



**ATTITUDES OF UNDERGRADUATE AND GRADUATE STUDENTS  
TOWARDS THE POTENTIAL ROLES OF ARTIFICIAL INTELLIGENCE IN  
THEIR FUTURE EMPLOYMENT**

**Master's Thesis in Business Administration**

**Reema E.N. Al Nabahin**

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## FINAL APPROVAL FOR THESIS

This thesis" titled **Attitudes of undergraduate and graduate students towards the potential roles of artificial intelligence in their future employment**" has been prepared and submitted by **Reema E.N.AI Nabahin** in partial fulfillment of the requirements in "Anadolu University Directive on Graduate Education and Examination" for the Degree of Master of Business Administration in the Department of Business Administration Has been examined and approved on 13/12/2024

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## ÖZET

Lisans ve Lisansüstü Öğrencilerinin Gelecekteki İstihdamlarında Yapay Zekanın  
Potansiyel Rolüne İlişkin Tutumları

Reema E. N. Al Nabahin

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Danışman: Prof. Dr. İ. Cemil Ulukan

Yapay zekâ (YZ), dünya genelinde istihdam piyasalarını ve öğrencilerin kariyer fırsatlarını hızla etkilemektedir. Bu çalışma, lisans ve lisansüstü öğrencilerinin gelecekteki kariyerlerine yönelik YZ'nin etkisine ilişkin algılarını incelemektedir. Çalışmada nicel araştırma yöntemi kullanılmış ve geçerliliği ve güvenilirliği sağlanmış AAIEQS anket formu kullanılarak . Anketin güvenilirliği Cronbach alfa katsayısı ile 0.767 olarak doğrulanmıştır. Veriler, Anadolu Üniversitesi'nde 2023-2024 akademik yılında okuyan öğrencilerden elde edilen 402 geçerli anket yoluyla elde edilmiştir. Akademik düzeyler arasında orantılı temsili sağlamak için tabakalı rassal örnekleme yapılmıştır. Veri analizi, SPSS paket programı, kullanılarak standart sapma, ortalama ve yüzdelik gibi tanımlayıcı istatistiklerin yanı sıra algılamadaki anlamlı farklılıkları belirlemek için ANOVA testleri ile gerçekleştirilmiştir. Bulgular, öğrencilerin çoğunluğunun YZ'yı kariyer olanakları açısından faydalı bulduğunu göstermektedir.. Erkek lisans öğrencilerinin YZ'nin potansiyeline dair daha fazla iyimserlik sergilediği görülürken, kadın lisansüstü öğrencilerin ise YZ'nin karmaşıklıkları ve istihdamı bozma potansiyeli konusunda daha fazla endişe dile getirdiği gözlemlenmiştir. Öğrenciler, YZ'nin endüstrilerin genişlemesine katkısını kabul ederken, çoğu hazırlık ve eğitimlerin artırılması gerekliliğini vurgulamıştır. Üniversite müfredatına kapsamlı YZ odaklı derslerin dahil edilmesi, öğrencilerin ilgili becerilerle hazırlanması için önerilmektedir. Pratik eğitimler, kariyer hazırlığını artırmak için sektör gereksinimlerine uygun olmalıdır. Eğitim kurumları, özel destek ve mentorlük hizmetleri sunarak cinsiyet farklılıklarını düzeltebilir.

**Anahtar Kelimeler:** Yapay Zekâ, İş Kaybı, Yaratıcı Yıkım Teorisi, Beceri Önyargısı .

## ABSTRACT

### Attitudes of Undergraduate and Graduate Students towards the Potential Roles of Artificial Intelligence in Their Future Employment

Reema E. N. Al Nabahin

Department of Business Administration

Anadolu University, Graduate School, November 2024

Advisor: Professor Dr. İ. Cemil Ulukan

Artificial Intelligence (AI) has been swiftly impacting employment markets and career opportunities for students globally. The present study examines the perceptions of undergraduate and graduate students regarding the influence of AI on their future careers. A quantitative methodology was utilized, employing the validated AAIEQS survey instrument. The Cronbach's alpha of the survey was 0.767. Data were gathered from 402 valid responses from students at Anadolu University during the 2023–2024 academic year. Stratified random sampling guaranteed proportional representation among academic tiers. Data analysis was conducted utilizing SPSS, employing descriptive statistics including standard deviation, mean and percentage, and ANOVA tests to ascertain significant differences in perceptions. Findings indicate that the majority of students perceive AI as advantageous for career prospects. Male undergraduate students exhibited greater optimism regarding the potential of AI. In contrast, graduate female students articulated greater apprehension regarding the intricacies of AI and its potential to disrupt employment. Students recognized AI's contribution to industry expansion, yet many underscored the necessity for enhanced preparation and training. It is recommended to incorporate extensive AI-centric courses into university curricula to prepare students with pertinent skills. Practical training must correspond with industry requirements to improve career preparedness. Educational institutions must rectify gender disparities by offering specialized support and mentorship.

**Keywords:** Artificial Intelligence, Job Displacement, Creative Destruction Theory, Skills Bias.

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Lastly, I express my gratitude to every individual who contributed to the success of this work.

## **STATEMENT OF COMPLIANCE WITH ETHICAL PRINCIPLES AND RULES**

I hereby truthfully declare that this thesis is an original work prepared by me; that i have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with “scientific plagiarism detection program” used by Anadolu University, and that “it does not have any plagiarism” whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

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Reema E.N.AL Nabahin

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## ABBREVIATIONS

|                |                                                       |
|----------------|-------------------------------------------------------|
| <b>AI</b>      | Artificial Intelligence                               |
| <b>AML</b>     | Algorithmic Machine Learning                          |
| <b>R&amp;D</b> | Research and Development                              |
| <b>ANOVA</b>   | Analysis of Variance                                  |
| <b>SPSS</b>    | Statistical Package for Social Sciences               |
| <b>ILSVRC</b>  | The ImageNet Large Scale Visual Recognition Challenge |
| <b>NLP</b>     | Natural Language Processing                           |
| <b>WEF</b>     | World Economic Forum                                  |
| <b>RBTC</b>    | Routine-Biased Technological Changes                  |
| <b>ICT</b>     | Information and Communication Technologies            |
| <b>SQL</b>     | Structured Query Language                             |

# CHAPTER 1.

## 1. INTRODUCTION

### 1.1. Introduction

Artificial Intelligence (AI) entails the conduct and thinking of machines as human beings (Chen et al., 2020). Improved program functions aided, in particular, in algorithmic machine learning (AML), enables machines to develop new solutions and devices and modify to diverse circumstances (Roll & Wylie, 2016). Therefore, AI is slowly being assimilated into everyday life, self-driving cars, online assistants, and other useful web services. (Huang et al., 2021). The use of AI in modern times is encroaching even into sectors of employment that have hitherto resisted any form of mechanization (Presbitero & Teng-Calleja, 2023). Current trends point to rapid generation advance saddled with technological enhancement which caused radical labor displacement, resulting in a dire unemployment situation (Bruun & Duka, 2018). As work is extended into the new AI driven era where the 4th industrial revolution involves the convergence of the digital biological and physical spaces (Tschang & Almirall, 2021).

One of the primary causes for the rapid expansion of AI is new power technology, available amounts of data, and better algorithms (Abuselidze & Mamaladze, 2021). Its possibilities are in decision making, pattern detection, and even creativity (Rapanyane & Sethole, 2020). These changes create a situation where the boundaries of different tasks that are day to day responsibilities or Job classification are increasingly becoming less sharp (Chowdhury et al., 2023). The fear of automation eliminating human operatives is common (Basu et al, 2023). Supporters of AI predict that the organization achieve feats that was never heard before, as it is augmenting people's work and processes (Howard, 2019). On the other hand, detractors of these technologies emphasize that progress in automation is detrimental to the working class and increases economic inequalities (Shaukat et al., 2020). It follows then, that this forms a basis for the need to research on students' attitudes in AI since they are the workforces of the future (Hui et al., 2023). Also, it is very important to understand their attitudes toward AI, what careers it affects, and what skills are required in order to succeed in this new AI-induced environment (Gregg, 2023). It encourages the solution to the challenges AI poses and help in making the students more employable.

The current study seeks to offer valuable information to various stakeholders such as the academia, corporate world, and governments among others. In this regard, the research focuses on students' attitudes and expectations towards AI. The objective is to research graduate and undergraduate students' attitudes towards AI and its integration in forging their career pathways. AI is of great relevance in all sectors, which radically changes the landscape of employment. The study addresses students' worries, expectations, and hopes regarding the influence of AI technologies development on their careers which would be of use to the employers and education providers in order to adjust their strategies to the more informed students.

### **1.2. Statement of the Problem**

The advent of AI into various spheres of life has been so rapid owing to many particular aspects that there is a wondering about the future of jobs in general. Bring also the fact that as AI technologies progress, there is a higher tendency for the labor market to have cut a few curves. The present study aims at investigating the attitudes of undergraduate and graduate students towards the future career advancement opportunities that would possibly be created by AI. In light of AI's proliferation in numerous sectors, it becomes necessary to understand the perceptions of students towards the application of AI in their career progression. The study proposes to contribute to the Body of Knowledge of schools, policy makers and employers by exploring in detail how students behave, how they perceive, what worries them and what they aspire regarding the role of AI in the employment market offers. On the one hand, analyzing students' expectations and fears about AI in this regard is crucial in enabling more effective and adaptive strategies to the third wave. The research results are expected to contribute to the recommendations on how to level up industry commitment, policy provision and education content towards meeting the interests and aspirations of the learners in the era of changing technology.

### **1.3. The purpose of the Study**

This study aims to explore and analyze undergraduates' and graduates' perceptions of the potential AI avails in their selected fields. The onset of AI is revolutionizing the manner of employment by changing the job categories as well as the type of skills that are appreciated by employers. Hence, the objective of this study is to assess how these factors modify the perception of students towards AI in regard of the careers that they are likely to take in the future. It is acknowledged as a catalyst for

inventions and employment opportunities and upskilling, which creates a lot of interesting areas for the inquisitive minds. However, there are a lot of concerns to address, for example, the fear of inability to cope with the changes in technology, ethical concerns especially in the use of AI to make decisions, and job security. The gender differences in the attitude towards AI are also some of the questions that this research seeks to answer. If these disparities are understood, then better systems of educational and vocational support can be put in place, and thus help prevent all girls and boys from being deprived of the chance to work in artificial Intelligence. Moreover, the current study looks at the similarities/differences of the student ethnic groups with respect to avocational interests in AI, and looks specifically at students in the arts and sciences. The research understands and emphasizes why it is very important to know about other disciplines and get ready to use AI in any field by giving a clear example of the reason why it is important.

#### **1.4.Importance of the Study**

This research is pertinent not only to individual groups but also to all stakeholders involved – undergraduate and graduate students, universities and contractual businesses that are all important in reducing the impacts of AI on future workforces. Young scholars can also be well guided using this research focused on AI and its impact on their respective careers. Quite a number of students, especially in the humanities, may not appreciate the extent to which A.I. is transforming industries today. The results of the study provide students with knowledge of the advantages and disadvantages of artificial Intelligence (AI) as well as regarding new job opportunities in AI fields and the necessity of acquiring new job-related skills to keep out-of-their-present-jobs.

We expect that the findings of this study inform curriculum development and educational policy making in institutions of higher learning. The study also examines how ready students are for taking on AI jobs and helps colleges assess how students view AI. It assists universities in developing appropriate strategies by which students can be exposed to AI from the technical perspective and also from administrative and ethical perspectives and thus offer courses such as AI ethics, machine learning, AI based innovation. The research assesses the challenges faced by the upcoming graduates in adjusting to the Machine Age such as in the industries of technology, healthcare, finance, and even manufacturing. Industries that embrace artificial intelligence sooner than others enter the market must take into account whether the new workforces being trained are

developing to respond to the challenges and the opportunities created by artificial intelligence. With this knowledge, it is possible for companies to partner with educational institutions and arrange for apprenticeships, and courses to be developed that fills those gaps in education in order to prepare today's students for the AI dominated labor market of tomorrow. In addition, the industries can employ the results of the research to alleviate the gender imbalances that were revealed in the study and to promote gender equality in the opportunities provided for the AI jobs.

The study collects the necessary intelligence to influence the formulation of National Artificial Intelligence strategies and policies with respect to human capital. If there are such problems as absence of AI topics in university programs or insufficient number of women in AI dynamics, the authorities may devise a legal act. Laws could be made that assist with the financial funding of AI R&D. There could be legislation encouraging the development of academic programs focused on AI within the universities. In addition, there is the possibility of the government easing the students' worries regarding job extinction effects and the importance of possessing technetronic competencies by recognizing such worries. This enabled them to develop strategies to enhance AI knowledge and helped to protect employment from the adverse effects of evolving technology.

### **1.5. Assumptions of the Study**

In this context, the assumptions of this investigation are very important in terms of its pre-design, implementation and post-interpretation of the outcomes of the study. Every assumption is important for the validity of the study; in other words, it ensures that the research findings about undergraduate and graduate students' perceptions of AI in future jobs, reflect their true feelings. Hence a justification of the key assumptions follows:

#### **1.5.1. Population Assumptions**

The research maintains that Turkish university graduate and undergraduate students constitute a cross-section of Turkish as well as foreign students. It is believed that the views of the local and foreign students, in this case, approximate the general views of students on the role of AI in their careers, inside and outside Turkey. The sample size of 402 students is sufficiently enough to offer relevant observations and its heterogeneity is presumed adequate to extrapolate the results to the student population.

This does not include any representation of this diversity in the sample, the results may be skewed or even incomplete.

### **1.5.2 Statistical Test Assumptions**

This research presupposes that differences in people's attitudes can be assessed using ANOVA methods and independent sample t-test. These tests presume that the data being analyzed is normally distributed and has equal variance. In the case of standard distribution assumption, student responses are distributed in a systematic manner which allows for statistical comparison. It is valid to differentiate between student populations for example, male and female students, provided that there is equality of variance. Also, in order for the comparison to make sense statistically, it is assumed that the steps taken to obtain the responses are independent of each other implying for instance that the response of a selected student to a question does not influence that of another selected student. Such assumptions safeguard the reliability and validity of statistical outcomes, aspects that are very critical in addressing the research objectives.

### **1.5.3. Research Design Assumptions**

The research perspective is expected to be quantitative, and a self-completion questionnaire is assumed to capture students' attitudes towards AI ideally. Since the questions are all closed-ended and in Likert scale format, it is assumed that the perception of the students captured. This approach provides an opportunity for organized data retrieval for statistical purposes and for making valid observations. The study also expects the administration of the said questionnaire to the population of interest to be online. For reliable results, the respondents are expected to be very sober in taking the test and tampering with the questions as little as possible.

### **1.5.4. Honesty and Truthful Responses Assumptions**

All the participants are expected to respond fairly to the questionnaires that are issued. In this case, self-reports of students are examined and it is assumed that these students do not lie about AI having any influence on their careers. Students should be assured to provide straightforward answers due to the nature of the survey in relation to anonymity and confidentiality. It is further assumed that there is little or no response alteration due to social desirability where respondents were trying to answer in a way they feel is expected of them. In line with the study, students are expected to think over every

question in the survey before they answer it. This assumption is important for the integrity of the data since people often give dishonest feedback or stray from the opinion that reflects their true feelings.

### **1.6. Limitations of the Study**

The constraints of this research come from various sources, including the research design, scope, and method. First, this study adopted quantitative research design using the survey method which is efficient in obtaining information on wide trends and patterns but restricted the level of insight that can be obtained on the understanding of students' perceptions of artificial intelligence. In addition, the research was conducted at Anadolu University, during academic year 2023-2024, which further affected the generality of the outcomes of the study. The unique setting of the university (including its social, cultural, and educational characteristics) might have shaped how students perceived AI. Hence, such findings can only be applicable to an extent to students from different universities, locations, and countries with different educational systems, levels of technology and career possibilities. The limitation of the study which concentrates on only one institution implies that it does not consider the different ways in which AI is embedded in the syllabus in other institutions. It does not factor in how the availability of institutional resources and support systems may affect students' attitudes towards AI.

Additionally, the choices made in this study narrow down the scope of the research to undergraduate and graduate students in higher education, thus excluding other significant demographics such as students enrolled in vocational training, recent graduates and many other settings. The emphasis may also fail in providing critical information on how perceptions of AI differ depending on one's academic orientation and level. Also, while SPSS software was adopted to analyze the collected data, this is a form of quantitative research analysis tool with all its respective advantages and disadvantages and cannot explore the qualitative intricacies the way it ought to. Furthermore, the study's reliance on self-reported data is a limitation because it is susceptible to biases such as social desirability bias and inaccuracies in respondents' self-assessments. These limitations suggest that future research takes a mixed-methods approach, including qualitative interviews or focus groups, to supplement quantitative data and provide a more comprehensive understanding of students' perceptions of AI.

## **1.7.Definitions of Key Terms**

### **Artificial Intelligence (AI)**

AI refers to the capacity of machines or computer systems to mimic human cognitive functions such as learning, problem-solving, and decision-making by using advanced program capabilities like algorithmic machine learning (AML).

### **AI Literacy**

The knowledge and understanding that individuals have about AI technologies, including how AI works and its potential implications for society and the workforce.

### **Fourth Industrial Revolution**

This term refers to the ongoing transformation of industries through the integration of digital, biological, and physical systems. AI plays a central role in this revolution by enabling smarter technologies and more automated processes.

### **Job Automation:**

The process by which tasks traditionally performed by humans are increasingly carried out by AI and machines for enhancing productivity.

### **AI-Driven Employment**

It refers to the employment landscape shaped by AI technologies, where jobs and industries are influenced by AI applications in areas like decision-making and innovation.

### **Undergraduate Students**

Undergraduate students are those enrolled in a bachelor's degree program, typically working toward their first academic qualification, such as a BA or BSc.

### **Graduate Students**

Graduate students are individuals who have completed a bachelor's degree and are pursuing advanced degrees, such as a master's or Ph.D., in specialized areas of study.

## **CHAPTER 2**

### **2. LITERATURE REVIEW**

#### **2.1. Evolution of Artificial Intelligence**

##### **2.1.1. Historical Development of AI**

The gap between human and machine Intelligence is considerable (Delipetrev et al., 2020). Artificial Intelligence (AI) refers to automated systems capable of understanding, logical thinking, acquiring knowledge, and problem-solving like humans (Russell & Norvig, 2016). Alan Turing's 1950 paper posed a question about machine Intelligence, introducing the Turing Test. The test suggests a machine can be considered intelligent if it engages in a human-like conversation, making it hard to distinguish from a person. The term "artificial Intelligence" was coined during the 1956 Dartmouth Conference. John McCarthy, a key attendee, suggested that every aspect of learning or Intelligence could be defined, enabling a machine to simulate it (Russell & Norvig, 2016). Pioneers like Herbert A. Simon, Allen Newell, and Arthur Samuel contributed significantly to AI's early development, generating high hopes through tasks that seemed to require intelligence. It led the U.S. government to invest in AI research. J.C.R. Licklider, then ARPA director, advocated unrestricted funding, promoting uninhibited exploration without immediate demands for results. Esteemed AI research facilities at MIT, Stanford, and Carnegie Mellon, as well as commercial labs like SRI International, emerged through this approach.

In the 1980s, symbolic AI and expert systems gained popularity. These systems encoded human expertise using programming with a knowledge base and inference engine. However, the complexity required often exceeded their capabilities. Though widely used, programming languages like Lisp and Prolog lacked the necessary sophistication. During the 1990s-2010s, AI achieved development in several areas including data mining, robotics, and medical diagnosis, and made the great effort to solve some problems. Scholars worked in teams from different fields of study where artificial intelligence was associated with economics and mathematics using advanced mathematical work. Many of them were calling their works computational Intelligence or informatics in order to enlist support which served as a buffer from the previous, overhyped definition of AI. The AI methodology shifted in 2006 with Fei-Fei Li instituting an importance of volume of data in counteracting the limitation of AI.

ImageNet the first visual database of over 3.2 million images with accompanying labels that changed the landscape of AI because it offered a good source of training data. The ImageNet Large Scale Visual Recognition Challenge (ILSVRC) was held to test image classification performance and advancements were made such as Alex Net which won the competition in 2012 and achieved minimum error rates (Krizhevsky et al., 2012). These breakthroughs initiated the era of deep learning which entail the use of Convolutional neural networks which can identify complex patterns in data (LeCun et al., 2015). The increase in open-source publications, frameworks, and datasets has furthered AI's progress. GitHub and GitLab host several AI algorithms and companies like Google and Facebook support open-source frameworks like TensorFlow and PyTorch. MOOCs and repositories like arXiv have expanded AI education, reaching a global audience. AI applications are now present across computer vision, speech recognition, and drug design fields. Initiatives like "Papers with Code," which offers research papers and code, and the European Commission's AI Collaboratory continue tracking AI advancements.

