

## THE IMPACT OF AI ON JOB SECURITY OF EMPLOYEES AND THE MODERATING ROLE OF JOB ENRICHMENT IN PAKISTAN

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### ABSTRACT

**Aim:** The study examined the impact of artificial intelligence on job security in Pakistan's industrial area with a focus on the moderating role of job enrichment.

**Method:** A quantitative research approach was employed using a survey questionnaire through which data was collected from 337 employees in Karachi industrial enterprises. The collected data was analysed using SmartPLS as the measurement model and the data was validated using Confirmatory Factor Analysis (CFA). A multicollinearity test was used to confirm the predictor variables' independence.

**Results:** The results indicated AI's direct impact on job security showing positive influence ( $\beta = 0.669$ , p-value 0.000). Job enrichment further showed positive influence on job security ( $\beta = 0.235$ , p-value 0.000). However, no significant engagement effect was revealed between AI and job enrichment on job security.

**Conclusion and implications:** The study significantly contributed to the growing body of literature suggesting that AI can be force for positive change in the workplace. Organisations can enhance job security by investing AI initiatives and by providing adequate training of the employees for better understanding.

**Keywords:** Artificial Intelligence, Job Security, Job Enrichment

**Abbreviations:** Artificial Intelligence (AI), Confirmatory Factor Analysis (CFA), Variance Inflation Factors (VIF).

### INTRODUCTION

Data technology is rapidly changing the employment landscape around the world, and this is especially true in Pakistan, where Artificial Intelligence (AI) is increasingly being integrated into organisational process. According to Nicolás-Agustín, Jiménez-Jiménez, and Maeso-Fernandez (2022), as organisations integrate digital practice, employees encounter significant shifts in how they perform their roles, which is often accompanied by reduced human interaction and increased IT systems. Employees need to adjust to changing workplaces, which can have a negative effect on their professional identity and self-perception. Individuals can lose confidence as a result of the continual development of AI when their responsibilities and values evolve, putting their professional identity at risk (Mirbabaie et al., 2022). Masera (2024) further shed light by stating

that individuals have been forced to re-evaluate their work as a result of artificial intelligence's influence on professions.

Artificial intelligence and other advanced technologies are driving the fourth industrial revolution, leading businesses and economies around the world to shift to digital landscape. The ability of AI to quickly evaluate vast amounts of complicated information endangers the employment paradigm in significant industries (Brodowicz, 2024). It includes the ability to perceive visual stimuli, recognise voices, analyse data, and make complex judgements. There is a need for a higher level of intelligence to undertake repetitive, non-cognitive jobs. With artificial intelligence, there may be more jobs with little or no potbelly, thus more unemployment (Gull, Ashfaq, and Aslam, 2023).

Furthermore, with the increased adoption of AI and automation in organisations, there has been apprehension about employment opportunities, especially in new economies. According to Ernst, Merola, and Samaan (2019), AI and robotics displace jobs, which increases worries about wealth inequality, and social disintegration. New technologies require a new look at the labour models, and this relook stresses the need to continue learning and improving work on the job to mitigate the impact of AI on employability.

On the other hand, in the current world of real-life applications of artificial intelligence, hence automation of tasks, job enrichment is helpful in reducing the adverse effects of artificial intelligence on job continuity by changing the attitude towards tasks. According to Saad (2021), the use of AI systems to perform repetitive, low-complexity tasks creates job losses and employee concerns. However, several disadvantages can be reduced through job enrichment because it makes the jobs more exciting and challenging. As pointed out by Knight, Kaur, and Parker (2022), job enrichment entails enabling employees to engage in more meaningful activities in their jobs that are at risk of being automated through autonomy, task variation, skills enhancement and decision-making power. The strategy reduced the level of anxiety that arises from the fear of losing a job to AI while at the same time enhancing job satisfaction and well-being among the employees. The ways in which employees may grow, learn, and make decisions make them feel more appreciated and indispensable for the company's functioning. Also, new technology is the reason that employees are prepared in a better way with the help of their employers. This may reduce AI's impact on job insecurity since people will feel that they have a role to play in society.

