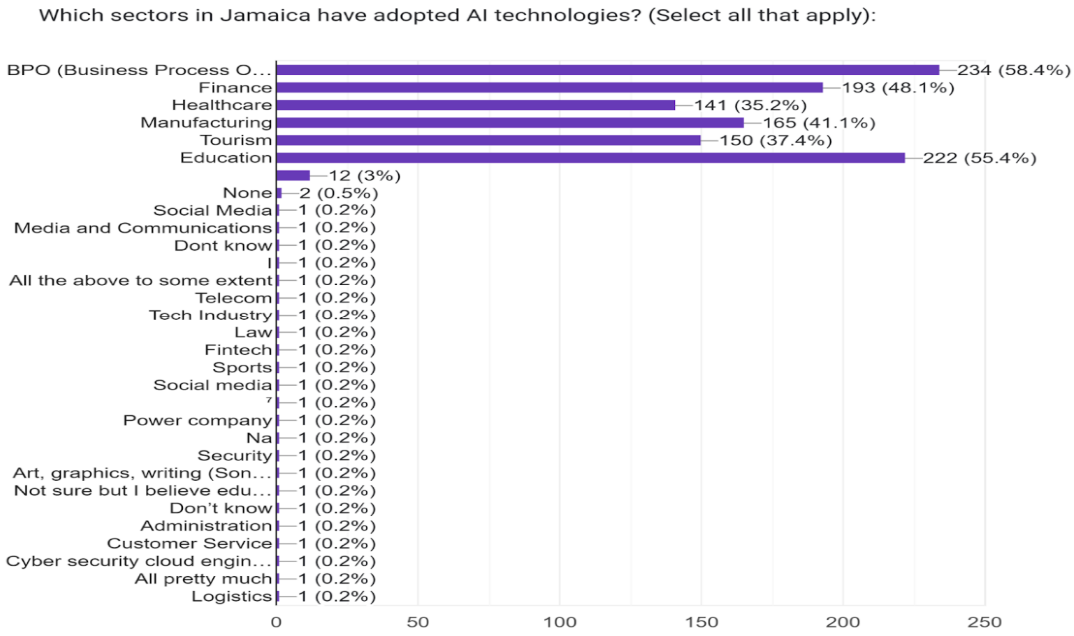


Figure 7: Identifying AI Impacted Sectors in Jamaica

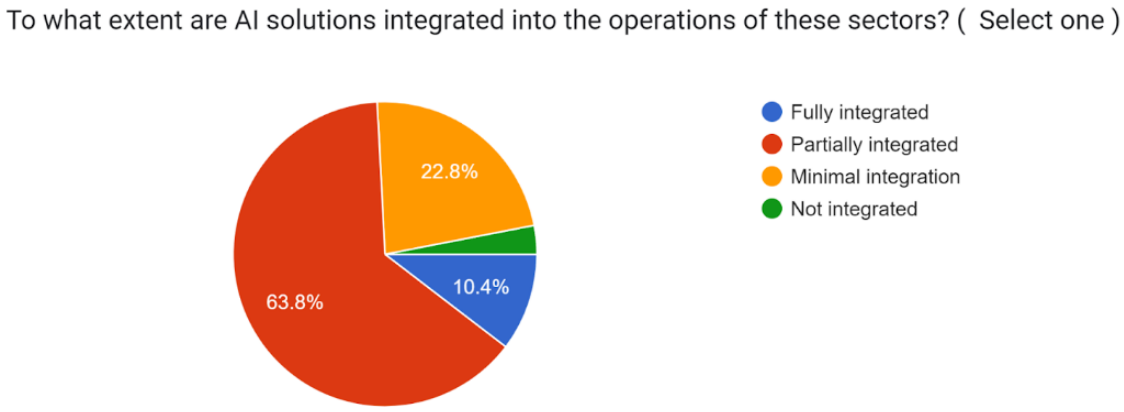


Figure 8: To what extent are solutions integrated?