### 2.1.2. Key Milestones and Breakthroughs

**Table 2.1.** *Key Milestones and Breakthroughs of Artificial Intelligence*

| Year | AI Milestone           | Description                                                                          | Citations                 |
|------|------------------------|--------------------------------------------------------------------------------------|---------------------------|
| 1952 | Checkers Program       | First computer program to learn and improve its game-playing skills.                 | [Samuel, 1960]            |
| 1955 | Logic Theorist Program | Proven mathematical theorems using innovative problem-solving techniques.            | [Newell et al., 1962]     |
| 1957 | Perceptron Model       | Introduced neural networks and deep learning, enabling computers to learn from data. | [Rosenblatt, 1961]        |
| 1961 | MENACE Program         | Mastered Tic-Tac-Toe using machine learning and game theory.                         | [Michie, 1963]            |
| 1965 | ELIZA Program          | Simulated human-like conversations using natural language processing (NLP).          | [Weizenbaum, 1966]        |
| 1969 | Shakey the Robot       | Integrated robotics, computer vision, and NLP.                                       | [Bertram, 1972]           |
| 1970 | MYCIN Expert System    | Diagnosed blood diseases and prescribed treatments using AI.                         | [Shortliffe et al., 1975] |
| 1979 | Stanford Cart Robot    | Navigated rooms and avoided obstacles using AI.                                      | [Moravec, 1983]           |

**Table 2.1.(continue)***Key Milestones and Breakthroughs of Artificial Intelligence*

|      |                                       |                                                          |                                  |
|------|---------------------------------------|----------------------------------------------------------|----------------------------------|
| 1982 | Hopfield Network Model                | Introduced a new neural network architecture.            | [Hopfield, 1982]                 |
| 1983 | ID3 Algorithm                         | Generated decision trees from datasets.                  | [Quinlan, 1986]                  |
| 1989 | Convolutional Neural Networks         | Read handwritten digits using AI.                        | [LeCun et al., 1989]             |
| 1989 | Q-Learning Algorithm                  | Improved reinforcement learning.                         | [Watkins, 1989]                  |
| 1993 | Deep Learning Model                   | Solved complex tasks using neural networks.              | [Schmidhuber, 1993]              |
| 1995 | Support Vector Machines Algorithm     | Applied to text categorization and image classification. | [Cortes & Vapnik, 1995]          |
| 1995 | Semi-Autonomous Car                   | Drove coast-to-coast across the US using AI.             | [unknown]                        |
| 1996 | IBM Deep Blue System                  | Won a game of chess against a human world champion.      | [unknown]                        |
| 1997 | LSTM Neural Network Model             | Improved recurrent neural networks.                      | [Hochreiter & Schmidhuber, 1997] |
| 1998 | Gradient-Based Learning Algorithm     | Improved neural network efficiency.                      | [LeCun et al., 1998]             |
| 2002 | TD-Gammon Program                     | Mastered the game of Backgammon using AI.                | [Tesauro, 2002]                  |
| 2005 | Stanford Robot                        | Won the DARPA Grand Challenge using AI.                  | [Thrun et al., 2006]             |
| 2009 | ImageNet Dataset                      | Enabled large-scale image recognition using AI.          | [Deng et al., 2009]              |
| 2011 | IBM Watson System                     | Won a game of Jeopardy using AI.                         | [Ferrucci, 2012]                 |
| 2012 | AlexNet Model                         | Won the ImageNet competition using AI.                   | [Krizhevsky et al., 2012]        |
| 2012 | Cat Recognition Program               | Identified cats in images using AI.                      | [Le, 2013]                       |
| 2014 | Generative Adversarial Networks Model | Generated realistic images and videos using AI.          | [Goodfellow et al., 2014]        |
| 2015 | DeepRL Program                        | Mastered Atari games using AI.                           | [Mnih et al., 2015]              |
| 2016 | AlphaGo System                        | Defeated a human Go world champion using AI.             | [Silver et al., 2016]            |
| 2017 | Transformer Model                     | Introduced a novel self-attention mechanism for AI.      | [Vaswani et al., 2017]           |
| 2017 | Libratus Program                      | Mastered poker using AI.                                 | [Brown & Sandholm, 2018]         |

**Table 2.1.(continue)***Key Milestones and Breakthroughs of Artificial Intelligence*

|      |                   |                                                                             |                       |
|------|-------------------|-----------------------------------------------------------------------------|-----------------------|
| 2018 | AlphaFold Program | Predicted 3D structures of proteins using AI.                               | [Senior et al., 2019] |
| 2019 | Dactyl Robot      | Trained a human-like robot hand for dexterous object manipulation using AI. | [OpenAI, 2019]        |
| 2019 | Google BERT Model | Achieved state-of                                                           |                       |

## **2.2. Impact of AI on Future Employment of Students**

AI adoption in various sectors often focuses on disruption and automation (McKinsey Global Institute, 2018; Pankewitz, 2017). Concerns exist around its impact on jobs, especially repetitive roles like administrative work (Garwood, 2018; Aleryani, 2019). Yampolskiy and Spellchecker (2016) assert that those in uncreative roles face higher risks. Studies show that routine and middle management roles may be heavily affected, especially those overseeing operations (Garwood, 2018; Smith & Anderson, 2014). In 2016, the World Economic Forum estimated that AI could eliminate over 4.7 million routine white-collar jobs (WEF, 2016).

AI could significantly reduce employment in the coming decades, with over 7.1 million jobs potentially at risk (Frey & Osborne, 2013; WEF, 2016; Florida, 2019). The impact, however, may be more pronounced in developed economies (Bassen, 2018). Productivity-enhancing technology has paradoxical employment effects, both positive and negative, depending on adoption rates. Rapid improvements driven by Moore's law could speed job loss (Evans, 2019), with some sectors impacted more heavily than others (Ford, 2015). Grace et al. (2017) predict that AI outperformed human surgeons by 2053, affecting transportation and health industries.

AI is widely used in voice recognition, language translation, and user experience enhancement (McKinsey Global Institute, 2018). According to Russell and Norvig (2009), AI comprises autonomous entities that perceive and respond to their environment. Eurostat reported 19.8 million university students in Europe in 2017, with 61% at the bachelor's level. These graduates, entering the workforce by 2020, encountered AI in diverse sectors. Since the Industrial Revolution, technology has steadily replaced human labor across industries, including agriculture and administration. While AI may create

fewer jobs than it replaces, Job loss could exceed levels seen with prior technologies (Hawksworth, 2018).

AI adoption by industrialized nations to cut costs could harm outsourcing firms in emerging markets (Khakurel et al., 2018). Frey and Osborne (2013) estimate that nearly 47% of U.S. jobs, especially in production and logistics, are highly susceptible to automation. A PWC study of 200,000 jobs across 29 countries found that about 30% could be automated by the 2030s, particularly for those with lower education levels (Hawksworth et al., 2018). AI deployment in routine tasks must be cautious to avoid overwhelming low-skill workers (Ford, 2013). Rather than displacing humans, AI should extract insights and drive innovation. Gartner projected AI would create 2.3 million new jobs by 2020 while cutting 1.8 million, yielding a net gain of two million AI roles by 2025. Similarly, the World Economic Forum expects AI to displace 75 million jobs but create 133 million new roles (WEF, 2018).

Historically, automation has led to increased wages and labor (Martens & Tolan, 2018). The likelihood of AI-driven joblessness is low; AI may take over repetitive tasks, freeing humans for personal services. The service sector has a favorable view of AI, expecting productivity boosts and economic growth. With proper integration, AI can complement rather than replace human work, enhancing productivity and resource allocation (Martens & Tolan, 2018).

### **2.2.1. Job Displacement Trends**

The potential of AI to carry out work that was previously done by human beings poses the threat of Job loss in many sectors (Frey & Osborne, 2017). These transformations, however, call for a reskilling of existing labor and the creation of jobs in new industries (Dauth et al., 2017). Although this can lead to the elimination of some functions, such functions also make new demands for fresh skills and competencies (Frey & Osborne, 2017). Providing people with necessary skills in creativity, advanced technologies, and problem-solving, which was important for the changing Job market, needs joint efforts from the government, education center and the industries (Deursen & Van Dijk, 2010). Occupations that require social and emotional skills, complex judgement, or artistic creativity, for example, are least likely to be completely mechanized (Korinek & Stiglitz, 2017).

Dedicating effort into these areas enables workers to keep up with technological advancement (Dauth et al., 2017). In addition, R&D investments are also expected to create additional employment within new industries, making it possible for people and AI systems to complement each other (Korinek & Stiglitz, 2017). A few approaches have been utilized to evaluate the effects of AI on job (Frey & Osborne, 2017). Frey and Osborne (2017) indicated that out of all jobs in the U.S., 47% can be categorized as at risk due to automation and other technology advancements (Dauth et al., 2017), however, Dauth et al. (2017) acknowledged that robots depressed manufacturing employment in Germany while raising jobs in the services industry. Specific occupational health Frame of Reference call for occupational safety and health initiatives which comprise venue for prevention strategies (Deursen & Van Dijk, 2010). Moreover, technology advancements have increased inequality in the income distribution by favoring the highly skilled workforce (Korinek & Stiglitz, 2017), while different application of AI increases labor productivity.

### **2.2.2. New Job Opportunities Created by AI**

AI can significantly enhance productivity across various industries, as noted by Persons (2018) and the McKinsey Global Institute (2018). While accurately predicting the overall economic impact of AI is complex, indications suggest that it can improve human performance and the quality of products and services (Persons, 2018). AI systems can efficiently analyze large volumes of data from diverse sources, enabling them to detect anomalies more rapidly than human workers. Furthermore, AI has the potential to provide unbiased, data-driven decision-making in policymaking, thereby mitigating harmful human biases (Persons, 2018).

Adopting AI offers valuable insights and solutions in sectors such as healthcare, transportation, logistics, and financial services (Persons, 2018). Research indicates that AI can deliver substantial economic benefits, enhance productivity, and drive GDP growth (McKinsey Global Institute, 2018). Additionally, AI enhances access to education, improves agricultural productivity, optimizes transportation systems, facilitates safer drug development, and provides innovative tools for diagnosing and treating diseases (Villasenor, 2019). However, these advancements are accompanied by inherent risks and challenges, particularly concerning changes in the job market.

Recent trends show that job advertisements increasingly emphasize the need for AI proficiency (Persons, 2018; McKinsey Global Institute, 2018). AI Job advertisements rose from 20.6 thousand in 2010 to 180.9 thousand in 2018, with projections reaching 220,000 by 2019 (Persons, 2018). The proportion of job postings requiring AI skills grew from 0.18% in 2010 to 0.72% in the initial seven months of 2019 (McKinsey Global Institute, 2018). The demand for AI-related skills is higher than other computer-related abilities, indicating significant growth in this area (Persons, 2018).

“Machine learning” was the most commonly mentioned AI expertise in job ads (McKinsey Global Institute, 2018). In 2019, the information industry had the most significant proportion of AI Job openings, accounting for 2.2% of all job advertisements (Villasenor, 2019). computer and mathematical group had the highest percentage of occupations, comprising 4% of AI-related job postings (Persons, 2018). These trends indicate that AI capabilities are increasingly being integrated into various occupational domains and sectors, highlighting the widespread incorporation of AI technology (McKinsey Global Institute, 2018; Villasenor, 2019).

### **2.3. Adaptation and Challenges in the Employment Landscape Under the AI Threat**

Certain social obstacles hinder the widespread adoption of AI technologies. Sun and Medaglia (2019) identify unrealistic expectations and a limited understanding of AI's value. Additionally, potential unemployment from AI has sparked extensive discourse in media and forums. Risse (2019) notes that AI-related issues may impact work nature and socioeconomic status. In an AI-integrated workforce, human workers are expected to tackle complex tasks (DIN & DKE, 2018; Jonsson & Svensson, 2016). AI's economic ramifications require significant financial investments and changes to operations. Tizhoosh and Pantanowitz (2018) debate AI's cost-effectiveness in healthcare, highlighting challenges for pathology labs. Sun and Medaglia (2019) argue that AI technologies could affect hospital profitability and increase patient care costs.

The McKinsey report (Bughin et al., 2018) analyzes AI's economic impact across sectors. It explores business AI adoption and obstacles like potential disruptions and worsening economic disparities. AI's combination with big data adds complexity, necessitating innovative technologies to manage evolving data (Khanna et al., 2013). Xu et al. (2019) discuss challenges in applying AI to cancer genomics, such as acquiring

outcome data and validating AI benefits. Reproducibility and transparency are crucial for public acceptance. Tizhoosh and Pantanowitz (2018) underscore the challenges of using artificial neural networks for image analysis. Wilson and Daugherty (2018) stress the importance of standardizing cardiac imaging data formats. Sun and Medaglia (2019) identify data integrity and algorithm opacity as barriers to stakeholder trust as AI evolves. Tizhoosh and Pantanowitz (2018) also highlight trust, financial return, ease of use, and evidence-based success in AI implementation.

Khanna et al. (2013) emphasize that AI researchers must understand health systems' needs. Advanced technologies are vital for optimizing information flow and human-computer interaction. Organizations face challenges in strategizing for AI's ramifications, which could potentially affect employee welfare. The complexities of AI in diagnostics, especially data interpretation and imaging, have been extensively studied. Tizhoosh and Pantanowitz (2018) note that people use precise language, while AI operates as opaque "black boxes," complicating adoption. Kahn (2017) highlights AI limitations in imaging and diagnosis, which may raise clinician doubts. "Loop think," an implicit bias in AI, hinders accurate information re-evaluation (Cheshire, 2017).

Baldassarre et al. (2017) investigate AI system design challenges, emphasizing human cognitive adaptability and ethical attributes. Sun and Medaglia (2019) examine technological obstacles, including algorithm opacity and the inability to interpret unstructured data. Thrall et al. (2018) address the shortage of AI-trained radiologists and suggest hiring specialists and training programs. Copyright infringement and accountability for AI errors are also concerns. Gupta and Kumari (2017) analyze legal challenges arising from AI errors, stressing the need for a legal framework protecting human efforts (Zatarain, 2017). Wirtz, Weyerer, and Geyer (2019) examine AI integration into government systems, advocating for a thorough understanding of AI applications and associated difficulties. They analyze legal structures for effective governance, accountability, privacy, and safety.

Sun and Medaglia (2019) highlight implementation challenges in the public sector. Their study examines AI challenges in China's public sector, considering hospital administrators, government policymakers, and IT executives. They investigate risks related to national security and barriers posed by foreign-owned enterprises. Ethical aspects of AI adoption raise concerns and skepticism about data use (Sun & Medaglia,

2019). The rapid growth of AI necessitates confronting ethical issues. Unresolved ethical and legal inquiries focus on AI system accountability and decision analysis. Comprehensive policies and regulations are essential to prevent AI misuse (Duan et al., 2019). Gupta and Kumari (2017) Stress the importance of addressing ethical dilemmas and transparency to avoid discrimination (Bostrom & Yudkowsky, 2011).

### **2.3.1. Shifts in Work Patterns**

Autonomous systems and AI are expected to improve employment stability and work quality. Training and ongoing education are vital for maximizing AI's benefits (Barner et al., 2015). A study by Adesso in 2019 reveals that 83% of Germans believe AI handled many tedious tasks. Moreover, 61% see advantages in AI and robotics, while 46% are willing to use virtual insurance services. Future workplaces promoted a partnership between humans and technology (Peissner et al., 2019). However, skepticism exists regarding AI's impact on business and society (Hirsch-Kreinsen & Karacic, 2019; Ittermann & Neuhaus, 2018; Matuschek et al., 2018). A solely technology-focused approach is inadequate; understanding interactions among technology, humans, and organizations is essential (Hirsch-Kreinsen et al., 2018). Gassmann and Sutter (2013) and Vahs and Brem (2013) highlight resistance to technological innovations. These studies draw on academic research and industry case studies to discuss the risks of new inventions.

Hirsch-Kreinsen et al. (2018) examine AI and automation's workforce impacts, raising concerns about job losses, skill adaptation, and increased surveillance. The employment displacement debate is contentious. Research by Frey and Osborne (2017) indicates that technology leads to job reductions, but actual applications often lag. More studies are needed to assess the effects of technology, particularly on industrial robots (Graetz & Michaels, 2015; Acemoglu & Restrepo, 2017). Wolter et al. (2016) used scenario calculations to project Industry 4.0's consequences. They predict marginal employment rate changes by 2035 despite significant industry transformations (Arntz et al., 2018). McKinsey estimates that over 50% of work activities could be automated by 2030, displacing 15% of the global workforce. However, labor demand may rise due to economic growth, potentially increasing the workforce by 21-33%.

Historically, the German Institute for Employment Research (Dauth et al., 2017) found that each robot replaced two jobs while creating marginally more outside the

industry. Research by ZEW shows automation in Europe displaced 1.6 million workers but created 3.4 million new jobs from 1999 to 2010. Automation is expected to generate a net increase of 560,000 jobs from 2016 to 2021 (Hagelüken, 2019). Employment impacts differ based on periods. Industry 4.0 is projected to need more skilled personnel for technological investments. These advancements might gradually replace some laborers (Arntz et al., 2018). Concerns arise regarding losing human control over increasingly autonomous digital systems (Hirsch-Kreinsen & Karacic, 2019).

AI excels at processing data and identifying patterns but struggles with common sense (Lenzen, 2018). The unpredictability of autonomous systems can hinder human decision-making (Gerst, 2019). Assigning tasks to AI may also reduce skills as digitalization divides work (Gerst, 2019). Despite challenges, many maintain a positive outlook on AI's employment contributions. AI complicates labor system design, particularly regarding digital control and qualifications (Gerst, 2019). Research by Fraunhofer IAO indicates that only 8% of participants believe AI could replace their jobs. However, 19% anticipate this by 2030. Meissner et al. (2019) argue for a balanced relationship between substitution and assistance.

An Accenture survey highlights a gap between executive perceptions of AI and employee receptiveness. While 67% of employees recognize the need for new skills, 62% expect AI to positively influence their jobs (SageGavin et al., 2018). Human labor remains crucial for decision-making, creativity, and contextual understanding—areas where AI struggles. The requirement for human involvement in innovation and customer engagement persisted, emphasizing the importance of human skills in the workplace.

### **2.3.2. Emerging Roles and Industries Influenced by AI**

Machine learning combined with other techniques allows us to develop equipment which is otherwise “ordinary” into “smart” devices capable of learning (Jumani et al., 2023). Such devices are able to process a lot of data in a very short time and are able to provide recommendations, make a conclusion or even go to the extent of making a decision on their own (Minh et al., 2022). They can either make local decisions using edge computation, use the cloud, or both (Saeik et al., 2021). Most research study claims that AI has many potential usages (Hafner et al., 2023).

The usage of robotics and artificial intelligence (AI) in the manufacturing sector has had a revolutionizing effect on production by increasing efficiency, precision, and

even the very volume of the production (Jumani et al., 2023). Several monotonous tasks have been replaced with automated assembly lines, robotic arms, and self-driving cars thus making the operations more efficient and reducing costs. Intelligent machines are able to adapt to new environments, perform advanced tasks very effectively, and even work alongside human beings (Gerst, 2019). This allows for adoption of predictive maintenance, better quality assurance, as well as more efficient inventory balance which in turn improves productivity (Hirsch-Kreinsen & Karacic, 2019).

Although automation presents numerous advantages, it also gives rise to concerns about job displacement (Carbonero et al., 2020). As automation takes over monotonous and unskilled duties, certain job positions may become obsolete (Au-Yong-Oliveira et al., 2019). Nevertheless, automation also presents prospects for enhancing the skills and knowledge of the workforce through upskilling and re-skilling. Automation frequently does not result in job elimination but rather in job transformation, necessitating humans to acquire new skills and concentrate on tasks that necessitate human creativity, problem-solving, and critical thinking (Hafner et al., 2023).

AI is making substantial progress in the field of healthcare. Artificial intelligence algorithms can examine extensive quantities of medical data, which can assist in achieving precise diagnoses and formulating treatment plans. Artificial intelligence-driven chatbots and virtual nurses provide individualized patient assistance, while wearable devices and remote monitoring systems facilitate ongoing health surveillance and prompt identification of medical conditions. Automation is augmenting medical operations, such as robotic surgery and automated laboratory testing, by raising accuracy, decreasing invasiveness, and improving patient outcomes. AI aids radiologists in analyzing medical images and expedites diagnostic procedures in clinical laboratories.

The financial services sector seeks benefits from the change that AI and automation bring into the operational processes, customer service and risk mitigation management. Customers are assisted through the use of mobile applications powered by AI based systems such as chat booths and virtual assistants. Automated systems meant for preventing fraud and assessing risk are fast and accurate when it comes to spotting fraudulent behavior. Machine learning takes a step further by analyzing figures with the aim of identifying, understanding trends and patterns to help in investment and portfolio management.

The transportation and logistics business are currently undergoing a massive transformation due to the advances in AI and automation technologies. The rise of autonomous vehicles, drones and intelligent logistic systems has radically changed the way transportation and supply chains work. The systems of smart warehouses and the systems of sorting goods reduce the costs of operation and errors in the process of maintaining stock. It is also possible to enhance fleet management and provision of deliveries by desiring flights, making predictions and routing the delivery structures.

AI is transforming the way learning experiences are structured in the field of education. Intelligent tutoring systems employ artificial intelligence algorithms to deliver customized instruction, adjusting to the unique requirements and learning preferences of each learner. AI-driven educational tools and platforms facilitate interactive and captivating learning experiences, fostering student engagement and enhancing information retention. Automated grading and feedback can be facilitated by NLP, resulting in time savings for teachers and timely assessments for students.