AI has massive implications for Pakistan's job market because of its capability to learn, solve problems, and make decisions is changing the demand for work, which has customarily been a function of gender, education, and other social factors. In the next ten years, technology is predicted to generate over 69 million new jobs but also release 83 million, which has led to a change in occupations and industries of about 23%. According to Arif & Naushahi (2023), manufacturing, customer services, and agricultural industries, where employment has been primarily

dependent upon manual workforce, are likely to be most affected in Pakistan, where 17 % of jobs are vulnerable to automation. Hence, the issues of job insecurity and workers' adjustment must be prioritised for meaningful economic development and social cohesiveness in Pakistan to pursue AI-generated employment prospects. In this study, the researcher intends to assess the effects of AI on job security through the analysis of job enrichment in Pakistan.

Despite the growing discussion on AI and its impact on job security, more is needed to know about the moderating role of work enrichment. Recent studies by Liu and Zhan (2020), Koo, Curtis, and Ryan (2021), and Ojiyi et al. (2023) have correctly discussed AI's impact on job security, but the studies have yet to provide any light on job enrichment. Additionally, workforce impact conversations on AI have mostly ignored job enrichment. The current study holds significance; the study evaluates how job enrichment might defend job security against AI. The study's findings will be relevant to the decision-makers and organisational leaders in Pakistani organisations. It will show how job enrichment could mitigate the adverse effects of AI on job security, hence enhancing employee resilience and engagement in the face of automation. The application of these findings' insights can help organisations establish more sustainable and employee-centric environments, thereby retaining talent and lowering turnover. As a result, employees will feel more motivated, allowing policymakers to better adapt to labour regulations and technological improvements.

### **Literature Review**

Artificial intelligence (AI) is a new technology that has a more substantial, more significant, and longer-term employment impact than previous technological revolutions (Ford, 2015). A large number of scholars argue that the emergence of modern technology, such as AI, is an external issue that puts the stability of employee jobs at risk (Brodowicz, 2024; Rehman, Iqbal and Shakil, 2017; Xie et al., 2021). Bhargava, Bester, and Bolton (2021) thought that employees' job insecurity was driven by subjective threat and that differences in individual and job dependency led to a variety of behavioural outcomes. Research completed in Dengzhou reveals that artificial

intelligence differs from technological growth in general and has had a significant impact on employment (Zhou et al. 2020). As a result of job insecurity, pay promotion insecurity, and excessive competition insecurity, workers' wages have decreased, and the employment structure has changed (Liu and Zhan, 2020). As per CNBC survey, AI increases the productivity of workers but also raises adoption concerns including job security, particularly among low-wage and minority workers (Caminiti, 2023).

Additionally, 60% of AI users are concerned about their jobs, compared to 35% who are not. Similarly, Findings from Petropoulos's (2018) study reveal that technological improvements, particularly AI, are displacing humans from ordinary jobs and developing new occupations that demand non-routine skills. Short-term job displacement will likely prevail, but long-term productivity gain may result in a net employment increase.

AI's impact on job security has been a topic of considerable debate, with perspectives being optimistic about its ability to create new opportunities. In contrast, others are concerned about its potential to displace employees. According to Shen and Zhang (2024), AI boosts productivity and improves labour division, hence creating and filling employment. In an educated society, AI benefits even the poorest workers and members of society by increasing job efficiency; this leads to better production efficiency, lower pricing and higher society consumption. As a result, firms are incentivized to expand their production capacity, which raises the demand for employment; despite the fact that this is a materialistic view of traditional requirements, AI is widely seen as a severe threat to human labour. Balsmeier et al. (2023) argued that developing tasks for human-machine cooperation reduced production constraints while increasing total factor productivity, resulting in new jobs and activities that involve coordination between human machines. Ojiyi et al. (2023) argued that automation and artificial intelligence are likely to replace manual and repetitive employment, displacing a considerable number of humans in the next decade. Fear of job migration has an impact on a wide range of industries, including healthcare (Rahman et al., 2024). Work projections need to be more evident due to a lack of data. The findings revealed that AI and automation are replacing some

jobs while chatbots and medical image analysis are supplementing others (Ojiyi et al., 2023).