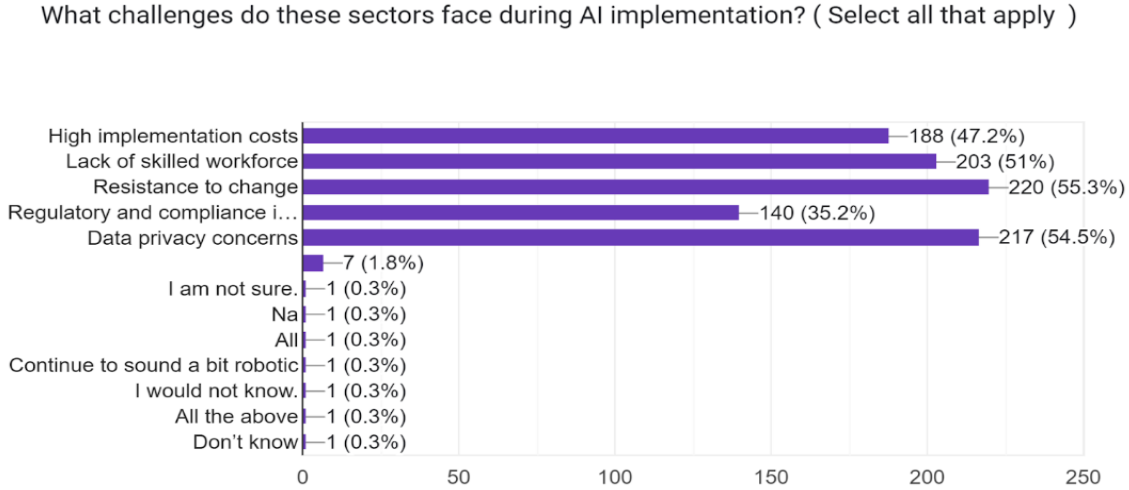


Figure 9: Challenges Sectors Face during AI Implementation

Appendix D

Section 3 from the Survey: Exploring the AI-Job Displacement Relationship (404 Responders)