### **2.3.3. Opinions of Graduate and Undergraduate Students on AI's Impact**

Almaraz-López et al. (2023) found through a comparative analysis of survey responses that a substantial majority of students from various disciplines acknowledge the significance of AI in relation to their prospective professional trajectories. In particular, 82.51% of students majoring in economics and business management and 85.82% of students pursuing education recognize the critical importance that AI have on their respective career trajectories. The percentages above align with the results reported by Sit et al. in their investigation of medical students, where 88% of participants held the belief that AI would play a crucial role in the future of healthcare.

In contrast, Almaraz-López et al. identified statistically significant differences in students' perceived preparedness for the critical use of AI-based on whether or not they had received AI training. However, this difference was not as pronounced among students majoring in economics and business management. Furthermore, the provision of AI training did not have a substantial impact on student's perception of the potential for AI tools to supplant human labor in their respective fields. It is noteworthy that the study conducted by Sit et al. predominantly examined radiology, which could potentially impact the career decisions of students in light of the ongoing advancements in AI for medical applications.

The interplay of students' inadequate comprehension of the possible shortcomings of the technological integration, coupled with their appreciation of AI's role in their individual disciplines makes them consider AI as a competitor which is detrimental to their careers. Previous studies have shown that artificial intelligence (AI) media attention affects how AI knowledge is adopted in students (Pinto Dos Santos et al. 2019).

It is suggested, however, that the excitement of the students on the topic of AI is higher than the understanding of the topic. This suggests that there is a need for AI teaching in a better way. Thus, it is imperative that the future developments focus on providing an all-round education in AI in order to prepare students for the knowledge and skills expected of them in their professions. The role of the universities should be to ensure that they have information about the effects of AI on different fields of study, which helps students use AI in their careers responsibly and with confidence. In line with Sit et al.'s (2020) results, the need to improve and expand the scope of AI education is also stressed through the integration of applications and limitations of the technology.

In addition, it is recommended that the implementation of algorithmic literacy strategies, as suggested by Flores-Vivar and García-Peñalvo (2023), be incorporated into the curriculum across all academic disciplines. These plans should encompass various aspects of AI, from its technological explanation to its ethical and philosophical implications, fostering inclusivity and continuous evolution. These endeavors are consistent with the UNESCO framework (2022), which prioritizes education regarding AI, learning with AI, and readiness for the potential ramifications of AI on human existence.

#### **2.3.4. Expectations for AI-driven Employment**

Instances such as the Industrial Revolution in nineteenth-century Britain and the mechanization of agriculture in early twentieth-century America illustrate that intensive automation has a propensity to generate employment opportunities and new industries. A multitude of scholarly investigations, such as those conducted by Manyika and Sneider (2018), Acemoglu and Restrepo (2018), and Atkinson and Wu (2017), indicate that automation not only generates employment opportunities but also eliminates some.

It is anticipated, for instance, that the introduction of autonomous vehicles revolutionized the transportation sector. Although this technology has the potential to supplant conventional taxi drivers, it also presents prospects for partnerships between

human drivers and autonomous vehicles. Furthermore, the operation and administration of autonomous vehicles necessitated the employment of exceptionally competent individuals, including technicians, designers, engineers, and software developers, thus generating fresh employment opportunities.

Nevertheless, it is critical to recognize that automation necessitated a greater level of expertise from the labor force. According to a 2017 report by the McKinsey Global Institute, developing countries are witnessing the most substantial expansion in employment within sectors that necessitate a bachelor's degree or higher. Particularly in countries such as India, there is still considerable demand for occupations that necessitate a high school diploma, notwithstanding the prevalence of automation.

Individuals must acquire digital skills and possess complementary key skills in order to effectively navigate the challenges posed by automation and digital transformation. Nevertheless, a discrepancy frequently arises between the competencies demanded by emerging technologies and the proficiencies held by the labor force. This emphasizes the significance of training and education programs that provide workers with the skills required for future employment.

In sum, although automation has the potential to eliminate specific occupations, it concurrently generates fresh prospects, especially for individuals possessing exceptional expertise. Ensuring a proper correlation between technologies and skills, the educational system's caliber is critical in preparing the labor force for the challenges posed by automation.

### **2.3.5. Future Career Perspectives in an AI-driven World**

It is a common belief that mechanization especially driven by AI systems leads to a danger of employment to a large extent in a near future. However, in the midst of this anxiety, one vital factor is often left out: entirely new types of jobs, which bear no resemblance whatsoever to any existing ones, are going to emerge. This issue is brought to light by the most recent global research conducted by Accenture PLC on over a thousand companies which are either utilizing or experimenting with Artificial Intelligence (AI) and machine learning technology. In this study three kinds of new jobs that only human beings can perform are introduced: trainers, explainers and sustainers.

The first group is trainers, the people who are responsible for training AI systems how to carry out assigned tasks effectively and ethically. These trainers perform stochastic functions such as teaching machines to perform tasks that mimic human action as well as enhancing capabilities that naturally interpret language. As in the case of entrepreneurs like Kemoko Inc., empathy trainers are teaching AIs how to be human. They teach these algorithms how to behave kindly in various situations, like answering customer questions or handling customer complaints, to promote healthy interactions.

The second category consists of explainers, who provide both business leaders and technology experts with a clear understanding of the complex workings of AI algorithms. As complex machine learning systems become opaquer, exhausting more and more business managers and executives have to deal with the problem of making decisions based on algorithms that are not transparent. These issues are addressed by explainers who clarify unclear concepts around algorithms and ensure that any advice provided by AI meet the vision and principles of the organization. An example is algorithm forensics analysts who, among other things, seek to understand the reasons for an algorithm's behavior, especially when it goes awry or produces undesired outcomes.

The last category is known as sustainers; their role is to make sure that the AI systems are functioning as expected and if there are any unexpected consequences or ethical issues, they can deal with those. With the present dilemma on how reliable, correct, and safe AI systems are, maintainers play a very important role in upholding ethical practices and tackling discrimination and other forms of bias. In scenarios where the AI systems in question have inherent bias or ethical deficits, there are ethics compliance managers' gatekeepers that intervene and quickly coordinate and work with algorithm forensics analysts. Further, while there is advancement in AI systems, human supervision remains essential to ensure that such systems operate within ethical frameworks and conform to societal expectations.

In summary, although the advent of automation may disrupt conventional job functions, it concurrently presents fresh prospects in the shape of these uniquely human occupations. Trainers, explainers, and sustainers play a crucial role in facilitating the ethical and responsible implementation of AI technologies across various contexts, thereby maximizing their potential.

## **2.4 Theoretical Perspectives on AI's Impact on Employment**

### **2.4.1 Technological Unemployment Theory**

The Technological Unemployment Theory, proposed by Keynes in 1933, suggests that technology can cause unemployment as robots replace human laborers. Ford (2019) argues that AI replaced workers in repetitive sectors. Research shows that AI and automation have replaced jobs in manufacturing and customer service (Manyika et al., 2017; Arntz et al., 2016). Some scholars predict significant job displacement due to AI and automation (Ford, 2019; Frey & Osborne, 2017). The McKinsey Global Institute estimates that up to 800 million jobs could be lost by 2030 (Manyika et al., 2017). The Oxford Martin Programme predicts that 47% of U.S. jobs are highly vulnerable to automation (Frey & Osborne, 2017).

Conversely, some argue that AI and automation created new opportunities (Brynjolfsson & McAfee, 2014; Autor, 2015). The World Economic Forum estimates that 75 million jobs may be replaced, but 133 million new jobs generated by 2022 (WEF, 2018). Autor (2015) cites historical evidence of technology creating new jobs and businesses. Despite differing views, the Technological Unemployment Theory is widely accepted for understanding AI's impact on employment. It highlights job displacement across industries and underscores the need for education and training initiatives (Ford, 2019). The theory remains essential for comprehending potential job market challenges due to AI.

### **2.4.2 Skills Bias Theory**

The Skills Bias Theory asserts that advances in technology are skewed towards enhancing skills and rendering the non-skilled obsolete (Acemoglu & Autor, 2011). High-skilled workers tend to embrace AI, while the same cannot be said of low-skilled workers (Autor, 2015). Income inequality could also be furthered by AI as it would be rewarding the skilled masses more (Autor, 2015). Many researchers are in line with Skills Bias Theory explaining the differences in earnings among skilled and unskilled workers. For instance, the use of machines in the US economy has led to a falling demand for low-skilled workers and therefore a rise in wage inequality (Autor, 2015). According to Goos and Manning (2007), new technology in the UK reduced the need for curved labor, which in turn raised the levels of unemployment. This theory is also associated with 'job polarization': technological advancement leads to a fall cognitive skill level job (mid-

skill jobs) (Autor, 2015). Such phenomena have been witnessed in the case of USA, UK and Germany and are linked with the rise of AI (Arntz et al., 2016).

Skills bias theory also states the significance of education and training in preparing the people for the challenges imposed by the technology (Ford, 2019). Education ought to emphasize critical thinking, problem-solving, and creativity which are less automatable skills (Brynjolfsson & McAfee, 2014). In conclusion, understanding the Skills Bias Theory is important in determining the effects of AI on employment and inequality. It also points out the importance of availing additional growth resources for unskilled individuals (Manyika et al., 2017). The authors claim that according to the Oxford Martin Programmed nearly half (47%) of all U.S. jobs are at risk of being computerized (Frey & Osborne, 2017). The loss of jobs in this sector has turned out to be considerable especially in the case of the manufacturing sector, which has been reported by NBER (Acemoglu & Restrepo, 2017). ILO also informs on employment losses in the course of routine automation enhancement of manufacturing in several countries (ILO, 2018). Customer service jobs have also been affected. Chatbots and virtual assistants have significantly reduced the workforce (Davenport, 2018). Forrester predicts further reductions in customer service roles due to AI (2019). AI and automation pose challenges across various sectors, leading to fears of Job displacement and social unrest (Manyika et al., 2017; Ford, 2019).

#### **2.4.3. Creative Destruction Theory**

Schumpeter's theory of creative destruction presupposes that the emergence of advanced technologies facilitates the development of new sectors and optimizes the existing ones, thus causing losses to some industries (Schumpeter, 1942). Although some jobs have been lost due to the advent of AI, there are new possibilities that have also risen (Brynjolfsson & McAfee, 2014). This asserts the hypothesis as technology is said to have developed and implemented new enterprises and occupations. Upwork, eBay and other similar platforms are cited as new technologies that have emerged as a result of existing technologies creating new opportunities for employment (Katz & Krueger, 2016). WEF goes on to say that it is because of progress made in AI that new Job typically found in development and maintenance of such applications emerged (WEF, 2018). This theory of creative destruction deals with new developments in technology and its associated effects in the changing labor patterns. It is suggested that many opportunities – new and better

jobs, greater productivity, higher rates of growth – takes the place of the jobs that are lost (Schumpeter, 1942).

Automation as a result of the McKinsey Global Institute is expected to bring about increased productivity and economic expansion, leading to the emergence of new job positions (Manyika et al., 2017). On the other hand, it stresses that with technology, jobs can be lost creating a dangerous social backlash (Schumpeter, 1942). In a summary, the Creative Destruction Theory explains some of the positive effects of technology especially with regards to job creation. Certainly, the uptake of AI leads to some occupations being rendered obsolete but it also has the potential of expanding the job market across various sectors. Lastly, there is a need to consider the adverse effects posed by technological improvement on the employees when such advances are being implemented within the workplace.

## **2.5. Models for Understanding Attitudes towards AI in Employment**

### **2.5.1. Freeman's job displacement model**

Richard Freeman's model on work displacement, unveiled in 2018, helps understand the employment implications of AI and automation across professions. More to the point, in Freeman's vision, AI would take over jobs from areas comprising low-skill, repetitive work, for instance, manufacturing and transportation jobs. This idea is consistent with previous findings that robots, artificial intelligence, and productivity-enhancing technologies, in general, can take over some tasks, especially those that are repetitive in nature.

Nevertheless, it is expected that these types of technological developments gave rise to occupational expansion, particularly in regions related to the development, operation, and maintenance of these technologies (Manyika et al., 2017). The displacement of workers attributed to the infusion of AI and automation into processes was dependent on the specific industry or occupation, with certain sectors experiencing extensive cutbacks while others revealed growth (Ford, 2019). The degree to which AI and Automation dislocate people and even create new job opportunities is dependent on creed systems in society, which include changing ethnic and religious strife levels, or the race for technological advancement (Acemoglu & Restrepo, 2017).

To mitigate the consequences of job loss, states and even organizations can use a combination of enhancing educational and training services, establishing effective legal measures to defend workers' interests and developing the promising sectors and jobs (WEF, 2018). Employment problems resulting from the incorporation of AI and automation into processes are not new; as every epoch has been characterized by the introduction of new technologies, which at times have caused some jobs losses, but some shifts have led to job creation in other areas of the economy (Schumpeter, 1942).

AI stands tall as one of the defining and transforming components of the present age. The effect of this technology cuts across many sectors, representing a radical change of how a business is run and even how decisions are made within the organization. The AI Technologies provide the enabling ability that not only automates functions but also improves performance and provides insight never seen before in the operations of the sectors. AI includes all technologies and applications that are used to make machines behave intelligently like a person by performing tasks associated with intellect such as learning, reasoning, seeing things, and understanding languages.

In the industrial world, AI plays the role of helping develop new products and services as well as improving existing ones (Gt&T, 2023). For example, in the case of finance, one of the industries that embraced AI, algorithms trained on AI learn to process extremely large amounts of data and find patterns and trends relevant for better decision making at a speed unimaginable for any person (Salim Khawan, 2023, p.10). Such forecasting abilities change the role of market research, investment models and the assessment of risks and completely reshape processes within banking institutions and financial markets. In the same manner, and even more so, industries such as healthcare are also undergoing some dramatic changes thanks to AI capabilities.

AI diagnostics devices analyze images (Al-Antari, 2023, p.1) and also patient records with acute focus and speed, therefore, transforming how diseases are diagnosed and treated. This enhancement of the medical practice has the potential of not only helping patients but also cutting down on misdiagnoses and speeding up the processes of discovery within the field of medicine. The transformative promise of AI is more than its commonly understood applications in a few specific industries; it spans a myriad of sectors. For instance, in the manufacturing industry, these predictive maintenance systems help in maximizing the output of the machines, which helps in lowering the operant cost

and enhancing customer satisfaction (Javaid et al., 2021, p.84). E-Commerce has also employed the use of AI where in a bid to increase the sales made, the customers are able to be connected to what they likely buy via the use of shopping recommendation AI powered engines.

In addition, AI's clear interventions in transportation, energy, agriculture and still many more, proving how well we can say it cuts across every aspect of what makes modern days' societies. Also, depending on the sector, AI is being integrated its adoption has also redefined existing operation processes, opened up previously impossible operational efficiencies and many more alterations to how work can be done. It is how the new era began where humans and technology are used concurrently in doing business in quite an unusual and fascinating manner. This is a critical moment in the history of contemporary civilization as it is not the case, that companies actively use such systems, but that they reconsider the very principles of their operations (Omol, 2023, p. 4).

Again, the quick progression has also raised issues on AI and economy especially the perception that jobs were lost. Where enhances productivity and the extent to which process can be automated comes the threat of job loss (Wang and Siau, 2019). The onset of this technology into the workplace, however, raises issues on the relevance of most invoked decreasing jobs and retraining periods (Frank, 2019). It is important to look into such concerns particularly among all categories of students- graduate and undergraduate who are entering the job markets that are changing due to AI. The perspectives of students regarding the employment paths that AI creates are instrumental in forming education, policy, and even industry.

This research study discusses their perceptions, worries, and hopes related to the effects of AI on their professional career development plans. Surveying the perspectives of learners in a nuanced fashion aims to inform the design of educational curricula and professional training strategies as well as policies. In an AI-infused labor market, it is pertinent to prepare the current and future workforce as it seeks to understand how young people relate with AI from the perspective of employment pathways.

## **2.6. The Evolving Role of AI in Job Market**

### **2.6.1. Defining AI in Employment**

AI in work is one of the elements causing a shift in how different tasks are carried out in different sectors. This is due to the availability of a range of tools which have been created to simulate and extend human Intelligence (Rayhan et al., 2023, p.2). This is all about the design of AI resources in that they work to make and ease as many processes as possible that would have otherwise required human labor. Technologically speaking, at the center of AI, there is the use of flows of advanced methods, learned powerful machines and networks of cells (Rayhan et al., 2023, p.2). These elements work together in order to reproduce the same cognitive processes people perform when involved in very different activities or making various decisions. The incorporation of AI into the world of work is attributed to the transformations that it is able to bring into the organizations; it is able to change the way things are done, the way business processes are structured or organized and where new ideas are applied into different sectors of economy like manufacturing, health care, finance or customer care (Mahesh, 2020, p.381).

Machine learning finds its application as the true backbone of the system helping to view the system how big data and its contents can be understood as complex structures (Mahesh, 2020, p.381). This enables the constant growth of these intelligent systems as they incorporate increasingly more information and learn to do things better. In stark contrast, the scope of machine learning is so wide that it comes with entirely different concepts from the confusion of systems like artificial intelligence. For example, today every system has recommendation engines that change the way things are done completely or even predictive models that aid in decision making in life within few sectors (Mahesh, 2020, p.381). Natural language processing (NLP) is another important area which is transforming the way humans communicate with machines. NLP techniques process human language for a variety of tasks, which include speech recognition, sentiment detection, and interactive voice response (IVR) systems (Milson & Levent, 2024, p.5).

The most palpable form that AI takes is in the field of robotics and automation, which cause changes in different sectors. Machines that are equipped with advanced sensors and AI technology can perform activities flawlessly and effectively (Mobashir et al., 2023, p.287). Nevertheless, AI is more than just the automation of work and workplaces; it is

also a change of skill sets and Job functions, extending to different professionals. Today, several AI systems are available to professionals who know how to use them to enhance human productivity. This change is not without challenges, as it requires shifts in mindsets, habits, and behaviors towards the use of AI at the workplace (Whittlestone et al., 2019, p.8). It is important for practitioners, policymakers and educators to appreciate the role of AI technology in the world of work. It is about understanding the promise of technology and what is morally and socially acceptable (Whittlestone et al., 2019, p.8). With the advent of AI, learning to manage change, learning how to cope with environmental change, and learning how to strategize are all important elements of the process. Therefore, considering how AI is revolutionizing the existing order of things, including work, is essential in building an AI-ready workforce in the future (Whittlestone et al., 2019, p.8).

#### **2.6.2. Impact of AI Integration on Traditional Careers and Sectors**

The integration of AI necessitates urgent upskilling to adapt to evolving Job demands (Richmond et al. Atiku, 2023, p.134). Adaptability, critical thinking, problem-solving, and technological proficiency are now essential across diverse industries (Williams, 2021, p.47). The widespread automation in manufacturing signifies a broader transformative wave that reshapes job roles and the interaction between human workers and technology (Jarrahi et al., 2022, p.94). As professionals cultivate a flexible mindset, continuous skill honing becomes vital to remain relevant in an AI-integrated workforce (Roslan & Ahmad, 2023).

The impact of AI is evident across various sectors, particularly in finance, where algorithms influence the roles of financial analysts. In healthcare, AI's integration in diagnostics alters the responsibilities of radiologists and pathologists (Kamran et al., 2020, p.53). Even legal professions are impacted, with AI assisting in document analysis and research (Milson & Levent, 2024, p.5). This integration complements human capabilities rather than replaces them, fostering collaboration that enhances industry productivity (Whittlestone et al., 2019, p.8). Furthermore, ethical considerations surrounding AI adoption, such as data privacy and algorithmic biases, highlight the need for fairness and transparency in AI-driven decisions (Mahesh, 2020, p.381). Ultimately, a workforce adept at integrating AI technologies is essential, prompting educational

institutions to emphasize a blend of technical skills and soft competencies for future readiness (Mobashir et al., 2023, p.287).

### **2.6.3. The Future of Jobs and Employment**

In the realm of technology's relentless advancement, the penetration of AI into diverse industries marks a pivotal moment, one that holds profound implications for the future of work. This convergence heralds a forthcoming job landscape characterized by its dynamic evolution, redefined roles, and the emergence of uncharted career pathways. Foreseeing the trajectory of future employment unveils a landscape shaped by AI's integration, where routine tasks automate, making way for a surge in specialized roles. According to TechCast's past data and future projections about the automation of routine tasks such as factory work, most clerical jobs, driving trucks, etc. The findings reveal that between 1982 and 2012, there was a pronounced decrease in routine jobs within the US labor force from 56 percent to 44 percent. TechCast further projects more decline in the routine jobs by the year 2025 (Halal, Kolber and Davies, 2016, p.85). This transformative shift beckons individuals to adapt swiftly, honing new skills to meet the burgeoning demands of an evolving job market. The fusion of human ingenuity with AI-oriented competencies stands as the linchpin in shaping the workforce of tomorrow.