Moreover, AI technologies boost production efficiency throughout the value chain in the industrial sector by increasing total factor productivity in a way that is proportional to factor endowments. As per Liu et al. (2022), this efficiency advantage has the potential to increase firm growth, market expansion and labour demand at all skill levels, stimulating labour market inventiveness. AI is the critical component of the fourth industrial revolution and is driving enormous changes in both society and the workplace. AI enhances efficiency and revenue by automating routine tasks and improving staff skills. As a result, employment that requires only moderate levels of competence may become obsolete, while previously inconceivable positions and responsibilities may develop (Polak, 2021). However, despite its potential benefits, AI is a threat to job security due to its destructive and substitutive impacts. When robots enter the work market, AI sets them against humans since it contains the intelligence of complex human labour in a condensed format. According to Shen and Zhang (2024), AI has the potential to cause "technological unemployment", a phenomenon in which gains in productivity and capital composition reduce demand for human labour, resulting in an excess labour population during the industrialization period. Despite the widespread adoption of AI, various nations have seen worker wages and labour productivity grow just a little, as Ramos et al. (2022) and Jetha (2023) argued that individuals with less education and disabilities are being displaced by automation.

Even though job enrichment has the potential to boost workplace satisfaction and productivity, it only sometimes provides beneficial results. Siruri and Cheche (2021) agreed that in order for job enrichment interventions to be effective, modern organizations must consider their employees' wants and preferences. Job enrichment increases the diversity, autonomy and relevance of work obligations, which can boost satisfaction for some but have a negative influence on others, particularly highly qualified professionals working in complex occupations. According to Muhlbradt (2022), the cognitive problems associated with increased decision-making autonomy may contribute to emotions of inadequacy and

vulnerability. Such employees might consider employment security, shorter working hours and additional remuneration more critical than assuming more tasks. Asuyama (2022) finds out that there is a difference in job happiness and job enrichment across the types of jobs held. However, for highly qualified professionals, job enlargement or job enrichment might be no better, and even worse, for job satisfaction.

Furthermore, the use of artificial intelligence in organizations distorts the correlation between job enhancement and job satisfaction. According to Al-Sartawi (2024), automation by means of artificial intelligence may enhance the ability to avoid boredom in the workplace by performing routine tasks on one's behalf; however, it is also associated with the loss of jobs. Based on the literature, individuals who consider AI as a positive factor, which is often associated with training and skill enhancement, are those who are more content with their careers (Brougham and Haar, 2018; Al-Sartawi, 2024). Although AI brings solutions and improvements in efficiency and productivity, those who believe that it poses a threat to their employment are likely to be stressed and dissatisfied. To maintain and enhance job satisfaction where work is becoming more and more robotic, firms need both AI job design and relevant actions that counter potential job loss and facilitate human-AI working relations.