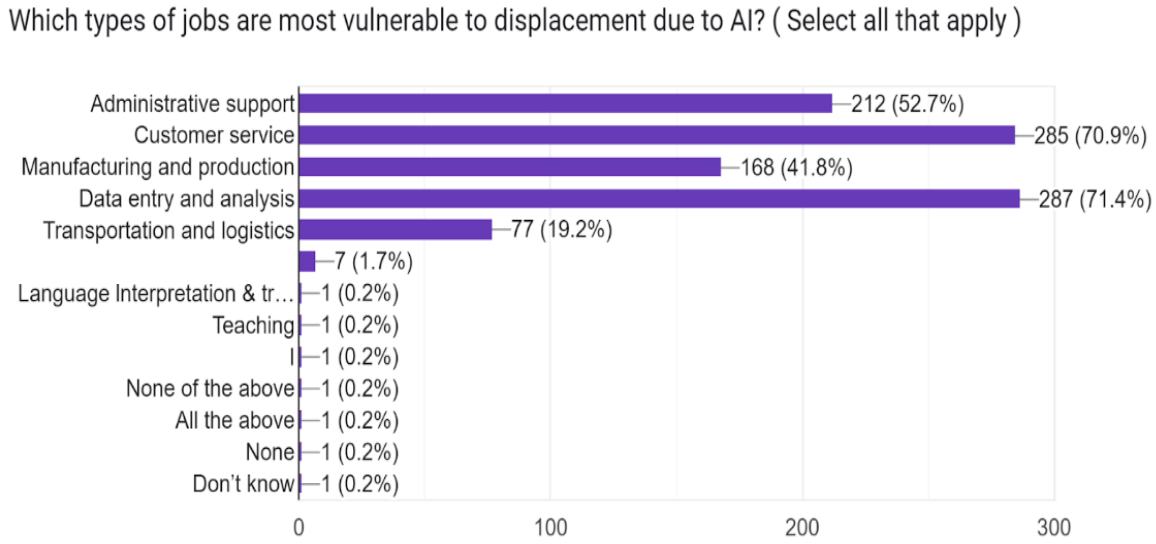


Figure 10: Types of Jobs that are most vulnerable to displacement due to AI

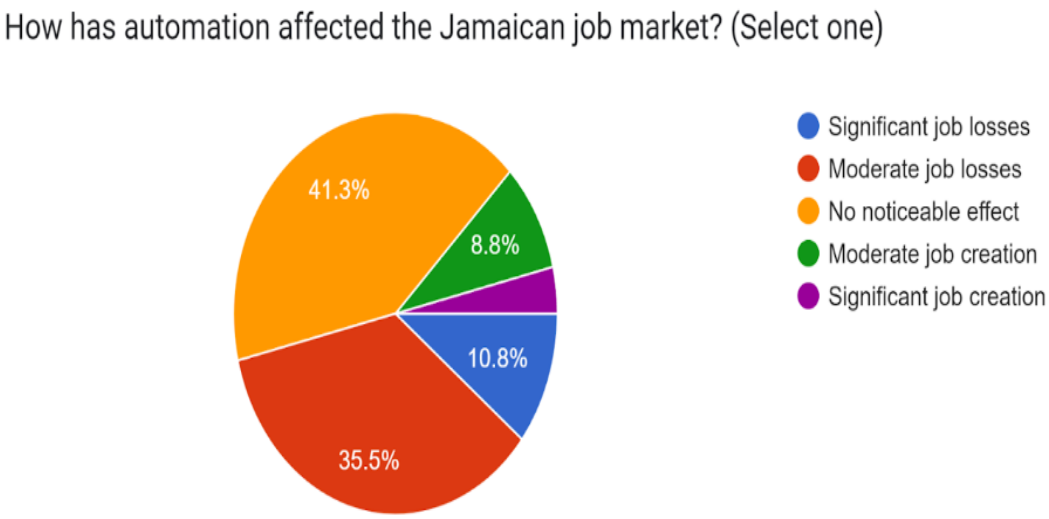


Figure 11: Automation Effect on Jamaica's Job Market

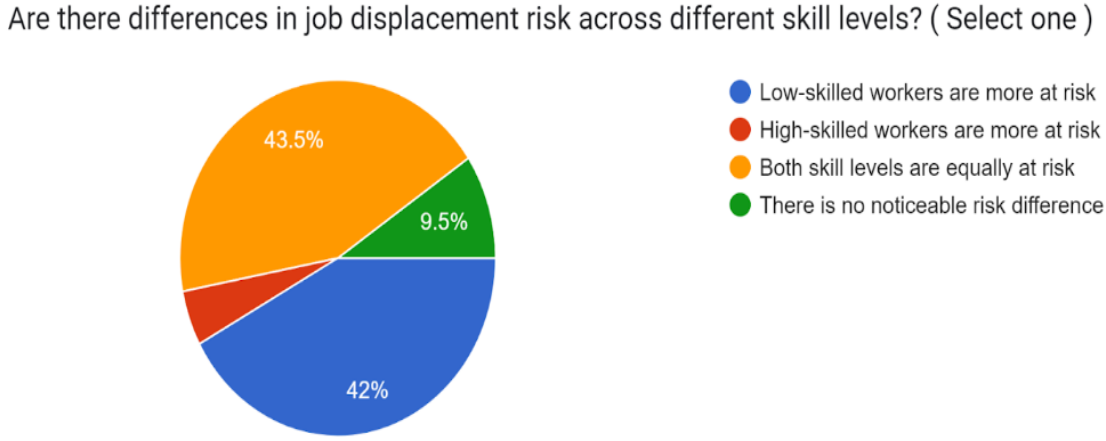


Figure 12: Job displacement risk based on Skill Levels

Appendix E

Section 4: From The Survey: Evaluating AI's Potential for Creating New Jobs (404 Responders)