Beyond mere integration, AI's impact knows no bounds, transcending industry barriers to forge novel career paths and overhaul existing roles. Fields like robotics, data science, and AI ethics become epicenters of job creation, demanding a fusion of AI expertise with conventional skills. Collaborative initiatives harness AI's potential, fostering cross-disciplinary collaborations and expanding the scope of career avenues. The future landscape of employability demands a holistic skill set integrating technical prowess with indispensable soft skills. While technical acumen remains crucial, attributes such as critical thinking, adaptability, and creativity emerge as keystones for navigating an AI-driven economy (Caruso, 2017, p.390). The accomplishment is based on the principle of learning and flexibility, without which one cannot survive in the ever-increasing turbulence of the evolution of the job environment. Therefore, thinking of the future of work is a balanced perspective that takes into account the talent of human beings and the transformational role of AI. It is anticipated that such collaboration require a workforce that is creative and able to adapt to changes in the labor market that is enhanced by artificial intelligence.

#### **2.6.4. The Impact of AI on Future Jobs**

The present and potential future employment trends are very closely associated with the ever-increasing competition AI suffers from. Numerous studies and reports have sought to predict what the labor market would look like in the years to come, taking consideration of the way AI has influenced and developed the job market over the years. Such studies depict a complex picture of the economy that is becoming more and more dependent on AI, changing existing job descriptions and creating new ones as well. According to Arif and Victoria, the integration of AI within HR functions holds the promise of significantly expediting various job tasks. AI-powered tools streamline talent acquisition processes, automating resume screening, candidate assessments, and initial interviews. This acceleration allows HR professionals to focus more on strategic aspects of recruitment and employee management.

However, as AI streamlines and automates certain tasks, it is also expected to create new job opportunities. Roles related to AI system management, data analysis, and ethical oversight of AI applications in HR are likely to emerge. This evolution in job roles signifies a transformation within HR, where the adoption of AI not only accelerates existing tasks but also sparks the creation of novel roles to navigate the changing technological landscape (Arif and Victoria, 2021, pp.34-36).

One significant trend foresees a substantial shift in job dynamics due to increased automation. Routine tasks across various industries are expected to be automated, thereby altering the skill requirements for many roles. Occupations primarily focused on tasks involving basic cognitive functions or manual dexterity may face changes, prompting a necessity for reskilling or upskilling to align with evolving job demands (Tschang and Mezquita, 2020, p.34). Moreover, projections highlight the creation of new job categories and specialized roles within an AI-driven economy. Fields such as data science, machine learning engineering, AI ethics, and robotics are anticipated to witness burgeoning opportunities. This surge in demarcated specialized roles reflects the evolving needs of industries as they embrace AI technologies to innovate and streamline operations.

The cross interactions between human beings and artificial intelligence are another important issue discussed in the reports. It is incorrectly assumed, however, that AI is eliminating the human workforce in totality. Research however shows that AI is used to extend the effectiveness of human labor (Jarrahi, 2018, p.583). This in turn creates

a new variety of roles that combine skills of humans and AI. As such, the capacity to work with AI systems becomes a requirement, hence the importance of equipping the employees with skills that enable them use AI tools for productivity and efficiency gains.

The international relations of countries and consumer traits in the country, it has been reported, are the strongest determinant of the effect. Thus, while some areas may register a rapid increase in the creation of employment in jobs related to AI, others may witness more serious issues in the job shift and the acquisition of skills. These investigations examine the effects of the inclusion of AI into operations in detail, with respect to the new needs in talent. There is a need for people with AI knowledge who possess not only the technical capabilities required but also those such as critical thought, flexibility, ingenuity, and the ability to solve problems. There are expectations that the future labor force would possess such kinds of skills for easy adjustment to the changing labor market so as to promote productivity in the AI economy.

#### **2.6.5. Emerging Opportunities due to AI**

Given the fast pace at which employment trends are evolving, the incorporation of AI in diverse sectors suggests that there is an impending revolution where the way people work, the careers they chose and their occupations all be changed. With this integration of AI in industries, new industries are expected to arise which each require a different set of skills. The level of integration of AI technologies and machines defined as the robotic systems has undergone a significant change (Jerbić & Švaco, 2023, p.44) as it is no longer confined to only the construction of goods but has reached logistics, medicine, and service delivery. There is a need for a diverse team consisting of, amongst others, robotics engineers, who are experts in the design and application of robots, automation engineers, and maintenance staff. In this respect, a robotics engineer is one who develops a robot with advanced features whereby AI is integrated within the machine thus supporting and enabling robotics AI. Also, automation engineers work on the implementation of these ideas, fine-tuning and checking performance (Singh & Mehta, 2020). In addition, the role of a maintenance technician regards the continued use of their products and their ability to fix all problems and uphold current standards in terms of their technology.

With the improvement of machines, so does improve the technique used in the predictions thus creating a high workforce need of data scientist and machine learning

engineers. This need has led the emergence of three main roles; data scientists, machine learning engineers, and AI experts. Databases of organizations contain valuable resources in terms of information which data scientists analyze and present various correlations in order to help the organization make decisions (Davenport & Patil, 2012). For example, machine learning engineers are responsible for deploying the advanced algorithms of AI and are focused on the development and improvement of the architectures of the algorithms (Administrator, 2022) which is aimed at providing solutions that enhance the business activities of the companies. One of the important advantages of AI specialists is that they know how to utilize various AI frameworks for different purposes, which helps to further enhance the level of productivity. However, with transformations in the environment, the development of AI has called for the urgency to demand and secure the professionals in ethics and governance. AI ethic curbs and policy designees are important persons who face the impacts of these technologies such as the use of algorithms with structural biases and the privacy of data (Gambelin, 2020, p.89). Some of those policy analysts assist in implementing measures by developing strategies that aid the use of advanced technologies like AI more towards the intended pursuits without breaching the boundaries of moral concerns. Governance, on the other hand, focuses on the maintenance of these ethical requirements and more importantly the actual I implementation of the AI systems within the confines set.

Further, incorporation of AI into health care has transformed not only the diagnosis but also the practice of medicine (Imhoff et al., 2000, p.181). In this context, new positions such as health data analysts and AI healthcare strategists are being created. Their role mainly involves making sense of vast amounts of medical information held in storage using AI, in order to identify useful information that can guide them in making decisions. At the same time, AI healthcare strategists facilitate the use of AI into existing systems of care, telehealth specialists employ AI to ensure the provision of care remotely, thereby enabling access to healthcare for people in hard-to-reach regions (Fernandes, 2021, p.5). There are also different aspects of AI which are assisting on other fronts, environmental issues being one of them, which is why there are more people looking for those who can save the environment. People specialized in Environmental AI and sustainable technology are at the forefront in projects that analyze energy efficiency and climate change prediction. For example, they develop machine learning algorithms that help study energy patterns to help industries go green. They design programs to optimize

the energy consumption of various sectors, hence promoting the embrace of green technologies in industries. As an illustration, (Zhong et al., 2021, p.12743) states, climate prediction models using artificial intelligence which has been researched and developed by environmentalists assist leaders in formulating policies aimed at addressing the effects of global warming. Such specialists also deal with management of resources with AI being a tool to help manage resources effectively with minimal impact on the environment.

## **2.7. Emerging Challenges in AI centric Market**

The incorporation of AI into the workforce triggers several issues that require urgent attention. The most important of these is the fear of losing jobs because of automation. With machines beginning to perform more and more of what were once done, regular worker functions, fears of the loss of certain jobs are increasing. Conversations surrounding the figures of unemployment tend to grow, emphasizing the importance of resolving the broad skill mismatches that arise from such a technology shift.

The McKinsey authority quoted every other market researcher says that 15–30% of the global workforce can be automated with the help of AI by the year 2030, which implies these millions of people would have to either find new jobs or up-skill (Manyika and Sneider, 2018). More so, Paul K. McClure (2017) provided a reasonable explanation for the rise of technophobia as a remarkable aspect of a good number of Americans. As this Advance in sociology, robotics and IA technology. Employment anxiety supported by integration of machine into the workplace is a real problem, more so head in hand towards those considered technophobic.

This enormous change calms the traditional understanding of job roles. People are forced to learn new skills that are consistent with market evolution. New skills required are not just technical, rather there are other areas including flexibility, critical analysis and strong technology skills. There is also an ethical aspect to consider in this new context. Algorithmic bias, data protection, and uses of AI are examples of concerns that raise urgent needs for regulatory regimes and ethical principles to mitigate the threat of mismanagement and to facilitate the safe need of such technologies (Du and Xie, 2020).

### **2.7.1. New Required Skills and Capabilities for Graduates**

Due to the ongoing rise of AI, which is altering the way people perceive various careers, educational curricula must be restructured in a more careful manner than ever. Companies are changing because of AI and these new graduates need to be equipped with the right skills. The assimilation of AI has changed the graduate competency model. Technical skills were already a prerequisite, but emphasis shifted to practicing AI, handling, and interpreting data (Colombo et al., 2019). Their understanding enables them to use existing AI and models and be prepared for new ones.

One of the most important skills is critical thinking and problem-solving. graduated students are required to examine complex situations, determine the problem, and bring an AI-based answer to the challenge (Purwanto et al., 2023). In the present world where information is power, using analytical decision-making tools powered by artificial intelligence is a must. It is imperative that these individuals possess the ability to unlearn and relearn due to the nature of AI that undergoes constant change and improvement. Moreover, there are situations where such skills are necessary. Newly graduated students should be able to design and implement new AI systems while at the same time knowing the harms associated with such technology like biases and privacy issues. The ability to present complex and often sophisticated technical results to audiences consisting of different groups, technical and non-technical, requires communication competence. Teamwork skills in a heterogeneous team are also beneficial in completing AI projects.

Giselle Rampersad calls for the need of such workers who are able to cope with changes in this age of human activities that ought to be creative and transformative (Rampersad, 2020). Graduates must possess knowledge related to specific industry sectors and how effectively AI is applied in those sectors (Bikse et al., 2022). Knowledge and use of good Emotional Intelligence, being empathetic, and having better communication are crucial because developing AI solutions is about addressing needs of users (Poláková et al., 2023). Equally important is Resilience that in this case motivates students to appreciate failures as learning curves and as a result promote growth. Perspectives also have to include values of global market and cultures because gender and its effects are global issues and thus the workforce tends to be global.

### **2.7.1. Education and Training to Equip Graduates with Skills**

Great changes are occurring in the curriculum of educational institutions so that all rounded students are produced in relation to the need of the market which is centra... This progression of development consists of a void where students are simply taught theory without much emphasis on application of artificial intelligence concepts in practice. The focus of the course has evolved with majority of the topics covering advanced AI technique, machine learning and big data analysis. However, combination of theory with practice is made possible through the use of projects, internships and work with sponsors which orients the students in the real use The study conducted by Al-Maskari, Al Riyami and Ghnimi articulates the importance of the Higher Education Institutions (HEIs) in equipping students with the 4th industrial revolution AIs. The research highlights the importance of HEIs having different constituents: academic programs, training programs and technology. These constituents are considered very important because they are required to prepare the students for the inevitable future workforce. Hence, this has to be emphasized as part of academic work (Al-Maskari, Al Riyami and Ghnimi, 2022).

In light of the fact that AI is a field that is developing so fast and constantly, there is an emphasis in the educational programs for AI on where students need to be flexible. At the same time, curriculum 's scope for flexibility is important, which means that there has to be frequent review of the curriculum to factor in the current trends in AI technology (Jacobs, 2010). This enthusiasm is topped by the fact that graduates do not become obsolete as far as new technology associated with AI is concern and hence are equipped with the relevant competencies and knowledge to handle the challenges that the changing work environment poses. 'Education is a complex process and ethical issues are at the core of such processes as educational management and cultural preservation. Autonomous artificial intelligence systems are becoming the focus of education today; in this progressive trend we cannot overlook - Courses of instruction on AI ethics and responsible AI design provide education on how to deal with ethical dilemmas, biases of algorithms, or invasion of privacy by AI technologies (Chen, Chen and Lin, 2020). This route taken in education, shapes a person who is not only proficient in every technical aspect of the concept but also one who appreciates the responsibilities of using the particular technology, in this case, AI.

Communication and collaboration skills are enhanced through the use of some interactive learning techniques such as interdisciplinary projects, simulations, and debates (Häfner, Häfner and Ovtcharova, 2013). In this way, students learn how to present complicated technical ideas to other people as well as the learned way of solving problems in teams which is a culture that is associated with working in fields like artificial intelligence. They also place emphasis on the pedagogical aspects of preparing employees for work depending on the field of knowledge. In particular, the training is also supplemented with working with organizations and utilizing real-time AI in certain sectors. Thus, the graduates well-versed in the complexity of the particular sector. This immersion ensures that all the graduates have perfect opportunities to grasp the needed sector-specific skills, therefore increasing their employability and readiness for the world of work especially in this era dominated by artificial intelligence.

### **2.7.2. Opinions of Undergraduates on Their Future Work Life**

As the reach of AI continues to grow in different sectors, undergraduates need to appreciate its relevance. It is becoming increasingly important for one to understand what AI does while predicting work environments of the future. AI is at the center of the revolutionary change of processes and structures within organizations, equipping students with the ability to invent and adjust within the changing environment. A research was done by Polona Tominc and Maja Rožman on attitudes towards AI of undergraduate and graduate students in economics and business study programs. The study also demonstrated that the two academic levels (Polona et al., 2023) had marked differences on the importance and comprehension of AI. Likewise, another cross-sectional study conducted in KIST Medical College in Nepal showed that 49% of the students accepted that artificial intelligence can eliminate their jobs (Jha et al., 2022). There was limited understanding of the effects of AI on the healthcare system; however, participants expressed high enthusiasm to learn about it.

Yet again, Keleş Pinar Ural and Aydın Suleyman, as two authors, explore the attitudes of university students towards AI. The research carried out with 130 senior students from different faculties showed that education students have more developed AI ideas. Nevertheless, there were widespread negative attitudes towards AI in all the groups (Keleş & Aydın, 2021). Anthony Nnamdi Ogbolu and Sukidjo Sukidjo's research focused on the feelings of Asian undergraduate students regarding artificial intelligence in

practice. The primary focus was the threat of Unemployment and Inequality. More than 70% of the participants expressed willingness and confidence that they would be able to accommodate the effects of AI, although the attitudes towards AI use were ambivalent (Ogbolu & Sukidjo, 2020).

In Rawalpindi, Pakistan institutions of medical education and research also examined the influence of Artificial Intelligence in Medicine. The participants in the study were 210 medical students, and a questionnaire was administered to evaluate the students' understanding of AI. Almost all the respondents (89%) had never heard of any concept in this technology, for example neural networks (only 13% knew that), however over two-thirds (65.4%) thought that AI would assist in making prognoses (Ul Sabah et al., 2023). Although many considered AI to be an encroaching phenomenon that would pose a risk to Job security, they all were in accord about the necessity to equip medical trainees with AI skills. The available literature points out the clear differences in undergraduate tendencies towards AI across their professional works. Optimism and pessimism are addressed regarding Job security and the social consequences of the changes, creating a call for more efforts in education in order to adequately equip all the students with the necessary skills to perform in an age where AI dominates.

## **2.8. Role of Higher Education Institutions in Students' Preparation for the Job Market**

Understanding undergraduates' perceptions of AI's impact on their future careers is crucial. Equally vital is evaluating their satisfaction with their academic institution's preparation for AI. This gap between academic preparation and students' perceptions is a critical area of inquiry. Assessing how well-equipped students feel to navigate an AI-centric professional landscape is imperative. A study by Hanna Rahma Abdelwahab, Abdul Rauf, and Dadi Chen investigates business students' perceptions regarding Dutch higher educational institutions (HEIs). The research assesses whether these HEIs effectively prepare students for AI work environments. The survey included 95 students from 27 HEIs in the Netherlands. Findings revealed a significant sentiment among students that their institutions inadequately prepared or underutilized resources for AI work environments. This highlights a belief that HEIs fail to optimize curriculum and resources for AI applications.

Another study indicates that most higher education institutions have failed to adapt to AI's widespread use. Research by Jha et al. in KIST medical college of Nepal revealed insufficient integration of AI, which led to low awareness levels on the said subject among students. Mean AI knowledge rate scored in the study was 11 out of 25 highlighting students' low understanding levels where many of them were however aware of the negative effects AI has on the healthcare system (Jha et al. 2022). The growing field of AI raises the question on whether the higher educational institutions are producing the appropriate results with respect to the preparation of such students. Assessment of students' attitudes towards AI and its relevance towards their career aspirations as well as their perception on academic preparedness presents a challenge. Hence, this aspect creates a vacuum which calls for institutions to readjust. The importance of Infusing AI-dependent skills and materials into the programmers' is essential especially to avoid this gap and that graduates are fit for the present Job market. The change needs to be very rapid in the case of higher education institutions as they have to use the available resources in the most efficient manner and revise the content of studies in line with artificial intelligence.

## **CHAPTER 3.**

### **3. RESEARCH METHODOLOGY**

This chapter is focused on the impact that undergraduate and graduate students associate with AI on their future employment opportunities. It describes the demographics and sampling strategy employed in the study, discusses the data collection instrument, the data collection and the data collection procedure, the data processing method used and the ethical issues concerned.

#### **3.1. Research Design**

The research strategy applied in this study was quantitative as it employed surveys to determine the attitude of graduate and undergraduate students with respect to the possible impact of AI in their career prospects. The survey research strategy involves the use of a structured and closed-ended questionnaire in soliciting for data from the sample population (Gregg, 2023). The Attitudes Towards Artificial Intelligence Employment Questionnaire for Students (AAIEQS) (Appendix B) which is a questionnaire designed by the researcher was adopted for this research. The AAIEQS (Appendix B) questionnaire was vetted by five experts and its reliability was determined using the SPSS software. The data was collected and analyzed quantitatively, where a five-point Likert-type scale was used to measure students' responses in regard to the gathered data. Besides collecting the data, the supervisor's permission was sought as one of the ethical considerations, and ethics have taken precedence during the entire research process (Appendix A).

#### **3.2. Population and Sampling of the Study**

A population is defined as an entire group of people who have similar traits (Filippi et al., 2023). All graduate and undergraduate students enrolled at Anadolu University in the academic years 2023–2024 make up the population for this study. This population served as the source for the study's sample. A sample is a subset of the population (Ellis, 2004). To gain an understanding of the total student population at the university, I visited the student affairs office and collected information about the number of students enrolled in the academic year 2023-2024. A total of 22,717 students were enrolled, with 5,563 in graduate programs and 17,154 in undergraduate programs.

The data from the samples for this study was gathered using the stratified random sampling method. This sampling technique divides the population into smaller groups, or

strata, according to shared characteristics in order to gather information from respondents. In order to assure proportional representation of each group, students are assigned into groups based on their academic backgrounds. This study employed a simple random sampling technique within each stratum to select the respondents. This strategy aims at ensuring fair as well as representative participation of the students of different fields of study. In the academic year 2023-2024, there were 437 Self-Administered Questionnaires issued to participants made up of undergraduate and graduate students of the Anadolu University. Out of 437, 417 were returned from the fieldwork component, however after analysis of the responses, 402 responses were adopted by the researcher as the rest of the responses were claimed to be unfilled by the participants.

### 3.3.Data Collection Tools

An instrument used to gather data for research is called an instrumentation. An instrument can gather information (Zhang et al., 2010; Cauley et al., 2010). The Attitudes Towards Artificial Intelligence Employment Questionnaire for Students (AAIEQS) (Appendix-B), a self-developed questionnaire, was used for this study. The four components of the AAIEQS were student opportunities, challenges posed by AI, the impact of AI on students' future employment, and demographic data. There are thirty items in all about AI in the AAIEQS. The AAIEQS utilized five-point Likert scales: Strongly Disagree (SDA), Disagree (DA), Neutral (N), Agree (A), and Strongly Agree (SA). SDA, 1, DA, 2, N, 3, A, 4, SA, and 5 were the data scores during data analysis. The instrument division utilized in this study was displayed in Table 3.1.

**Table 3.1.** *Division of items in AAIEQS*

| Questionnaire                                  | No of items |
|------------------------------------------------|-------------|
| Demographics                                   | 8           |
| Impact of AI on students in future employments | 8           |
| Challenges to students from AI                 | 6           |
| Opportunities for students using AI            | 6           |
| <b>TOTAL ITEMS</b>                             | <b>30</b>   |

### 3.4.Validity and reliability of AAIEQS

Following the preparation of the AAIEQS with the aid of existing literature and supervision, the researcher chose educational experts to validate the data collection

instrument. What is measured and what is meant to be measured are referred to as validity. The researcher chose five educational experts to ensure content validity for the current AAIEQS study content. The degree to which a questionnaire is considered valid depends on what it used to measure (Borg & Gall, 1989). Nonetheless, the AAIEQS's face validity and content were verified for this investigation. To make sure the questionnaire is valid, content and face validity were examined. The researcher consulted several experts, including the supervisor and senior colleagues, to ensure the questionnaire's validity aligned with the research objectives for assessing face validity. To further enhance the instrument's validity, the researcher sought feedback from a group of qualified experts. Reliability is a sign of the scores' consistency or reproducibility (American Educational Research Association, 1999). The Pearson Product Movement (PPM) was used in conjunction with SPSS software to analyze the instrument's reliability.