The transactional theory of stress, which focuses on stress as a process that can be studied in terms of how individuals manage it, describes both the acute and chronic effects of stress. The transactional theory of stress assumes that people utilize problem-focused coping strategies in order to reduce stress and enhance the quality of their lives. This idea proposes that when humans regard artificial intelligence as an opportunity, they employ these approaches. Stress is a subjective experience that emerges when people believe they lack the resources to handle a critical situation (Folkman, 2012). This theory describes the cognitive assessment and coping methods used by people to deal with stressful events. According to Duan and Guo (2018), People may endure stress as a result of AI replacing particular jobs and income levels. The transactional theory of stress states that cognitive evaluation and coping processes decide how employees are affected by the advancement of artificial intelligence. The usage of artificial

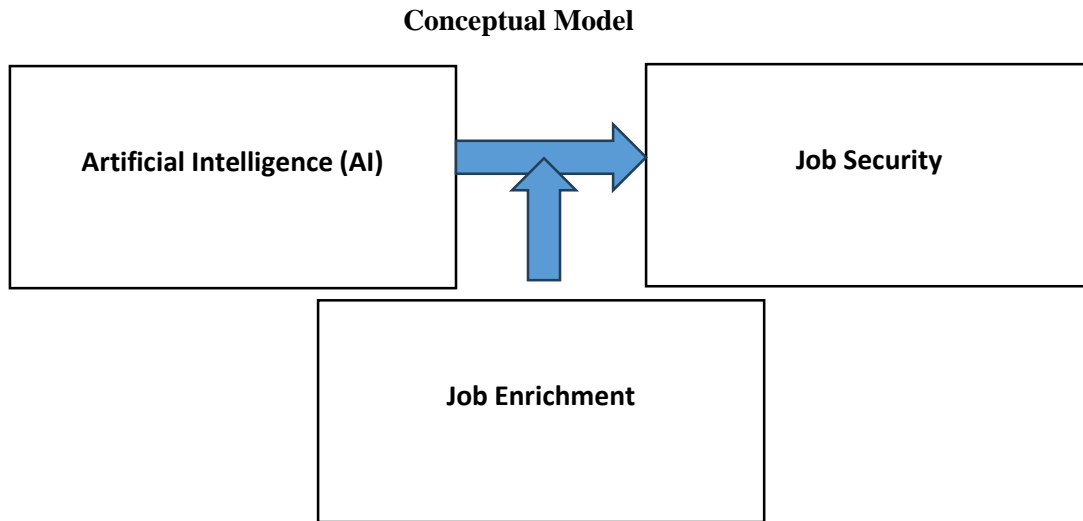
intelligence creates new jobs (Zhou et al., 2017; Mao and Hu, 2020) and raises the pay of some management and skilled jobs (Peng, Li, and Peng, 2021; Ahmad and Iqbal, 2022; Zhang and Zhang, 2019) but it also causes unemployment (Xie et al. 2021).

### **Methodology and Framework**

The study was based on quantitative method as survey questionnaire was utilised to examine the impact of AI on job security of employees considering the role of job enrichment. 350 employees from Karachi industrial enterprises were recruited using convenience sampling method as the method ensured efficiency in collecting the data. The sample's error rate was 5%, with a 95% confidence level. This is through the random sampling technique that is able to yield a good sample size given the huge population of workers; 337 people were selected for the research. The participants for the study were 385 of the 400 respondents who agreed to take the survey. 4-item scale which has been constructed and validated by Ta et al. (2023) measuring AI was used and the scale was further refined so that it reflects the current study's focus on AI and employment insecurity. The items assessed to what degree or frequency employees employ AI for decision, learning, problem solving and thinking. Because of such alterations, the challenges became applicable to the selected sector. Moreover, 4-item was originally created by Yam et al. (2023) but the current study adapted it to measure job security. The items were developed to measure job security concerning the application of AI at the workplace. Ruiz-Palomo et al. (2020) developed 4-item scale to measure job enrichment. The items were modified to capture the influence of AI on the employment status of employees with a view of including the moderating effect of job enrichment. Questionnaires were built to find out whether the use of AI in employees' occupations was useful for learning new skills, advancing in their careers, requiring a level do knowledge and competency, and giving more challenging tasks. The data was analyzed using the SMRT PLS methodology since it can accommodate sophisticated approaches as well as exploratory and confirmatory research. Validation of the measurement model was conducted using Confirmatory Factor Analysis (CFA), which ensured that all theory components

were included. The same kind of metrics were acquired, including component loadings, composite dependability, and average variance extraction. A multicollinearity test was used to confirm the predictor variables' independence.