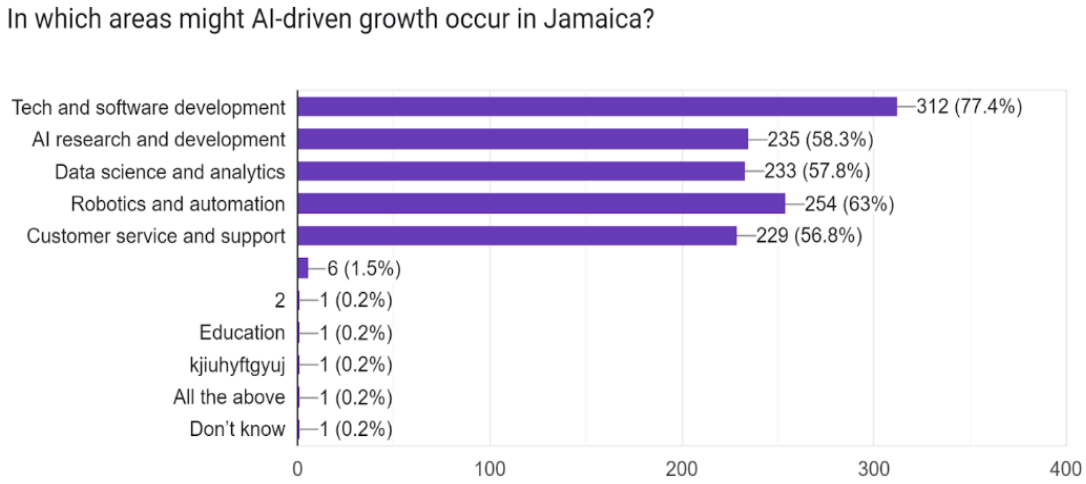


Figure 13: Areas which might drive growth in Jamaica due to AI

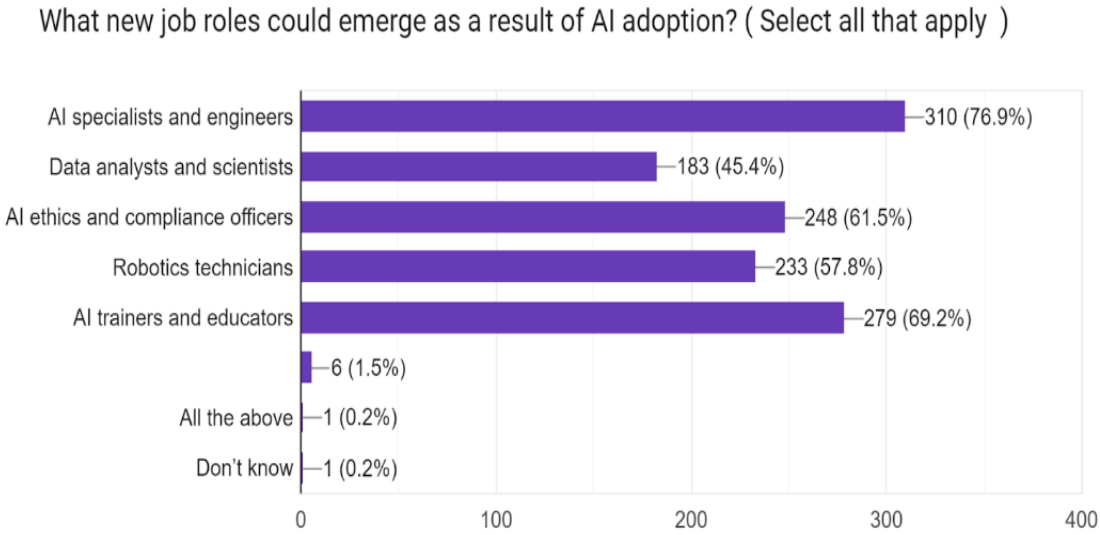


Figure 14: New Job Roles that could emerge as a result of AI Adoption

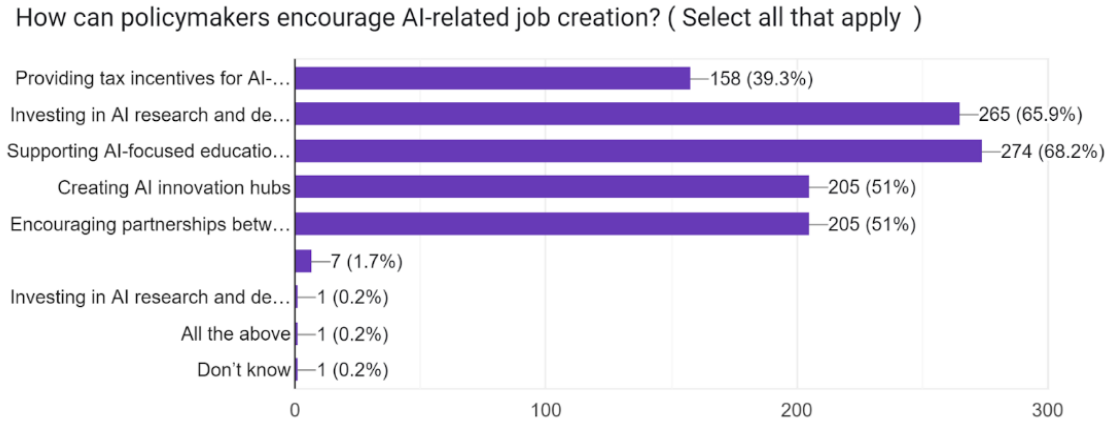