### **3.5.Data Collection Procedure**

The purpose of this study is to investigate how graduate and undergraduate students feel about the possible effects of AI on their career prospects. A research permit was obtained from the university (Anadolu University) in order to gather the required data. Following that, the researcher visited graduate and undergraduate students at Anadolu University and obtained permission from the dean prior to gathering data from the students. Thirdly, in accordance with research ethics guidelines, permission from pertinent students also be obtained, and they have given the necessary information. A self-administered drop-and-pick method and Google Forms was used to administer the questionnaires, giving participants a week to complete them. Google Forms was used to collect data, and access was limited. Two reminder prompts were included in the one-month data collection process. The main instrument for gathering data from important participants, particularly graduate and undergraduate students, was an AAIEQS (Self-administered Questionnaire), which is a self-administered survey. The information gathered shed light on graduate and undergraduate students' perceptions of the possible effects of AI on their career prospects. In order to investigate student attitudes towards AI and spot any disparities, pertinent variables, including demographic data, the impact of AI on students, obstacles presented by AI to students, and opportunities for students to use AI, was also examined. A five-point Likert scale used for quantitative analysis of the gathered data.

### **3.6.Data Analysis Procedure**

The statistical software SPSS 24 was used to conduct a methodical process on the gathered data. A pilot test to gauge the reliability of the questionnaire came after precise data entry into SPSS software. Following that, frequencies, means, and standard deviation was used to analyze descriptive statistics and interpret the data. In addition, the study's gender-based analysis was conducted using the independent t-test.

### **3.7.Pilot Study**

Pilot testing, according to Seale (2011), can uncover unanticipated problems with a questionnaire's design. The investigator intended to conduct preliminary testing on fifty students from Anadolu University's social sciences department who study in an English program. The department's success was attributed to fellows' support and ease of access. Reliability was assessed once the data from social sciences students had been gathered. Pilot study was conducted to check the reliability of the questionnaire, validity of the questionnaire and the analysis of responses in the SPSS 24 software.

### **3.8.Ethical Consideration**

The ethics of conducting research is what allows the researchers to protect the rights and wellbeing of the research participants. To assure the proper ethics in this study, the researcher avoided payment, promoted volunteerism, secrecy, and assurance of no risk involved. They ensured that their names and the names of the subjects remain undisclosed in line with the research objective and the design making people comfortable to interact openly. Since the volunteers were working on scanned economist and willing to spend time, the researcher also recognized the value of voluntary participation. Last but not least, the researcher assured no monetary incentives provided, allowing only participants' good-will to be the driving force in fulfilling the study needs. These principles should be followed as they serve to safeguard the well-being and dignity of our subjects; in turn increasing the validity and value of the research outcomes. Hence, this approach foresees gathering information from respondents only after addressing possibilities and issues like the above.

## **CHAPTER 4**

### **4.DATA ANALYSIS OF PILOT STUDY**

#### **4.1. Introduction**

This chapter dealt specifically with researching the perspectives of both undergraduate and graduate students regarding AI and its potential influence on their career endeavors. It commenced with a short overview which presented the aim of the research and the research design applied in the collection of data. For the purpose of getting a picture of the total student population in the university, the author went to the student affairs office and gathered statistics of students who registered for the academic year 2023-2024. A total of 22,717 students were enrolled, with 5,563 in graduate programs and 17,154 in undergraduate programs. The researcher visited the university and provided questionnaires to 60 science, arts and administrative sciences students for collecting data for pilot study. Analyzing how undergraduates and graduates feel about AI and its possible effects on the Job market was the primary goal of the pilot study.

The items concerning the impact of AI on career paths were assessed using factor analysis. The reliability of the scale was enhanced through the iterative elimination of items with low communalities, leading to improved reliability overall. The last version of the scale showed strong communalities in the majority of items, suggesting a reliable method of measuring students' perspectives. In addition, Cronbach's Alpha was used to evaluate the questionnaire's reliability, and the results showed that there was a high level of internal consistency among the items. Analysis of participant demographics by program, major, age, gender, and employment status were also revealed by the demographic reports. Students' attitudes toward AI were found to be impacted by various factors, including their academic background and gender. It provided context for understanding these effects. Also investigated using descriptive and inferential statistics were students' levels of AI knowledge, their views on how AI affected their future careers, and the difficulties they anticipate in integrating AI into their daily work.

Perceived opportunities associated with AI, such as the emergence of new Job functions and the possibility of remote work, were also examined in the study. Significant differences in perceptions based on gender and academic major were found using ANOVA and independent sample t-tests. This analysis provided valuable insights into

how diverse groups view the future influence of AI on employment. Additional research on students' perspectives on AI and its potential effects on their professional advancement can be built upon this thorough pilot study.

#### **4.2.Factor loadings of Items**

The factor loadings presented below illustrate the commonalities of each item across all three iterations of factor loading in IBM SPSS, reflecting the variance in each item attributed to the underlying factors. The initial column exhibits the items. The second, third, and fourth columns displayed the factor loading values from the first, second, and third iterations, respectively. During the initial analysis, factor loadings for the majority of items reside within an acceptable range; however, several fall below 0.7, which was typically regarded as the benchmark for adequate indicator reliability. AISFE\_6, AISFE\_7, CTSAI\_2, and OTSUAI\_2 are below the threshold, with values of 0.62, 0.555, 0.529, and 0.579, respectively. In accordance with factor loading criteria, these items ought to be considered for removal to improve the reliability of the measurement model. During the second iteration, numerous items persist in not achieving the 0.7 threshold, notably AISFE\_6, AISFE\_7, CTSAI\_2, and OTSUAI\_2, which continue to exhibit low values or are excluded from the analysis. It underscored potential concerns regarding these items and justifies their exclusion.

Furthermore, certain items exhibited enhanced loadings, exemplified by AISFE\_5, which rose markedly from 0.694 in the initial run to 0.846 in the subsequent iteration, signifying a more robust fit in this phase. Moving on to the third assessment, based on the conditions established by Ringle et al. (2020) and Hair et al. (2014), any factor loading greater than 0.6 was accepted indicating sufficient indicator reliability. In this analysis, those items that were cut off or did not meet the requirements in earlier examinations – for instance, these are AISFE\_6, AISFE\_7, CTSAI\_2, and OTSUAI\_2 – were also omitted or remain under the threshold levels justifying their exclusion. Nevertheless, however, for instance items of AISFE\_1 to AISFE\_5, CTSAI\_1, CTSAI\_4, and OTSUAI\_6 were all above the 0.6 boundaries thereby supporting the degree of strength and consistency of such indicators in the model as per PLS-SEM requirement on indicator reliability.

**Table 4.1.** *Interpretation of factor loading in all three runs*

| Items    | Run-1 | Run-2 | Run-3 |
|----------|-------|-------|-------|
| AISFE_1  | 0.692 | 0.689 | 0.678 |
| AISFE_2  | 0.629 | 0.697 | 0.729 |
| AISFE_3  | 0.687 | 0.702 | 0.703 |
| AISFE_4  | 0.707 | 0.712 | 0.705 |
| AISFE_5  | 0.694 | 0.846 | 0.852 |
| AISFE_6  | 0.62  | 0.598 | Omit  |
| AISFE_7  | 0.555 | Omit  | Omit  |
| AISFE_8  | 0.668 | 0.682 | 0.733 |
| CTSAI_1  | 0.711 | 0.759 | 0.764 |
| CTSAI_2  | 0.529 | Omit  | Omit  |
| CTSAI_3  | 0.627 | 0.665 | 0.667 |
| CTSAI_4  | 0.724 | 0.732 | 0.754 |
| CTSAI_5  | 0.799 | 0.862 | 0.859 |
| CTSAI_6  | 0.818 | 0.888 | 0.901 |
| OTSUAI_1 | 0.665 | 0.618 | 0.632 |
| OTSUAI_2 | 0.579 | Omit  | Omit  |
| OTSUAI_3 | 0.642 | 0.67  | 0.682 |
| OTSUAI_4 | 0.729 | 0.726 | 0.728 |
| OTSUAI_5 | 0.768 | 0.769 | 0.762 |
| OTSUAI_6 | 0.716 | 0.803 | 0.785 |

#### 4.3. Reliability of the Questionnaire

Reliability analysis using the Cronbach's Alpha coefficients has been successful in establishing the internal consistencies of the survey items which sought to measure the attitudes on the roles of AI in future employment. All items had coefficients between .762 and .808, which shows high internal consistency. The series of coefficients for the items in the scale of attitudes towards AI and its influence on the employment of the future which is labelled AISFE\_1 to AISFE\_8, was found to range from .766 to .782. These coefficients showed high internal consistency in this group of items, which means that these items are likely measuring the same concept. Items pertaining to the impact of AI technologies on the skills and knowledge required for future job careers i.e CTSAI\_1 to

CTSAI\_6 revealed Cronbach's Alpha coefficients that range from .765 to .808. The coefficients implied very good internal consistency of these items, thus indicating dependable measurement of the construct. Items gauging attitudes towards expected impacts of AI in various dimensions of work, identified with OTSUAI\_1 to OTSUAI\_6 series had lowest and highest Cronbach's Alpha coefficients of .762 and .780 respectively. The coefficients showed that there was high internal consistency amongst these items.

**Table 4.2.** *Interpretation of reliability of the questionnaire*

| Item-Total Statistics |                                  |
|-----------------------|----------------------------------|
|                       | Cronbach's Alpha if Item Deleted |
| AISFE_1               | .773                             |
| AISFE_2               | .771                             |
| AISFE_3               | .782                             |
| AISFE_4               | .770                             |
| AISFE_5               | .781                             |
| AISFE_6               | .766                             |
| AISFE_7               | .780                             |
| AISFE_8               | .768                             |
| CTSAI_1               | .796                             |
| CTSAI_2               | .768                             |
| CTSAI_3               | .765                             |
| CTSAI_4               | .808                             |
| CTSAI_5               | .780                             |
| CTSAI_6               | .792                             |
| OTSUAI_1              | .762                             |
| OTSUAI_2              | .776                             |
| OTSUAI_3              | .775                             |
| OTSUAI_4              | .774                             |
| OTSUAI_5              | .773                             |
| OTSUAI_6              | .780                             |

## **CHAPTER 5**

### **5.RESEARCH FINDINGS AND DATA ANALYSIS**

#### **5.1. Introduction**

The investigation conducted in this chapter, focused on describing research results and data concerning students' attitudes towards AI technology, as well as its influence on possible employment in the future. To gain an understanding of the total student population at the university, the researcher visited the student affairs office and collected information about the number of students enrolled in the academic year 2023-2024. A total of 22,717 students were enrolled, with 5,563 in graduate programs and 17,154 in undergraduate programs. The researcher visited the university and provided questionnaires to 402 science, arts and administrative sciences students for collecting data for pilot study. The chapter commences with a reliability analysis, employing Cronbach's Alpha to evaluate the internal consistency of the survey items. It ensured that the data obtained from respondents is reliable for subsequent analysis.

The demographic attributes of the respondents, encompassing program enrolment, major, age, gender, and employment status, are analyzed to contextualize the ensuing findings. A descriptive statistical analysis is conducted to examine students' perceptions of AI regarding its familiarity, educational usage, and influence on their career trajectories. The researcher subsequently examined the perceived challenges and opportunities that AI poses for students, specifically regarding Job roles and future employment prospects. The chapter includes an inferential statistical analysis to investigate gender-based differences in students' perceptions of AI, employing ANOVA to identify any significant variations. An independent sample t-test is utilized to compare the attitudes of undergraduate and graduate students regarding AI's role in their future careers. The analysis is organized according to principal research objectives, providing a thorough investigation of the impact of diverse demographic factors on students' perceptions of AI.

#### **5.2. Reliability of the responses**

The reliability analysis presented in Table 5.1 indicates that the items used to measure students' perceptions of AI are highly reliable, with Cronbach's Alpha values generally exceeding the acceptable threshold of 0.70 and overall reliability of all the items

are 0.767. This high level of internal consistency across various items suggests that the survey reliably captures the diverse dimensions of students' perceptions of AI, including familiarity, impact on employment and skills, challenges, and opportunities. These findings underscored the robustness of the survey instrument in measuring students' attitudes toward AI and its implications for their future careers.

**Table 5.1. *Interpretation of Reliability of the Study***

| <b>List of Items</b>                                                                                          | <b>Cronbach's Alpha</b> |
|---------------------------------------------------------------------------------------------------------------|-------------------------|
| I am familiar with artificial intelligence (AI) technology.                                                   | <b>.752</b>             |
| I use AI in my assignments/studies.                                                                           | <b>.747</b>             |
| I believe AI will help me find a job after graduation.                                                        | <b>.760</b>             |
| Industries grow faster as AI replaces humans.                                                                 | <b>.749</b>             |
| AI systems are capable of autonomously making decisions without human intervention.                           | <b>.748</b>             |
| AI impacts the types of skills and knowledge required for future careers of students.                         | <b>.766</b>             |
| Students are adequately prepared to compete in a job market increasingly shaped by AI.                        | <b>.751</b>             |
| AI can contribute to reducing human error and increasing efficiency in various industries.                    | <b>.751</b>             |
| I feel overwhelmed by the complexity of AI technology in my future employment.                                | <b>.799</b>             |
| AI could affect the demand for traditional job roles within my area of expertise.                             | <b>.752</b>             |
| (AI) is assisting educational institutions in enhancing students' skills.                                     | <b>.740</b>             |
| I see AI as a threat to future job opportunities.                                                             | <b>.810</b>             |
| AI helps industries address worries about spreading misinformation and fake news.                             | <b>.747</b>             |
| AI enhances positive discrimination in employment (e.g., encouraging employment of people with disabilities). | <b>.741</b>             |
| I am optimistic about AI in creating employment opportunities for me.                                         | <b>.749</b>             |
| I perceive the presence of new job roles in my field identified by artificial intelligence.                   | <b>.747</b>             |
| I believe that AI will create opportunities for interdisciplinary careers.                                    | <b>.753</b>             |
| AI provides educational institutions with opportunities for teaching skills to students.                      | <b>.760</b>             |
| AI allows flexibility for remote working.                                                                     | <b>.759</b>             |
| AI could enhance job satisfaction and work-life balance of employees.                                         | <b>.751</b>             |

**Table 5.1.(continue)*Interpretation of Reliability of the Study***

| Overall Reliability Statistics |            |
|--------------------------------|------------|
| Cronbach's Alpha               | N of Items |
| .767                           | 20         |

### **5.3. Demographic Analysis of Respondents**

Table 5.2 presents the demographic characteristics of the study participants, encompassing variables such as the level of program enrolled, majors, age, gender, marital status, and employment status. This data offers a comprehensive overview of the population under study, facilitating an understanding of their background and context.

#### **5.3.1. Program Enrollment and Majors**

The majority of respondents are enrolled in undergraduate programs, accounting for 86% (n=345) of the total responses, while only 14% (n=57) are graduate students. This distribution indicated a predominantly undergraduate sample, which could influence the generalizability of the findings to primarily undergraduate experiences. Within the sample, the most common major was Sciences, comprising 46.8% (n=188) of the respondents, followed by Administrative Sciences at 29.1% (n=117) and Arts at 24.1% (n=97). The prominence of science majors suggests a potential focus on STEM-related issues and perspectives within the study.

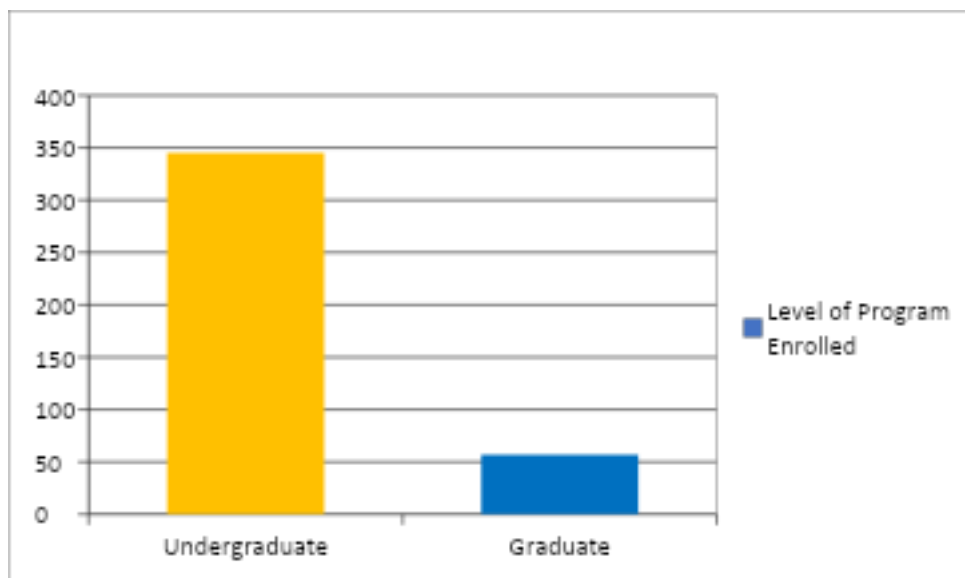


**Figure 5.1. Program Enrolled by respondents**

### 5.3.2. Age Distribution

The age distribution revealed that the largest age group is 20-25 years, representing 63.9% (n=257) of the respondents. This is followed by the 31-35 age group at 18.9% (n=76), and the 26-30 age group at 17.2% (n=69). The predominance of younger participants, particularly those in the traditional college age range, indicated that the findings may be more reflective of early adulthood experiences and perspectives.

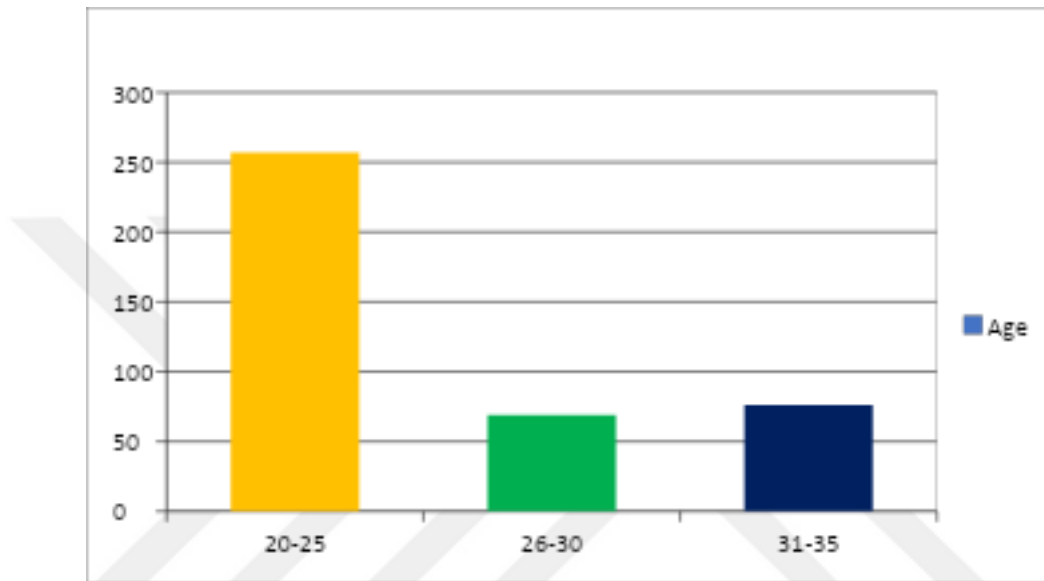


**Figure 5.2.** *Age distribution of respondents*

### 5.3.3. Gender and Marital Status

In terms of gender, 62.2% (n=250) of the respondents were male, while females constituted 37.8% (n=152). There were no respondents identifying as 'Others' in this study. This gender imbalance may have implications for the study's outcomes, potentially reflecting gender-specific attitudes or behaviors.

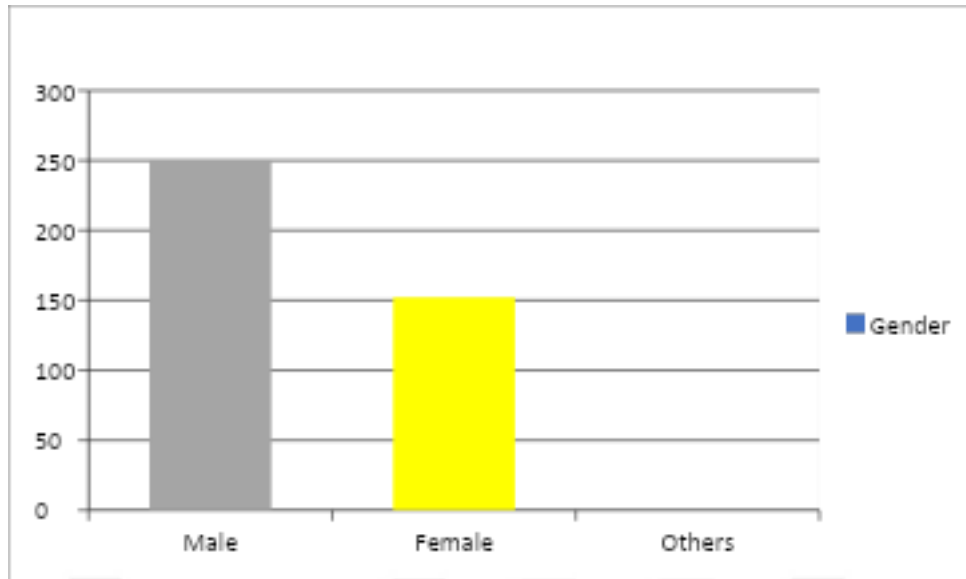


**Figure 5.3.** *Gender of respondents*

Marital status data showed that the majority of participants were single (91.5%,  $n=368$ ), with a small proportion being married (8.2%,  $n=33$ ) and a negligible number identifying as 'Others' (0.2%,  $n=1$ ). The high percentage of single respondents aligned with the young age distribution, suggesting a population that is still in the early stages of their personal and professional lives.