Variance Inflation Factors (VIF) were calculated for the independent variable. The structural model was utilized to determine relationships between artificial intelligence, job security, and job enrichment.



**Results**

Measurement model using confirmatory factor analysis (CFA)

**Table 1: Measurement model using CFA**

Constructs	Indicators	Factor Loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Artificial Intelligence	AI1	0.845	0.830	0.833	0.667
	AI2	0.866			
	AI3	0.849			
	AI4	0.695			
Job Security	JS1	0.746	0.798	0.798	0.623
	JS2	0.776			
	JS3	0.818			
	JS4	0.814			
Job Enrichment	JE1	0.836	0.909	0.909	0.787
	JE2	0.874			
	JE3	0.927			
	JE4	0.909			

The study by Brown (2015) discovered that component factor analysis (CFA) confirms the variable factor structure in terms of convergence, discrimination, and dependability. Cronbach's alpha and composite reliability are approaches for assessing the reliability of latent constructs. Table 1 displays the results of the internal consistency reliability tests. According to Kline's (2015) outcomes, Cronbach's Alpha and composite

reliability must be more than. The above table shows that the latent variables have a higher degree of internal consistency and dependability as a result: Cronbach's alpha is 0.830 for Artificial Intelligence, 0.798 for Job Security, and 0.909 for Job Enrichment. On the other side, the AI composite's dependability is 0.833, job security is 0.798, and job enrichment is 0.909. The construct indicators' validity has been assessed using factor

loadings. According to the authors Latan, Noonan, and Matthews (2017), factor loadings must be more than 0.6 to ensure the factors' validity. Table 1 displays the factor loadings of each indicator, which show that all of the factors have a value larger than 0.6, supporting the variables' validity

and eliminating any indications. Furthermore, the Average Variance Extracted (AVE) criterion of 0.5 was used to determine convergent validity, a method for determining relatedness (Hair et al., 2017). Convergent validity is shown by AVE values greater than 0.5, as seen in Table 1.

**Table 2: Discriminant Validity**

Variables	Artificial Intelligence	Job Security	Job enrichment	Job enrichment x Artificial Intelligence
Artificial Intelligence				
Job Security	0.899			
Job enrichment	0.321	0.471		
Job enrichment x Artificial Intelligence	0.130	0.159	0.444	

A measure known as the Heterotrait-monotrait ratio (HTM) was used to assess the discriminant validity of the study's items. This ratio demonstrates the distinctions between constructs. Furthermore, Wong (2011) states that in order to ensure discriminant validity and minimise multicollinearity, HTMT ratios must be less than 0.85. Table 3 shows that the idea correlates more strongly with its indicators than with other constructs, indicating that the model is effective. As per the above table, the correlation between Artificial Intelligence and Job Security is notably high at 0.899 showing the use of AI appears to have a considerable impact on employees' job security. Job Enrichment shows a moderate correlation with

Job Security 0.471, indicating that employees who experience enrich job roles also per cove higher level of job security. Artificial Intelligence has a low correlation 0.321 with job enrichment implying that is a minimal impact. The association between Job Enrichment and Artificial Intelligence shows a moderate correlation with Job Enrichment 0.444, but a weaker relationship with Job Security 0.159 and Artificial Intelligence 0.130. It demonstrates that while AI and Job enrichment changes job roles, they have no impact on Job Security.