Figure 15: Ways for Policymakers to encourage AI-related job creation

Appendix F

Section 5: From the Survey: Assessing Workforce Reskilling Implications (404 Responders)

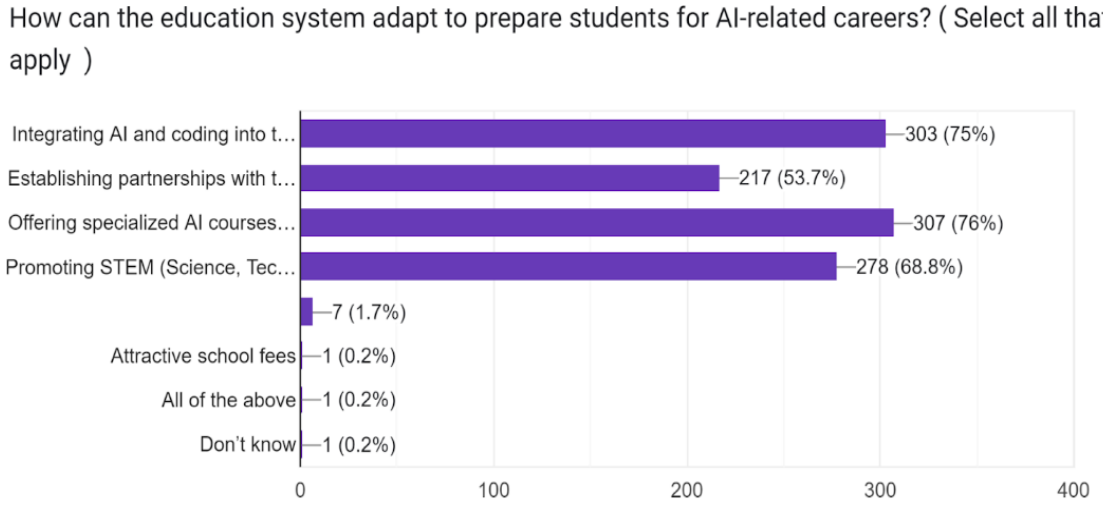


Figure 16: Education system adaptation in preparing Students for AI-related careers