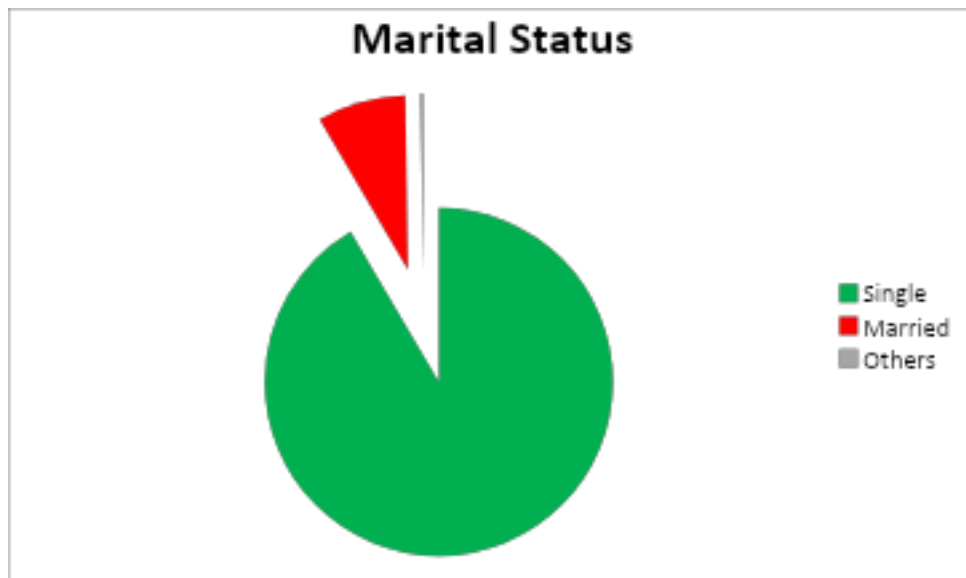


**Figure 5.4.** *Marital Status of respondents*

#### 5.3.4. Employment Status

Employment status data indicated that a significant majority of the respondents are unemployed (90%, n=362). Only 6.5% (n=26) were engaged in part-time employment, and an even smaller proportion (3.5%, n=14) were employed full-time. This high rate of unemployment among the study participants could be reflective of the student status of the majority, as well as economic factors influencing their employment opportunities.

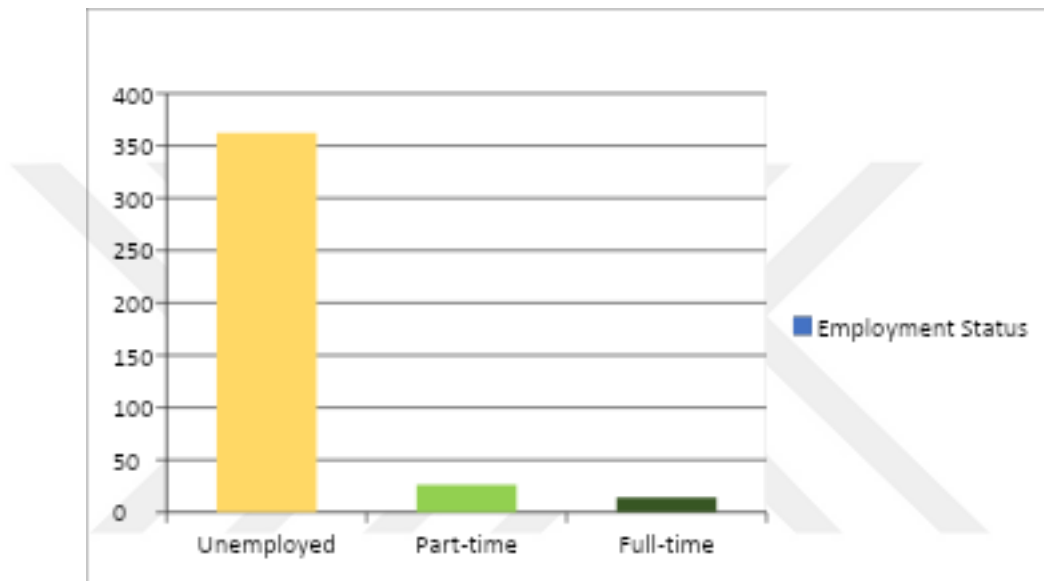


**Figure 5.5.** *Employment Status of respondents*

**Table 5.2.** *Demographic Information*

| Description of Demography        | No. Of Responses | %    |
|----------------------------------|------------------|------|
| <b>Level of Program Enrolled</b> |                  |      |
| Undergraduate                    | 345              | 86   |
| Graduate                         | 57               | 14   |
| <b>Majors</b>                    |                  |      |
| Administrative sciences          | 117              | 29.1 |
| Arts                             | 97               | 24.1 |
| Sciences                         | 188              | 46.8 |

**Table 5.2.(continue)***Demographic Information*

|                          |            |             |
|--------------------------|------------|-------------|
| <b>Age</b>               |            |             |
| 20-25                    | 257        | 63.9        |
| 26-30                    | 69         | 17.2        |
| 31-35                    | 76         | 18.9        |
| <b>Gender</b>            |            |             |
| Male                     | 250        | 62.2        |
| Female                   | 152        | 37.8        |
| Others                   | 0          | 0           |
| <b>Marital Status</b>    |            |             |
| Single                   | 368        | 91.5        |
| Married                  | 33         | 8.2         |
| Others                   | 1          | .2          |
| <b>Employment Status</b> |            |             |
| Unemployed               | 362        | 90.0        |
| Part-time                | 26         | 6.5         |
| Full-time                | 14         | 3.5         |
| <i>Total</i>             | <i>402</i> | <i>100%</i> |

#### 5.4 .Descriptive Statistical Analysis

***Objective 1: To identify factors shaping students' attitudes towards AI's impact on their career paths.***

Table 5.3 provided a comprehensive overview of students' perceptions regarding the impact of AI on their future employment prospects. The first item indicated a high level of familiarity with AI technology among students, with 175 students agreeing (A) and 113 strongly agreeing (SA), resulting in a mean score of 3.94 and a standard deviation of 0.87. This suggested that most students have a solid understanding of AI. Furthermore, item two showed that a substantial proportion of students incorporate AI into their assignments and studies, as evidenced by a mean score of 4.11 and a standard deviation of 0.90, with 200 agreeing and 140 strongly agreeing. Item three reveals a moderate belief that AI aids in job acquisition post-graduation, with a mean score of 3.57 and a higher standard deviation of 0.98, indicating diverse opinions. While 212 students were neutral, 100 students strongly agreed, and 64 agreed that AI is beneficial in finding jobs.

Item four suggests that students believed industries grew faster as AI replaced human roles, reflected in a mean score of 3.83 and a standard deviation of 0.81. A significant majority, 241 students, agreed with this statement. Additionally, item five showed a strong agreement that AI systems can autonomously make decisions without human intervention, with a mean score of 4.12 and a standard deviation of 0.99, with 177 students strongly agreeing and 133 agreeing. Item six had a mean score of 3.77 and a standard deviation of 0.86. While 151 students were neutral, 146 agreed, indicating a recognition of AI's influence on future job skills. Item seven addressed whether students feel adequately prepared to compete in an AI-driven job market, with a mean score of 3.71 and a standard deviation of 0.94. Item eight underscores the belief that AI can reduce human error and enhance efficiency across industries, achieving a high mean score of 4.06 and a standard deviation of 0.87. A significant number of students, 152 agreeing and 146 strongly agreeing, support this perspective.

**Table 5.3.** *Interpretation of Impact of AI on students' future employments*

| SR. No         | Items                                                                                      | SDA      | DA        | N          | A          | SA         | M           | SD          |
|----------------|--------------------------------------------------------------------------------------------|----------|-----------|------------|------------|------------|-------------|-------------|
| 1              | I am familiar with artificial intelligence (AI) technology.                                | 3        | 17        | 94         | 175        | 113        | 3.94        | 0.87        |
| 2              | I use AI in my assignments/studies.                                                        | 12       | 10        | 40         | 200        | 140        | 4.11        | 0.90        |
| 3              | I believe AI will help me find a job after graduation.                                     | 8        | 18        | 212        | 64         | 100        | 3.57        | 0.98        |
| 4              | Industries grow faster as AI replaces humans.                                              | 9        | 14        | 76         | 241        | 62         | 3.83        | 0.81        |
| 5              | AI systems are capable of autonomously making decisions without human intervention.        | 8        | 21        | 63         | 133        | 177        | 4.12        | 0.99        |
| 6              | AI impacts the types of skills and knowledge required for future careers of students.      | 4        | 10        | 151        | 146        | 91         | 3.77        | 0.86        |
| 7              | Students are adequately prepared to compete in a job market increasingly shaped by AI.     | 10       | 22        | 128        | 157        | 85         | 3.71        | 0.94        |
| 8              | AI can contribute to reducing human error and increasing efficiency in various industries. | 2        | 13        | 89         | 152        | 146        | 4.06        | 0.87        |
| <b>Overall</b> |                                                                                            | <b>7</b> | <b>16</b> | <b>106</b> | <b>159</b> | <b>114</b> | <b>3.89</b> | <b>0.47</b> |

***Objective 2: To identify perceived challenges of AI in students' future employment.***

Table 5.4 provides a detailed examination of students' perceptions regarding the challenges posed by AI on their future employment prospects. The first item in Table 3 indicates that a substantial number of students feel overwhelmed by the complexity of AI technology concerning their future employment. With a mean score of 2.44 and a standard deviation of 1.03, the majority of responses lean towards disagreement. Specifically, 139 students disagree (DA), and 78 strongly disagree (SDA), reflecting a significant portion who do not feel overwhelmed.

However, a notable minority of 37 students agree (A) and 16 strongly agree (SA), suggesting that the complexity of AI is still a concern for some. Item two reveals students' concerns about AI affecting the demand for traditional job roles within their areas of expertise. The mean score for this item is 3.67 with a standard deviation of 0.88, indicating a general agreement. A significant number of students, 229, agree (A) and 45 strongly agree (SA), suggesting a prevalent belief that AI could disrupt traditional employment roles.

The third item highlights the positive role of AI in assisting educational institutions to enhance students' skills. With a high mean score of 4.22 and a standard deviation of 0.86, the majority of students perceive AI positively in this context. A substantial 166 students agree (A) and 175 strongly agree (SA) with this statement, indicating widespread recognition of AI's benefits in education. Item four explores whether students perceive AI as a threat to future job opportunities. The responses yield a mean score of 2.25 and a standard deviation of 1.07, indicating a general disagreement. A significant number, 133 students, disagree (DA), and 117 strongly disagree (SDA), suggesting that many students do not view AI as a major threat. However, there remains a minority, with 38 students agreeing (A) and 13 strongly agreeing (SA), who do feel threatened by AI.

The fifth item examines the role of AI in helping industries address concerns about misinformation and fake news. The mean score of 3.93 and a standard deviation of 0.83 reflect general agreement among students. A significant number, 215, agree (A) and 93 strongly agree (SA), demonstrating confidence in AI's potential to mitigate misinformation. Item six assesses the perception of AI enhancing positive discrimination in employment, such as encouraging the employment of people with disabilities. The

mean score of 4.21 and a standard deviation of 0.90 indicate strong agreement. A majority of 148 students agree (A) and 183 strongly agree (SA), suggesting a positive view of AI's role in promoting inclusive employment practices.

**Table 5.4.** *Interpretation of perceived challenges of students from AI*

| <i>SR No.</i>  | <i>Items</i>                                                                                                  | <i>SDA</i> | <i>DA</i> | <i>N</i>  | <i>A</i>   | <i>SA</i> | <i>M</i>    | <i>SD</i>   |
|----------------|---------------------------------------------------------------------------------------------------------------|------------|-----------|-----------|------------|-----------|-------------|-------------|
| 1              | I feel overwhelmed by the complexity of AI technology in my future employment.                                | 78         | 139       | 132       | 37         | 16        | 2.44        | 1.03        |
| 2              | AI could affect the demand for traditional job roles within my area of expertise.                             | 14         | 23        | 91        | 229        | 45        | 3.67        | 0.88        |
| 3              | (AI) is assisting educational institutions in enhancing students' skills.                                     | 6          | 12        | 43        | 166        | 175       | 4.22        | 0.86        |
| 4              | I see AI as a threat to future job opportunities.                                                             | 117        | 133       | 101       | 38         | 13        | 2.25        | 1.07        |
| 5              | AI helps industries address worries about spreading misinformation and fake news.                             | 5          | 17        | 72        | 215        | 93        | 3.93        | 0.83        |
| 6              | AI enhances positive discrimination in employment (e.g., encouraging employment of people with disabilities). | 7          | 12        | 52        | 148        | 183       | 4.21        | 0.90        |
| <b>Overall</b> |                                                                                                               | <b>38</b>  | <b>56</b> | <b>81</b> | <b>139</b> | <b>88</b> | <b>3.45</b> | <b>0.43</b> |

**Objective 3: To identify perceived opportunities of AI in students' future employment.**

Table 5.5 provides insights into students' perceptions of the opportunities that AI might offer for their future employment. The first item in Table 5.4 reflects students' optimism about AI creating employment opportunities. The mean score is 3.43 with a standard deviation of 0.90, indicating a moderately positive outlook. A significant proportion of students, 193, are neutral (N), while 124 agree (A) and 49 strongly agree (SA), suggesting that while many are cautiously optimistic, there remains a considerable number who are undecided.

The second item indicates strong agreement with the perception that AI identified new job roles within students' fields. This is supported by a mean score of 3.93 and a standard deviation of 0.84. A substantial number of respondents, 202, agree (A), and 98 strongly agree (SA), highlighting a widespread belief in AI's potential to create new professional opportunities. Item three examines the belief that AI fosters opportunities for interdisciplinary careers. With a mean score of 4.00 and a standard deviation of 0.95, there is robust agreement among students. A total of 132 students agree (A) and 150 strongly

agree (SA), reflecting a strong conviction that AI enabled the merging of various disciplines into new career paths. The fourth item assesses the perception that AI provides educational institutions with opportunities to teach new skills to students. The mean score of 3.85 and a standard deviation of 0.87 indicate a positive view. A significant number of respondents, 177, agree (A) and 95 strongly agree (SA), underscoring the belief that AI can enhance educational programs.

The fifth item highlights the perception that AI allows for increased flexibility in remote working. This item has a mean score of 3.96 and a standard deviation of 0.84, indicating strong agreement. A large number of students, 185, agree (A) and 110 strongly agree (SA), suggesting that the potential for remote work facilitated by AI is widely recognized. The sixth item explores the belief that AI could enhance job satisfaction and work-life balance. With a mean score of 3.97 and a standard deviation of 0.93, there is considerable agreement among students. A total of 128 students agree (A) and 142 strongly agree (SA), indicating a positive outlook on the potential quality-of-life improvements AI could bring to the workplace.

**Table 5.5.** *Interpretation of perceived opportunities of students from AI*

| <b>SR<br/>No.</b> | <b>Items</b>                                                                                | <b>SDA</b> | <b>DA</b> | <b>N</b>   | <b>A</b>   | <b>SA</b>  | <b>M</b>    | <b>SD</b>   |
|-------------------|---------------------------------------------------------------------------------------------|------------|-----------|------------|------------|------------|-------------|-------------|
| 1                 | I am optimistic about AI in creating employment opportunities for me.                       | 14         | 22        | 193        | 124        | 49         | 3.43        | 0.90        |
| 2                 | I perceive the presence of new job roles in my field identified by artificial intelligence. | 5          | 15        | 82         | 202        | 98         | 3.93        | 0.84        |
| 3                 | I believe that AI will create opportunities for interdisciplinary careers.                  | 4          | 20        | 96         | 132        | 150        | 4.00        | 0.95        |
| 4                 | AI provides educational institutions with opportunities for teaching skills to students.    | 5          | 15        | 110        | 177        | 95         | 3.85        | 0.87        |
| 5                 | AI allows flexibility for remote working.                                                   | 5          | 9         | 93         | 185        | 110        | 3.96        | 0.84        |
| 6                 | AI could enhance job satisfaction and work-life balance of employees.                       | 4          | 14        | 114        | 128        | 142        | 3.97        | 0.93        |
| <b>Overall</b>    |                                                                                             | <b>6</b>   | <b>16</b> | <b>115</b> | <b>158</b> | <b>107</b> | <b>3.86</b> | <b>0.49</b> |

Table 5.6 provides a synthesized view of the three primary dimensions investigated in this study. The first dimension assesses the perceived impact of AI on

students' future employment prospects. The mean score for this dimension was 3.89, with a standard deviation of 0.47, indicating a generally positive outlook. Specifically, 164 students agreed (A) and 117 strongly agreed (SA), suggesting that a significant majority of students believe AI positively influences their employment opportunities. This optimism reflects the findings in Table 2, where familiarity with AI and its perceived role in enhancing job prospects were noted. The second dimension focuses on the challenges that AI may pose to students. With a mean score of 3.45 and a standard deviation of 0.43, the responses indicate a moderate level of concern. A total of 159 students agreed (A) and 119 strongly agreed (SA) that AI presents challenges, while 106 students remain neutral (N). This aligns with the findings in Table 3, where feelings of being overwhelmed by AI complexity and the potential threat to traditional job roles were highlighted. The moderate agreement suggests that while students recognize the challenges, these are not perceived as overwhelmingly negative.

The third dimension evaluates the perceived opportunities AI presents for students. The mean score here is 3.86, with a standard deviation of 0.49, indicating a positive perception. A substantial number of students, 152 agree (A) and 120 strongly agree (SA), recognize the opportunities AI offers. This is consistent with the data in Table 4, where the potential for new job roles, interdisciplinary careers, and enhanced job satisfaction were emphasized. The overall mean score across all three dimensions is 3.73, with a standard deviation of 0.38, indicating a generally positive perception of AI's role in future employment among students. The aggregated responses show that students were more inclined to view AI as a beneficial factor rather than a detrimental one. This overall positive sentiment is crucial for educational institutions and policymakers as they develop strategies to integrate AI into curricula and career preparation programs.

**Table 5.6.** *Interpretation of overall determinants of the study*

| <i>SR No.</i> | <i>Dimensions</i>                            | <i>SDA</i>      | <i>DA</i>        | <i>N</i>          | <i>A</i>          | <i>SA</i>         | <i>M</i>           | <i>SD</i>          |
|---------------|----------------------------------------------|-----------------|------------------|-------------------|-------------------|-------------------|--------------------|--------------------|
| 1             | Impact of AI on students' future employments | 5               | 15               | 102               | 164               | 117               | 3.89               | 0.47               |
| 2             | Challenges to students from the AI           | 5               | 13               | 106               | 159               | 119               | 3.45               | 0.43               |
| 3             | Opportunities for students using AI          | 5               | 15               | 109               | 152               | 121               | 3.86               | 0.49               |
|               | <b><i>Overall</i></b>                        | <b><i>5</i></b> | <b><i>14</i></b> | <b><i>105</i></b> | <b><i>158</i></b> | <b><i>120</i></b> | <b><i>3.73</i></b> | <b><i>0.38</i></b> |

## 5.5. Inferential Statistical Analysis

### **Objective 4: To examine gender-based differences in students' attitudes and perceptions of AI's role in their employment paths.**

Table 5.7 presents an analysis of the differences in gender perceptions of AI and its impact on future employment, using **ANOVA** to compare the responses of male and female students across various dimensions. The first item, AISFE\_1, explores general familiarity with AI. Males have a slightly higher mean score ( $M=3.99$ ,  $SD=0.88$ ) compared to females ( $M=3.86$ ,  $SD=0.85$ ), though this difference is not statistically significant ( $F=2.012$ ,  $Sig.=.157$ ). Similarly, AISFE\_2 indicates higher male agreement ( $M=4.17$ ,  $SD=0.80$ ) versus female agreement ( $M=4.01$ ,  $SD=1.04$ ), with no significant difference ( $F=2.825$ ,  $Sig.=.094$ ). In AISFE\_3, which addresses belief in AI helping to find jobs post-graduation, males again score slightly higher ( $M=3.62$ ,  $SD=0.96$ ) than females ( $M=3.50$ ,  $SD=1.01$ ), but the difference is not significant ( $F=1.335$ ,  $Sig.=.249$ ). For AISFE\_4, males ( $M=3.87$ ,  $SD=0.82$ ) and females ( $M=3.76$ ,  $SD=0.80$ ) show no significant difference in their belief that AI aid in industry growth ( $F=1.586$ ,  $Sig.=.209$ ).