**Structural Model**

**Table 3: Structural Model**

Variables	Coefficient	T statistics	P values
Artificial Intelligence -> Job Security	0.669	19.659	0.000
Job enrichment -> Job Security	0.236	4.509	0.000
Job enrichment x Artificial Intelligence -> Job Security	0.025	0.797	0.425

After determining the accuracy of the data, the author investigated the impact of Artificial Intelligence on job security as well as the purpose of job enrichment. According to Avkiran and Ringle (2018), bootstrapping is a resampling approach that uses variable significance to determine a path. Table 3 shows the path coefficient and significance levels for artificial intelligence's impact on job satisfaction. Artificial Intelligence has a large and positive impact on employees' Job Security ( $\beta = 0.669$ , p-value

0.000), showing that the use of AI has been effective in improving Job security. Job Enrichment and Job Security have a significant positive connection ( $\beta = 0.236$ , p-value 0.000) indicating that enriching job roles improves job security, although to a lesser extent than AI. Job Enrichment and Artificial Intelligence shows no meaningful impact on Job security ( $\beta = 0.025$ , p-value 0.425), implying that AI and job enrichment have no significant influence on job security.

**Predictive Relevance and Quality Assessment**  
**Table 4: Predictive Relevance and Quality Assessment**

Variable	R-square	R-square adjusted
Job Security	0.581	0.578

As per the above table 4, it shows that Job Security model is correct and predictive. R-square value of 0.581 indicates that the model variables which include Artificial Intelligence and Job Enticement and their engagement can be explained by the variance 58.1%. Due to the high explanatory power of the model, it is able to predict the outcomes of job security within the context of studied. The R-squared value is 0.578 which is closer to the R-square value confirming model's reliability, indicating the inclusion of predictors in the model effectively explains in job security with minimal loss of predictive power.

**Table 5: Multicollinearity**

Constructs	Indicators	VIF
Artificial Intelligence	AI1	2.139
	AI2	2.498
	AI3	2.140
	AI4	1.322
Job Security	JS1	1.899
	JS2	2.023
	JS3	2.489
	JS4	2.468
Job Enrichment	JE1	2.216
	JE2	2.831
	JE3	14.088
	JE4	12.649

According to table 5, all of the Variance Inflation Factor (VIF) values falling below the recommended threshold of 5.0 that was established by Hair et al. (2019) are below the threshold. With this evidence, it is clear that there is no multicollinearity. The VIF ranges from 1.322 to 14.088 Artificial Intelligence, Job Security and Job Enrichment. The findings suggest that there is no multicollinear tendency considering neither of the variables included in this model exceed a certain threshold. This ensures the reliability of the regression coefficient as well as the model's stability.

**Discussion**

The widespread concerns about the potential for artificial intelligence to destabilise the employment sector (Zhou et al. 2020; Bhargava, Bester and Bolton 2021). Additionally, the development of contemporary technology, such as artificial intelligence, is an external factor compromising the security of employee employment (Brodowicz, 2024; Xie et al. 2021). The results found that the implementation of AI has a direct impact on Job security. AI automation have the capacity to displace employees and their jobs. The study by Shen and Zhang (2024) discovered that AI has the ability to improve job security of employees; hence creating new job opportunities and increasing work security. It indicate that while AI can destroy some job categories, it can provide new opportunities particularly in industries that demand human-AI collaboration. Therefore, it helps to reduce some of the negative effects that AI could have on job security. According to Balsmeier and Woerter (2023), human machine cooperation increases total factor output while also creating new employment opportunities. These opportunities is required to understand the dual nature of AI in the workplace. AI can automate unsafe and repetitive, labour but it also allows employees to focus on more creative and strategic activities. Therefore, this shift in work roles, human labour may become indispensable in situations where AI is utilised as an augmentation tool contributing to greater employment security. Furthermore, the study further suggested that job enrichment operate as a moderator in the relationship between AI and job security. As stated by Siruri and Cheche (2021), job enrichment is associated with increased job security. The results from the study argue that interventions be targeted to employees; interests. Enhancing employment enrichment leads to increase diversity, autonomy and skill development which increase job satisfaction and security. As a result, this is relevant since AI career opportunities rapidly evolving. Brodowicz, (2024) discussed that employees may feel more prepared face interruptions in AI if they are given more control over their work and the opportunities to develop new skills, as this may reduce job insecurity. The study's discovery that AI and job enrichment do not interact in terms of job security demands further research, as Al-Sartawi (2023) claimed that job enrichment has the ability to improve the benefits of AI by making

employment more attractive and less automated. AI and job enrichment may be more challenging

than previously imaged as the study found no significant engagement between the two variables.