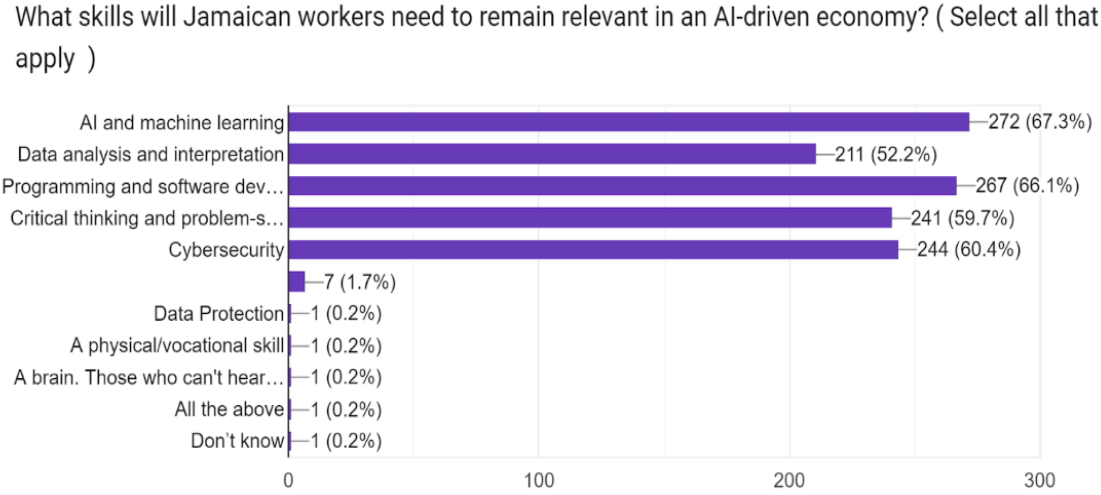


Figure 17: Skills needed to remain relevant in an AI-driven economy

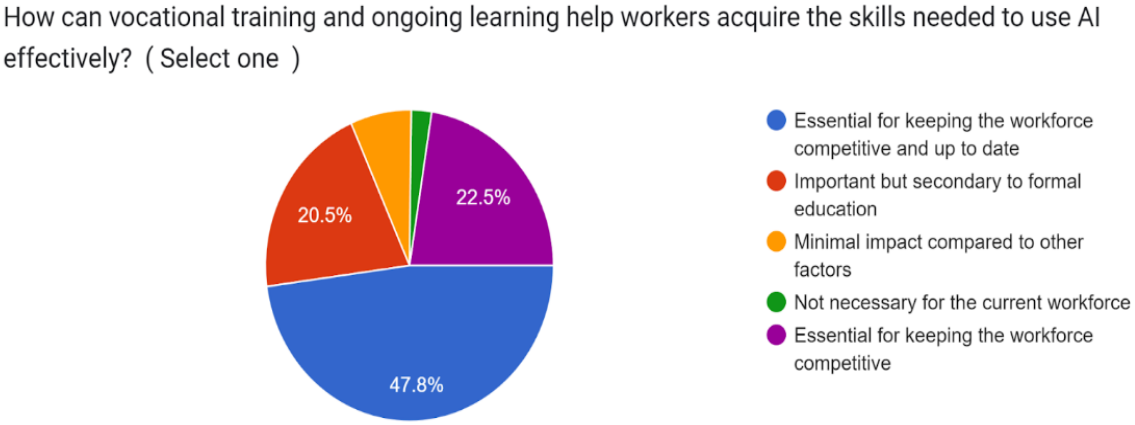


Figure 18: Vocational training and ongoing learning effectiveness for helping workers acquire the skills needed to use AI