AISFE\_5, which measures perceptions of AI's autonomous decision-making, shows a significant gender difference ( $F=18.277$ ,  $Sig.=.000$ ), with males scoring higher ( $M=4.28$ ,  $SD=0.89$ ) than females ( $M=3.86$ ,  $SD=1.08$ ). However, in AISFE\_6, concerning AI's impact on required skills, both genders show similar agreement (Males:  $M=3.76$ ,  $SD=0.86$ ; Females:  $M=3.79$ ,  $SD=0.87$ ), with no significant difference ( $F=.111$ ,  $Sig.=.740$ ). For AISFE\_7, which assesses preparation for an AI-driven job market, both genders show comparable levels of agreement (Males:  $M=3.70$ ,  $SD=0.95$ ; Females:  $M=3.72$ ,  $SD=0.94$ ), with no significant difference ( $F=.059$ ,  $Sig.=.808$ ). AISFE\_8 shows a near-significant difference ( $F=3.811$ ,  $Sig.=.052$ ), with males scoring slightly higher ( $M=4.13$ ,  $SD=0.88$ ) than females ( $M=3.95$ ,  $SD=0.85$ ).

CTSAI\_1 indicates a significant gender difference in feeling overwhelmed by AI complexity ( $F=17.876$ ,  $Sig.=.000$ ), with females ( $M=2.71$ ,  $SD=1.09$ ) feeling more overwhelmed than males ( $M=2.27$ ,  $SD=0.96$ ). For CTSAI\_2, which addresses AI's impact on traditional job roles, both genders show similar agreement (Males:  $M=3.69$ ,  $SD=0.88$ ; Females:  $M=3.63$ ,  $SD=0.88$ ), with no significant difference ( $F=.549$ ,  $Sig.=.459$ ). CTSAI\_3, related to AI aiding educational institutions, shows no significant gender difference ( $F=.013$ ,  $Sig.=.908$ ), with both genders showing high agreement

(Males: M=4.22, SD=0.93; Females: M=4.23, SD=0.75). In CTSAI\_4, females perceive AI as a greater threat to job opportunities (M=2.62, SD=1.13) compared to males (M=2.02, SD=0.98), with a significant difference (F=31.580, Sig.=.000). CTSAI\_5 shows no significant difference in perceptions of AI reducing misinformation (F=2.376, Sig.=.124).

CTSAI\_6 highlights a significant difference in perceptions of AI enhancing positive discrimination (F=6.071, Sig. = .014), with males scoring higher (M=4.30, SD=0.88) than females (M=4.07, SD=0.93). For OTSUIAI\_1, which measures optimism about AI creating job opportunities, the difference is near-significant (F=3.821, Sig.=.051), with males scoring higher (M=3.50, SD=0.87) than females (M=3.32, SD=0.94). OTSUIAI\_2 and OTSUIAI\_3, which examine perceptions of interdisciplinary career opportunities and remote working flexibility, respectively, show significant differences (OTSUIAI\_2: F=4.388, Sig.=.037; OTSUIAI\_3: F=6.708, Sig.=.010), with males scoring higher in both items. For OTSUIAI\_4, concerning AI providing educational institutions opportunities to teach skills, there is no significant difference (F = .397, Sig. = .529).

**Table 5.7.** *Interpretation of difference between gender perception from AI*  
ANOVA on Gender Perception

|         | Gender | N   | Mean | Std. Dev | Std. Error | F     | Sig. |
|---------|--------|-----|------|----------|------------|-------|------|
| AISFE_1 | Male   | 250 | 3.99 | 0.88     | 0.06       | 2.012 | .15  |
|         | Female | 152 | 3.86 | 0.85     | 0.07       |       |      |
| AISFE_2 | Male   | 250 | 4.17 | 0.80     | 0.05       | 2.825 | .09  |
|         | Female | 152 | 4.01 | 1.04     | 0.08       |       |      |
| AISFE_3 | Male   | 250 | 3.62 | 0.96     | 0.06       | 1.335 | .25  |
|         | Female | 152 | 3.50 | 1.01     | 0.08       |       |      |
| AISFE_4 | Male   | 250 | 3.87 | 0.82     | 0.05       | 1.586 | .21  |
|         | Female | 152 | 3.76 | 0.80     | 0.06       |       |      |
| AISFE_5 | Male   | 250 | 4.28 | 0.89     | 0.06       | 18.27 | .00  |
|         | Female | 152 | 3.86 | 1.08     | 0.09       |       |      |
| AISFE_6 | Male   | 250 | 3.76 | 0.86     | 0.05       | .111  | .74  |
|         | Female | 152 | 3.79 | 0.87     | 0.07       |       |      |

**Table 5.7. (Continue)***Interpretation of difference between gender perception from AI*

|          | Gender | N   | Mean | Std. Dev | Std.<br>Error | F     | Sig. |
|----------|--------|-----|------|----------|---------------|-------|------|
| AISFE_7  | Male   | 250 | 3.70 | 0.95     | 0.06          | .059  | .81  |
|          | Female | 152 | 3.72 | 0.94     | 0.08          |       |      |
| AISFE_8  | Male   | 250 | 4.13 | 0.88     | 0.06          | 3.811 | .05  |
|          | Female | 152 | 3.95 | 0.85     | 0.07          |       |      |
| CTSAI_1  | Male   | 250 | 2.27 | 0.96     | 0.06          | 17.87 | .00  |
|          | Female | 152 | 2.71 | 1.09     | 0.09          |       |      |
| CTSAI_2  | Male   | 250 | 3.69 | 0.88     | 0.06          | .549  | .46  |
|          | Female | 152 | 3.63 | 0.88     | 0.07          |       |      |
| CTSAI_3  | Male   | 250 | 4.22 | 0.93     | 0.06          | .013  | .91  |
|          | Female | 152 | 4.23 | 0.75     | 0.06          |       |      |
| CTSAI_4  | Male   | 250 | 2.02 | 0.98     | 0.06          | 31.58 | .00  |
|          | Female | 152 | 2.62 | 1.13     | 0.09          |       |      |
| CTSAI_5  | Male   | 250 | 3.98 | 0.79     | 0.05          | 2.376 | .12  |
|          | Female | 152 | 3.85 | 0.88     | 0.07          |       |      |
| CTSAI_6  | Male   | 250 | 4.30 | 0.88     | 0.06          | 6.071 | .01  |
|          | Female | 152 | 4.07 | 0.93     | 0.08          |       |      |
| OTSUAI_1 | Male   | 250 | 3.50 | 0.87     | 0.05          | 3.821 | .05  |
|          | Female | 152 | 3.32 | 0.94     | 0.08          |       |      |
| OTSUAI_2 | Male   | 250 | 4.00 | 0.81     | 0.05          | 4.388 | .04  |
|          | Female | 152 | 3.82 | 0.87     | 0.07          |       |      |
| OTSUAI_3 | Male   | 250 | 4.10 | 0.94     | 0.06          | 6.708 | .01  |
|          | Female | 152 | 3.85 | 0.95     | 0.08          |       |      |
| OTSUAI_4 | Male   | 250 | 3.87 | 0.87     | 0.06          | .397  | .53  |
|          | Female | 152 | 3.82 | 0.86     | 0.07          |       |      |
| OTSUAI_5 | Male   | 250 | 3.97 | 0.84     | 0.05          | .130  | .72  |
|          | Female | 152 | 3.94 | 0.84     | 0.07          |       |      |
| OTSUAI_6 | Male   | 250 | 4.02 | 0.93     | 0.06          | 2.218 | .14  |
|          | Female | 152 | 3.88 | 0.93     | 0.08          |       |      |
| Overall  | Male   | 250 | 3.75 | 0.37     | 0.02          | 1.997 | .16  |
|          | Female | 152 | 3.70 | 0.41     | 0.03          |       |      |

**Objective 5: To explore how academic differences affect students' attitudes toward AI's role in their employment paths.**

Table 5.8 provides an analysis of the differences in perceptions of AI's impact on future employment between undergraduate and graduate students, using an Independent Sample T-Test. The first item, AISFE\_1, explores general familiarity with AI. Undergraduates have a higher mean score ( $M=4.01$ ,  $SD=0.84$ ) compared to graduates ( $M=3.53$ ,  $SD=0.89$ ), with a significant difference ( $t=3.97$ ,  $Sig.=0.00$ ). This indicates that undergraduates are more familiar with AI technology. Similarly, AISFE\_2 shows that undergraduates ( $M=4.17$ ,  $SD=0.82$ ) use AI in their studies more than graduates ( $M=3.72$ ,  $SD=1.21$ ), with a significant difference ( $t=2.74$ ,  $Sig.=0.00$ ). For AISFE\_3, which assesses belief in AI helping to find jobs post-graduation, undergraduates again score higher ( $M=3.62$ ,  $SD=0.92$ ) than graduates ( $M=3.30$ ,  $SD=1.24$ ), with a significant difference ( $t=1.86$ ,  $Sig.=0.00$ ). In AISFE\_4, undergraduates ( $M=3.87$ ,  $SD=0.80$ ) also show higher agreement on AI aiding industry growth compared to graduates ( $M=3.58$ ,  $SD=0.84$ ), with a significant difference ( $t=2.53$ ,  $Sig.=0.05$ ).

AISFE\_5 reveals a significant difference ( $t=5.55$ ,  $Sig.=0.00$ ) in perceptions of AI's autonomous decision-making, with undergraduates scoring higher ( $M=4.26$ ,  $SD=0.87$ ) than graduates ( $M=3.30$ ,  $SD=1.25$ ). AISFE\_6 shows that undergraduates ( $M=3.81$ ,  $SD=0.84$ ) perceive AI's impact on required skills more positively than graduates ( $M=3.56$ ,  $SD=0.98$ ), with a significant difference ( $t=1.99$ ,  $Sig.=0.12$ ). AISFE\_7 assesses preparation for an AI-driven job market, with undergraduates ( $M=3.75$ ,  $SD=0.93$ ) showing higher levels of agreement than graduates ( $M=3.46$ ,  $SD=1.02$ ), with a significant difference ( $t=2.19$ ,  $Sig.=0.19$ ). AISFE\_8 shows a significant difference ( $t=3.08$ ,  $Sig.=0.14$ ), with undergraduates ( $M=4.12$ ,  $SD=0.84$ ) more positive than graduates ( $M=3.74$ ,  $SD=0.95$ ).

CTSAI\_1 indicates that graduates feel more overwhelmed by AI complexity ( $M=2.63$ ,  $SD=1.19$ ) than undergraduates ( $M=2.41$ ,  $SD=1.00$ ), with a significant difference ( $t=-1.36$ ,  $Sig.=0.01$ ). For CTSAI\_2, undergraduates ( $M=3.71$ ,  $SD=0.85$ ) are more concerned about AI impacting traditional job roles than graduates ( $M=3.42$ ,  $SD=0.98$ ), with a significant difference ( $t=2.08$ ,  $Sig.=0.01$ ). CTSAI\_3 shows that undergraduates perceive AI aiding educational institutions more positively ( $M=4.29$ ,  $SD=0.85$ ) than graduates ( $M=3.82$ ,  $SD=0.85$ ), with a significant difference ( $t=3.83$ ,

Sig.=0.39). CTSAI\_4 reveals that graduates see AI as a greater threat to job opportunities (M=2.88, SD=1.34) than undergraduates (M=2.14, SD=0.99), with a significant difference (t=-3.98, Sig.=0.00). CTSAI\_5 shows undergraduates (M=3.99, SD=0.80) more positive about AI reducing misinformation than graduates (M=3.60, SD=0.92), with a significant difference (t=3.32, Sig.=0.01).

CTSAI\_6 highlights those undergraduates (M=4.32, SD=0.83) perceive AI enhancing positive discrimination more than graduates (M=3.60, SD=1.10), with a significant difference (t=4.72, Sig.=0.00). OTSUI\_1 shows undergraduates (M=3.49, SD=0.87) more optimistic about AI creating job opportunities than graduates (M=3.05, SD=0.99), with a significant difference (t=3.45, Sig.=0.79). OTSUI\_2 and OTSUI\_3 examine perceptions of interdisciplinary career opportunities and remote working flexibility, respectively, showing significant differences (OTSUI\_2: t=4.27, Sig.=0.00; OTSUI\_3: t=4.13, Sig.=0.01) with undergraduates scoring higher in both items. OTSUI\_4 shows undergraduates (M=3.91, SD=0.81) more positive about AI providing educational institutions opportunities to teach skills than graduates (M=3.49, SD=1.09), with a significant difference (t=2.78, Sig.=0.00).

**Table 5.8.** *Interpretation of difference between gender perception from AI*  
Independent Sample T-Test

| Program Enrolled |             | N   | Mean | Std. Dev | Std. Er | Sig. | t    | df    |
|------------------|-------------|-----|------|----------|---------|------|------|-------|
| AISFE_1          | UN-Graduate | 345 | 4.01 | 0.84     | 0.05    | 0.23 | 3.97 | 400.0 |
|                  | Graduate    | 57  | 3.53 | 0.89     | 0.12    |      |      |       |
| AISFE_2          | UN-Graduate | 345 | 4.17 | 0.82     | 0.04    | 0.00 | 2.74 | 64.82 |
|                  | Graduate    | 57  | 3.72 | 1.21     | 0.16    |      |      |       |
| AISFE_3          | UN-Graduate | 345 | 3.62 | 0.92     | 0.05    | 0.00 | 1.86 | 66.59 |
|                  | Graduate    | 57  | 3.30 | 1.24     | 0.16    |      |      |       |
| AISFE_4          | UN-Graduate | 345 | 3.87 | 0.80     | 0.04    | 0.05 | 2.53 | 400.0 |
|                  | Graduate    | 57  | 3.58 | 0.84     | 0.11    |      |      |       |
| AISFE_5          | UN-Graduate | 345 | 4.26 | 0.87     | 0.05    | 0.00 | 5.55 | 65.11 |
|                  | Graduate    | 57  | 3.30 | 1.25     | 0.17    |      |      |       |
| AISFE_6          | UN-Graduate | 345 | 3.81 | 0.84     | 0.04    | 0.12 | 1.99 | 400.0 |
|                  | Graduate    | 57  | 3.56 | 0.98     | 0.13    |      |      |       |

**Table 5.8. (Continue)** *Interpretation of difference between gender perception from AI*

| Program Enrolled |             | N   | Mean | Std. Dev | Std. Er | Sig. | t      | df    |
|------------------|-------------|-----|------|----------|---------|------|--------|-------|
| AISFE_7          | UN-Graduate | 345 | 3.75 | 0.93     | 0.05    | 0.19 | 2.19   | 400.0 |
|                  | Graduate    | 57  | 3.46 | 1.02     | 0.13    |      |        |       |
| AISFE_8          | UN-Graduate | 345 | 4.12 | 0.84     | 0.05    | 0.14 | 3.08   | 400.0 |
|                  | Graduate    | 57  | 3.74 | 0.95     | 0.13    |      |        |       |
| CTSAI_1          | UN-Graduate | 345 | 2.41 | 1.00     | 0.05    | 0.01 | (1.36) | 69.65 |
|                  | Graduate    | 57  | 2.63 | 1.19     | 0.16    |      |        |       |
| CTSAI_2          | UN-Graduate | 345 | 3.71 | 0.85     | 0.05    | 0.01 | 2.08   | 70.75 |
|                  | Graduate    | 57  | 3.42 | 0.98     | 0.13    |      |        |       |
| CTSAI_3          | UN-Graduate | 345 | 4.29 | 0.85     | 0.05    | 0.39 | 3.83   | 400.0 |
|                  | Graduate    | 57  | 3.82 | 0.85     | 0.11    |      |        |       |
| CTSAI_4          | UN-Graduate | 345 | 2.14 | 0.99     | 0.05    | 0.00 | (3.98) | 66.48 |
|                  | Graduate    | 57  | 2.88 | 1.34     | 0.18    |      |        |       |
| CTSAI_5          | UN-Graduate | 345 | 3.99 | 0.80     | 0.04    | 0.01 | 3.32   | 400.0 |
|                  | Graduate    | 57  | 3.60 | 0.92     | 0.12    |      |        |       |
| CTSAI_6          | UN-Graduate | 345 | 4.32 | 0.83     | 0.04    | 0.00 | 4.72   | 66.83 |
|                  | Graduate    | 57  | 3.60 | 1.10     | 0.15    |      |        |       |
| OTSUAI_1         | UN-Graduate | 345 | 3.49 | 0.87     | 0.05    | 0.79 | 3.45   | 400.0 |
|                  | Graduate    | 57  | 3.05 | 0.99     | 0.13    |      |        |       |
| OTSUAI_2         | UN-Graduate | 345 | 4.01 | 0.77     | 0.04    | 0.00 | 4.27   | 66.72 |
|                  | Graduate    | 57  | 3.40 | 1.03     | 0.14    |      |        |       |
| OTSUAI_3         | UN-Graduate | 345 | 4.09 | 0.90     | 0.05    | 0.01 | 4.13   | 69.70 |
|                  | Graduate    | 57  | 3.47 | 1.07     | 0.14    |      |        |       |
| OTSUAI_4         | UN-Graduate | 345 | 3.91 | 0.81     | 0.04    | 0.00 | 2.78   | 66.67 |
|                  | Graduate    | 57  | 3.49 | 1.09     | 0.14    |      |        |       |
| OTSUAI_5         | UN-Graduate | 345 | 3.99 | 0.82     | 0.04    | 0.19 | 2.00   | 400.0 |
|                  | Graduate    | 57  | 3.75 | 0.93     | 0.12    |      |        |       |
| OTSUAI_6         | UN-Graduate | 345 | 4.06 | 0.90     | 0.05    | 0.16 | 4.61   | 400.0 |
|                  | Graduate    | 57  | 3.46 | 0.96     | 0.13    |      |        |       |
| Overall          | UN-Graduate | 345 | 3.78 | 0.34     | 0.02    | 0.00 | 5.12   | 64.44 |
|                  | Graduate    | 57  | 3.43 | 0.51     | 0.07    |      |        |       |

## 5.6. Findings

The study investigates students' perceptions of AI and its impact on their future employment prospects, encompassing aspects such as familiarity, usage, perceived benefits, challenges, and opportunities. As presented in Table 1, the demographic composition of the study includes 86% undergraduate students and 14% graduate students, with the majority of participants majoring in Sciences (46.8%), followed by Administrative Sciences (29.1%) and Arts (24.1%). The age distribution is primarily between 20-25 years (63.9%), with a predominant male representation (62.2%). The data reflects a largely single (91.5%) and unemployed (90%) student population, which provides context for interpreting their perceptions of AI and future employment.

The perception of AI's impact on future employment is generally positive among students, as indicated by the mean score of 3.89 (SD=0.47) in Table 5. A significant portion of students agree that AI positively influence their job prospects, with 164 agreeing and 117 strongly agreeing. This optimism is further supported by specific items in Table 2, where familiarity with AI technology scores a mean of 3.94 (SD=0.87) and the belief in AI's assistance in job acquisition post-graduation scores 3.57 (SD=0.98). Despite the optimistic outlook, students also recognize the challenges posed by AI. As shown in Table 3, feelings of being overwhelmed by AI complexity have a mean score of 2.44 (SD=1.03), with 139 students disagreeing and 78 strongly disagreeing. Additionally, the perception of AI as a threat to future job opportunities scores 2.25 (SD=1.07), with 133 students disagreeing and 117 strongly disagreeing. These findings highlight the nuanced view students hold, acknowledging both the benefits and potential threats of AI.

Students perceive significant opportunities from AI, as illustrated by a mean score of 3.86 (SD=0.49) in Table 5. Specific items in Table 4 reveal high levels of agreement on AI creating new job roles (mean=3.93, SD=0.84) and fostering interdisciplinary careers (mean=4.00, SD=0.95). The belief in AI enhancing job satisfaction and work-life balance also scores highly (mean=3.97, SD=0.93), suggesting students recognize AI's potential to improve their professional lives. Gender differences in perceptions of AI are evident, with males generally showing higher optimism and familiarity with AI compared to females. For instance, in Table 6, males score higher on the belief in AI's autonomous decision-making capabilities (mean=4.28, SD=0.89) than females (mean=3.86,

SD=1.08), a difference that is statistically significant ( $F=18.277$ , Sig.=.000). Additionally, females feel more overwhelmed by AI complexity (mean=2.71, SD=1.09) compared to males (mean=2.27, SD=0.96), with a significant difference ( $F=17.876$ , Sig.=.000).

The independent sample t-test in Table 8 reveals that undergraduate students generally have more positive perceptions of AI compared to graduate students. Undergraduates score higher on familiarity with AI (mean=4.01, SD=0.84) compared to graduates (mean=3.53, SD=0.89), with a significant difference ( $t=3.97$ , Sig.=0.00). Similar trends are observed in the belief that AI help in job acquisition (undergraduates: mean=3.62, SD=0.92; graduates: mean=3.30, SD=1.24;  $t=1.86$ , Sig.=0.00) and AI's role in industry growth (undergraduates: mean=3.87, SD=0.80; graduates: mean=3.58, SD=0.84;  $t=2.53$ , Sig.=0.05).