**Table 6: Table of Hypothesis**

Hypothesis	Outcome	Support
H1: Artificial Intelligence (AI) positively impacts job security.	Accepted	The study found a significant positive impact of AI on job security, aligning with findings by Shen and Zhang (2024) and Balsmeier and Woerter (2023).
H2: Job enrichment positively impacts job security.	Accepted	The findings support that job enrichment significantly improves job security, consistent with Siruri and Cheche (2021).
H3: The interaction between Artificial Intelligence (AI) and job enrichment has a significant positive effect on job security.	Rejected	No significant interaction effect was found, contrary to expectations based on Al-Sartawi (2024), suggesting context-specific influences.

**Conclusion and Implications**

The study examined the impact of artificial intelligence on job security in Pakistan's industrial area with a focus on the moderating role of job enrichment. The study found that strategic AI use can boost job security, demonstrating that incorporating AI into the workplace can increase productivity and create new professionals that require human-AI collaboration rather than resulting in job losses. Job enrichment through increased autonomy, skill variety, and personal development amplified AI's positive effects on job security. It shows that enriching jobs equips employees with skills and motivation to adapt to technology advancements, making them feel more secure. The study revealed no significant relationship between AI and job enrichment and job security. While AI and job enrichment provide direct benefits, further research is needed to understand how they interact. In addition, the study supports the idea that AI can improve workplaces, particularly when combined with job enrichment. The study benefits both organisations and policymakers, as implementing AI and job enrichment can increase job security in Pakistani organisations. Employees who receive training, development and increased autonomy can use artificial intelligence more successfully. These findings highlight the necessity of lawmakers fostering the use of AI and the creation of new jobs in the workplace. As part of this, companies may

be given incentives to invest in AI, and employees may be trained to adapt to new technologies. In addition, the study advocates for more research on the long-term effects of AI and job enrichment on job security. Future studies can look into how organisational culture and leadership affect AI, job enrichment and job security. The findings presented here can help maximise the benefits of AI while protecting the employee.

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**Appendix: Questionnaire**

1. Please specify your age:
  - i) 18-25
  - ii) 25-35
  - iii) 35-45
  - iv) 45-55
  - v) More than 55 years
2. Please specify your Gender:
  - i) Male
  - ii) Female
  - iii) Other
  - iv) Not feeling comfortable to specify

Based on your knowledge and experience, select any one of the options given below each of the following statements.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
<b>Artificial Intelligence (AI)</b> ( <i>Yam et al. 2023</i> ).					
Today, many of the decision-making activities in my job were automated or assisted by AI.					
Today, many of the problem-solving tasks in my job were automated or assisted by AI.					
Today, many of the learning activities required for my job were automated or supported by AI.					
Today, much of the reasoning needed for my job was automated or assisted by AI.					
<b>Job Security</b> ( <i>Yam et al. 2023</i> ).					
I think that the introduction of AI will soon lead to changes in my job.					
I feel insecure about the future of my job due to AI integration.					
I thought that AI might reduce the relevance of my current skills in the near future.					
I believe that AI could significantly alter my job responsibilities soon.					
<b>Job Enrichment</b> ( <i>Ruiz-Palomo et al. 2020</i> ).					
I can learn new things in my job by working with AI technologies.					
I feel that my work with AI can improve my professional skills.					
My job requires a lot of skills and capabilities to effectively work alongside AI.					
I believe that integrating AI into my job enhances my ability to take on more challenging tasks.					