## **CHAPTER 6**

### **6.DISCUSSION AND CONCLUSION**

#### **6.1. Introduction**

This chapter offers a deep dive into the study's findings, revealing critical insights into students' perceptions of artificial intelligence (AI) and its impact on their future careers. The findings shed light on the opportunities, challenges associated with AI, and the role of gender and academic differences in shaping these perceptions. By comparing the study's results with existing literature, the researcher situates the findings within the broader context of AI's impact on the labor market. Additionally, this chapter discusses the implications of the study for educational institutions, policymakers, and industry leaders. It concludes with recommendations for future research and a discussion of the contributions the study makes to the growing body of knowledge on AI and employment

#### **6.2. Interpretation of Results**

##### **6.2.1. Demographic Overview**

The researcher articulates that the study's demographic analysis provided context for understanding the participants' perceptions of AI. The majority of respondents were undergraduate students, accounting for 86% (n=345) of the sample, with only 14% (n=57) being graduate students. The sample was predominantly male (62.2%, n=250), with females comprising 37.8% (n=152). The age distribution was largely concentrated in the 20-25 years range, representing 63.9% (n=257) of the respondents. The academic majors of the participants were primarily in the Sciences (46.8%, n=188), followed by Administrative Sciences (29.1%, n=117) and Arts (24.1%, n=97). Additionally, the majority of participants were single (91.5%, n=368) and unemployed (90%, n=362). The demographic profile is important as it reflects a young, predominantly undergraduate population, which could influence the generalizability of the findings.

##### **6.2.2. Perceptions of AI's Impact on Employment**

Students generally perceived AI as having a positive impact on their future employment prospects. The overall mean score for the perceived impact of AI on employment was 3.89 (SD=0.47), indicating a favorable outlook. For instance, a significant portion of students agreed that AI would positively influence their job prospects, with 164 students agreeing and 117 strongly agreeing. Specific items related

to familiarity with AI and its role in job acquisition post-graduation also supported this optimism. The mean score for familiarity with AI technology was 3.94 (SD=0.87), while the belief that AI would assist in securing employment had a mean score of 3.57 (SD=0.98). These findings suggest that students recognize the importance of AI in shaping future job opportunities.

### **6.2.3. Challenges Associated with AI**

Even though the students were optimistic about the use of AI technology, they were also aware of the difficulties it comes with. One of the notable issues was that of getting confused or lost because of AI complexity since it had a mean score of 2.44 (SD=1.03). In this case, 139 students disagreed and 78 strongly disagreed with the argument that they were not lost by AI, which means that a good number of the respondents viewed AI as complicated. Another perception was that of AI with a mean score of 2.25 (SD=1.07) in relation to Artificial Intelligence taken as a danger to job prospects in the future with 133 students disagreeing and 117 students disagreeing strongly. These manifest the students' complex attitude towards technology such as AI. They appreciate and even enjoy the potential its use brings but they are also highly cognizant of the threats it poses to the existing job market.

### **6.2.4. Opportunities from AI**

In contrast, the investigator claims that the students anticipated expansive prospects brought along by AI as demonstrated by an overall mean score of 3.86 (SD=0.49) for this dimension. The students' belief that there would develop more job roles in AI-related careers for them, on average, scored 3.93 (SD=0.84) with 202 of the students agreeing and 98 strongly agreeing. Likewise, the averagely held perception that AI would spur the growth of careers that cut across disciplines scored 4.00 (SD=0.95), where 132 students agreed and 150 strongly agreed. Another notable area was the view that their jobs would be more fulfilling, and work-life balance would be possible, thanks to AI, which reported a mean of 3.97 (SD=0.93). Such high scores imply that students are aware that the presence of AI in their professions do more than opening up new job opportunities, but also enhance the overall quality of the professional life.

### **6.2.5. Gender Differences in Perceptions**

The findings of the research also revealed distinct gender differences in the perception of AI technologies and systems. According to the researcher, male students, in general, tended to be more positive in their assessment of AI than females. For example, males had a stronger belief in the capacity of AI to make executive decisions (mean=4.28, SD=0.89) than the females (mean=3.86, SD=1.08) and the difference was statistically significant ( $F=18.277$ , Sig.=0.000). Similarly, females also experienced greater or rather higher discomfort with the intelligence than did males (mean=2.71, SD=1.09) than males (mean=2.27, SD=0.96) which was also significant ( $F=17.876$ , Sig.=0.000). These results imply that there may be variations between males and females in their levels of confidence and comfort in handling AI innovations and technologies which could be influenced by their exposure or disposition to technologies.

### **6.2.6. Academic Differences in Perceptions**

The study findings further identified differences in perception across levels of education. Most undergraduates had a better view of AI technology than most of the graduates. For instance, the researcher affirms that undergraduates had a greater mean of exposure to AI (mean=4.01, SD=0.84) than and not lower than graduate student (mean=3.53, SD=0.89), and this difference was significant ( $t=3.97$ , Sig.=0.000). Also, undergraduates were more sanguine than graduates regarding the use of AI in securing employment (mean=3.62, SD=0.92) than (mean=3.30, SD=1.24) who were graduates ( $t=1.86$ , Sig.=0.000). It can, therefore, be suggested that the younger students are more likely to use AI technology owing to the nature of education at the moment compared to older graduate students.

## **6.3. Comparison with Literature**

The author of this study focused on undergraduate and graduate students' perceptions of the effects of AI on their future work. The students showed remarkable optimism about the impact of AI on their professional lives (in all of them rather than just literature) and rated it the highest with a mean score of 3.89. The research also supported the views of Almaraz-López et al. (2023) showing that students, especially those attending business or education colleges, are fans of AI as it enhances their employment prospects and enables more cross-border careers. In regard to job satisfaction and the balance of responsibilities at work and in private life, it received quite high evaluations

as well – 3.97 in mean score. Kuleto et al. (2021) rationalized that work productivity can be enhanced through the removal of routine and mundane tasks with the employment of artificial intelligence. The students in the study also appreciated the aspect of working from home enabled by the AI system as reflected on their average score of 3.96. This finding is in line with the viewpoint of Wang and Siau (2019) that more work flexibility is afforded by the AI.

Polona Tominc and Maja Rožman (2023) figured out that students expect AI to significantly transform novel professional functions and plead their case with 3.93 as mean score across study cycles. Those positions were much like the interdisciplinary possibilities the students in the current study have pointed out and their research provided also showed that due to AI's development it is possible to change career paths due to the convergence of various disciplines. The study found out that AI encourages cross-field careers with a mean score of 4.00. According to Roslan and Ahmad (2023), it is anticipated that recent industries integrate AI, which leads to the development of new roles, especially within the core services and information technology. Notwithstanding the favorable findings, there were ethical issues that were raised by the study. Non-technical students scored an average of 2.44, denoting that they found the intricacies of AI too much to handle. Women, in comparison to men, acknowledged the challenges of using AI technology (mean score 2.71 and 2.27 respectively). This gender gap that has been related to less exposure and confidence towards technology explains why Sit et al. (2020) found that women consider AI more sophisticated and difficult to work with. Women rated this technology less than men and were also found to be more afraid of the technologies overuse (mean score 3.71 vs 3.41). This worry was reflected in their score of 3.67, where students expressed anxiety that AIs would encroach and compromise job markets or existing employment. Frey and Osborne (2017) also included a warning about the impact of AI on employment in their research work and this present study concurs. The very same sentiment was made by the respondents of the study to that of the World Economic Forum (2018) who claimed that many occupations are under threat due to automation with the use of AI. The study further revealed that men were more receptive towards AI including its capacity to make decisions independently (mean score 4.28 vs 3.86). It goes in line with Kamran et al. (2020) which found that among male participants, achieving confidence in AI abilities is associated with technological exposure.

#### **6.4. Conclusion of the Study**

The implications of the findings of the current study are numerous across different categories of beneficiaries; students, universities and the government. To students, understanding that AI can give rise to new job estimates and achieve cross-discipline careers has its own conclusion which suggests that students should learn the basics of AI and its applications and should persist in upskilling. These aspects of AI and its challenges especially IT and its realistic demands, entails that students should engage in active self-learning and seek learning in other relevant disciplines if at all they wish to be attractive to the job market. It turns out that universities have also the share of implication of the findings as the research calls for the introduction of courses to all levels of education that focus on artificial intelligence. Such new areas would call for an entire redesign of the existing curriculum and the introduction of workshops and training classes for students on AI relevance and appropriate use.

In addition to this, designing strategies to mitigate the gender gap in AI engagement calls for the implementation of measures to promote the involvement of women in AI through, for example, mentoring, participation in inclusion initiatives and creating a conducive environment. To the policy makers in the government, the study shows how crucial it is to ensure that the education policies in place are responsive to the changing trends of the market such as the artificial intelligence labor market. It touches on, implementing policies that aid them in understanding the need to spend a lot of resources in promoting AI education, the relevance of partnerships between industries and academia, and the need for reskilling and upskilling the current workforce to prevent the adverse effects of AI on employment within more traditional sectors. Women and other marginalized groups also need to be protected by the state when it comes to access of AI education to ensure justice in the formation of an AI workforce. With regard to industry participants, these conclusions suggest that companies should allocate resources to the development of training programs that prepare employees for the application of artificial intelligence and foster transdisciplinary skills to retain competitiveness in the economy. It is important for the industry to work with education in order to provide students with opportunities such as internships, apprenticeships, and hands-on projects involving AI, which in turn helps in calibrating the curriculum to market demand. Moreover, it is the responsibility of the business community to reassure the public

regarding the negative implications of AI in employment and constantly work with educators and government officials to mitigate the effects of such technologies. The research calls for the active participation of all sectors in fully harnessing the promise of AI and overcoming its challenges so that the future labor force is adequately balanced and ready.

#### **6.4. Recommendations for Educational Institutions and Employers**

Educational institutions need to make it a point to incorporate courses on artificial intelligence in their syllabuses. This means devising certain programs that entail a mix of both technical and soft skills in order to equip learners for careers associated with AI technology. Universities should also employ practical, real-life training in a bid to assist learners in grasping how AI technology works. In addition, to these, creating an enabling setting with women friendly policies stipulations and provisions for services such as Lawson's and other targeted initiatives to draw women into AI was quite imperative. Educational institutions should engage the relevant sectors so that the training provided is in sync with what is required in the market and every graduate has up to date and appropriate skills. Students should be encouraged to take proactive measures and pursue various avenues leading to the acquisition of different levels of competencies that are AI-related. Moving away from these include self-directed learning, enrolling to attend workshops on AI, and engaging in subjects outside one's field of study. In the rapidly changing work environment, students must accept continuous skill acquisition in order to remain relevant. Having a strong grounding in AI enhanced chances of finding and holding jobs in many fields. Moreover, students must also understand that there are limitations to the usage of AI and seek to address any mental and technical limitations they face.

The public authorities need to offer guarantees to modify educational policies in relation to the needs of the AI economy. It means finding resources for the implementation of AI education and promoting the interaction between science and education. The adoption of reskilling and upskilling programs was effective in mitigating the adverse effects of AI on existing occupations. In addition, to support the creation of AI culture, the government have to focus on the provision of AI education for all, especially those groups that have been left behind in the society. Without strategic planning, it was impossible to make a planned transition into an AI-infested labor market. It is imperative

for employers to improve their training and development programs by incorporating aspects of AI and also social sciences. This way they can maintain a flexible and competitive workforce. Working with the education sector is key in creating relevant programs in the right field. Furthermore, employers should engage with governments and teachers about possible effects of AI such as loss of jobs. Accordingly, they prepared a labor force that is able to face new challenges and opportunities.

#### **6.4. Summary of Findings**

The research revealed that the students had a complex perspective concerning the influence of AI on their future employment. In general, students viewed AI as a constructive enhancer of career opportunities and infrastructure. To them, it was something beyond the scope of technology — an agent which would change the dynamics of the job market by creating or re-appropriating existing jobs into new categories. The levels of optimism were particularly high in young male graduates, who were convinced that there was no way to make them less employable thanks to the grace of AI. Such students considered that AI would bring about revolutionary changes in the workspace and contribute towards enhanced levels of fluidity within the work environment. This trend resonates with the current demands of the labor market which require creativity and a readiness to learn throughout the working life. Conversely, the current analysis raised very important issues regarding the intricacies of artificial intelligence. For instance, a number of students voiced their fears regarding the pace at which artificial intelligence technology was growing and how fast they could adapt to it as most jobs were quickly becoming artificial intelligence jobs rather than basic cognitive ones. There were notable differences, with a higher proportion of female participants indicated worries about the cognitive and technical aspects of A.I than the males. In this case, the gap indicates that there is a need for institutions to equip the students with relevant information and skills targeting gender disparities.

In addition to that, the research stated that students were aware of the potential of A.I technologies to change relationships when it comes to employment. They on one hand appreciated the opportunities that the A.I. presents, but also understood the threat it possesses to the current employment system. This realization also points to a more complex view of technology, which regards it as both constructive and destructive. Students who pursue graduate degrees, in particular, expressed a more careful and

complex understanding of AI technologies almost certainly because having confronted such issues many times they are more used to the complications and the ethical dilemmas of artificial intelligence spheres. The results point out the necessity of taking AI education beyond instructional technology by adding a combination of interdisciplinary, ethical, applied, and technical training in AI Education. Modern education must incorporate changes in its content in order to respond to the needs of the ever-evolving labor market, which ensures that students acquire skills in artificial intelligence and its associated challenges. The study also demonstrates that it is important not only to teach but also to create a favorable environment for learning, that corresponds to the needs of diverse groups of students, particularly with regard to balance the gender gap in engagement with AI technologies. Government and business leaders are, therefore, reminded that training and education policies and practices should be consistent in helping advance workforce preparedness for a world of AI and such policies must encourage lifelong learning, retraining, and fair access to AI resources.

### **6.5. Contributions to Knowledge**

This research is important in many ways, especially when it comes to anticipating the role of artificial intelligence (AI) technologies in the future of work, and more specifically, in the area of higher education. Lee's research extends the existing literature by undertaking an examination of students views on AI and its effect on the chances of employment. The results are valuable to educators, policymakers and those involved in initiatives in which employment is done. It is one of the benefits that the study presents that it examines students' endorsement of AI designing new opportunities and collaboration between various fields. This fits well with the already existing discourse on how technology has revolutionized and continues to revolutionize the market place. Brynjolfsson and McAfee (2014) studied... While technology may result in the loss of existing jobs, in particular due to AI, new jobs that need a different set of qualifications are also created at the same time. Further, the research emphasizes the idea that educational institutions need to revamp their curriculum in order for students to compete effectively in a workforce governed by AI.

The growing concern about the readiness for work in the period of ongoing technological revolutions is also discussed in this text. It considers the role of education

as helping to level the differences between the speed of technological change and the skills needed by the workers. Another factor, according to the World Economic Forum (2020), is that the emphasis on education should change in order to satisfy the need for AI skills that is predicted to grow exorbitantly. The outcomes of the study, emanating from its action-research participant's exposure to AI, are likely to stimulate educational reform processes, especially in the endorsement of AII literacy and development of relevant skills in the students. The gender bias in AI Participation is another significant aspect of this research. The results indicate that female students are more likely than males to experience the intimidation associated with the advancements in AI. That finding is important as it suggests an urgent need for formulated educational policies which make sure that there is equal opportunity to succeed in a society where AIs are the order of the day. A study by Das et al. (2020) found that gender-based disparities in the levels of technology engagement have very far-reaching effects on careers and performance in STEM-oriented professions. It thus becomes very critical for the education system to counteract this trend and provide nurturing and conducive climate within all institutions of learning for every girl child and particularly with regards to AI.

Also, it is equally refreshing to learn of and analyze the differences created by age between undergraduate and graduate students regarding AI; therefore, the study considers such information important. This means that graduate students are more skeptical of the AI-based technology systems due to the understanding of the complexity and ethical issues involved in various aspects of the AI technologies. This layered perspective creates a basis for designing a more effective implementation of education programs among students experiencing different fears and at different levels of their studies. In the opinion of Carretero et al. (2017), learning experiences tailored to particular individuals can lead to positive student engagement and outcomes. Besides exploring gender and academic level, this study also takes part in the current discourse on the impact of artificial intelligence on society, mainly in the area of Job displacement and the Future of work. While presenting students' understanding of the power of AI to change the conventional understanding of Job, the study further emphasizes the importance of equipping students in educational policy with the skills needed in a waged employment system that may not only change but also disappear. This is in agreement with the analysis done by Arntz et al. (2016) who argue that although specific jobs may be done away with or taken over by

systems, especially AI, new jobs requiring skills, and specific competency levels which we do not have today needed.

Evaluation of the findings of this research also helps to comprehend the attitude of AE learners. Expressed as the relevance of artificial intelligence in their future profession and certain areas of its improvement; where exactly educational and policy actors should direct their focus. Since the labor force is dynamic, there is need for an education system that places greater emphasis on cross-discipline learning, continual upskilling and diversity within the student population. In their Research, Institute for the Future (2017) highlights the importance of educational institutions and includes Resilient Work Ready Education 20 which aims at provision of skills such as Critical thinking, Creativity and Collaboration which are essential in the present deployment of Artificial intelligence in the economy. Furthermore, the research also supports the need to address the social aspect concerning education on AI. It is imperative for upcoming professionals to grasp the moral concerns underpinning these technologies for they tend to enjoy greater prevalence and adaptation in sociological issues. Ethics within the scope of AI, in other words, in the learning process makes students think and act responsibly when making decisions about the usage and application of AI in practice. This is consistent with the ideas of Jobin et al. (2019) who emphasize that there is a need for appropriate measures to be put in place to regulate the ethical aspects of artificial intelligence technologies.

These study results are also important for industry players, as it draws attention to the necessity of educational institution cooperation with the industry for effective forming of labor forces in the age of AI. If it is possible to adjust program content with industries, it was possible to have a technically competent workforce that cope with changes in the environment owing to AI innovations. This is echoed by the McKinsey Global Institute (2021) which states that there is a need for a balance between academia and the industry so that the students who are trained acquire practical skills that fit the market expectations.

## **6.6. Further Study**

Further investigation ought to incorporate both qualitative and quantitative techniques evaluating student opinions on the topic of Artificial Intelligence (A.I.) in its entirety. The information gathered by means of several research tools such as questionnaires and survey instruments has its advantages and helps to some degree; however, it is recommended that the results be supported with qualitative data gathered

by other means, such as through the use of focus group discussions or one-on-one interviews with the respondents in order to get a more in-depth portrait of the complex issues and challenges faced by students. There are many other attributes that can be gauged through qualitative research but might not be accessible from the quantitative mechanical description. According to Creswell and Plano Clark (2017), mixing both qualitative and quantitative information helps to enrich and expand the research results, providing a clearer picture of the studied objects or processes.

Additionally, it is important to emphasize the need for multi-institutional rather than mono-institutional research. Comparative studies conducted within and across several countries and/or universities explain how educational and cultural settings, and available resources shaped students' attitudes towards A.I. This improve the external validity of the results and illustrate better why perceptions differ when institutions provide different levels of assistance. For instance, a-haw-In et al. (2017)'s study pointed out how differences in the availability of institutional resources affect students' acceptance of new technological advancements. Hence, research needing to conduct more institutional diverse contexts.

Not only institutional differences play a role, but future research should also take into account who engages with AI. This encompasses rather vocational students, young professionals, and adults who are not traditional students. Differences in educational attainment and the stage of career development can be useful in developing educational and training programs. For example, research done by Li and colleagues in 2020 shows how vocational education affects students' views towards technology and readiness for jobs which justifies doing research on AI with the inclusion of vocational approaches.

In addition, these evaluations would also be applicable in tracking the changes in students' perceptions of AI over the years as they move from one education level to the next or into the workforce. Thus, such research could elaborate on the potential of AI education and its impact on students' employment prospects in the job market where AI technologies are deployed. Zhao et al. (2021) point out that longitudinal studies provide an opportunity to 'age' the attitudes of students over a period of time and how their education has prepared them for the work place.

As technology advances, there is a need to understand the students' perspective on the technology in other scenarios. For example, when studying women's engagement

with socio-ethical issues related to AI and the placement of these issues in the educational process, it would be important to assess the students' preparedness to use AI sensibly. Jobin et al. (2019) advocate incorporating ethics into AI education, stating the importance of knowing the ethical dilemmas associated with the use of AI in order to prepare learners for functioning in an AI-enhanced environment. Furthermore, research on the impact of teachers on students' beliefs about artificial intelligence should also be conducted. Chen et al. (2020) carried out a study that confirmed that students' beliefs towards any technology may be influenced by their teachers. Therefore, comparative research should focus on the position and views of educators in relation to AI, their implementation of it in teaching and how that influences learners' attitudes.

Researching how the role of industry partnerships in this case, educational approaches to AI also be beneficial. These institutions and industries can improve the content of the courses and guarantee that the students are equipped with the necessary skills. According to Choudaha and Chang (2019), it demonstrates the advantages of academic industry relationships with enhanced creativity and increased employability of students. This is crucial in their learning process since these interactions aim to modify students attitude towards psychology. Also, it is important to look at the influence of other factors such as the social or cultural context on students attitude towards AI. Empirical studies demonstrate that students' attitudes towards acceptance or rejection of AI are dependent on the prevailing cultural beliefs about technology. As Smith and McKenzie (2018) pointed out, culture must be taken into account when assessing the adoption of new technologies, and therefore the culture of students in relation to AI should be researched in commentators on this issue. Lastly, the insights from several areas of study can enhance absorbing AI technology in Education and work. Interdisciplinary conducted works of education, psychology, sociocultural issues, and technology, for instance, can examine the phenomenon of AI from its threats and advantages. As He and Wang (2020) point out, interdisciplinary approaches have been able to comprehend the social aspects surrounding the use of AI in various sectors.

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## Appendix

### ATTITUDES TOWARDS THE ROLE OF ARTIFICIAL INTELLIGENCE ON STUDENTS' FUTURE EMPLOYMENT QUESTIONNAIRE

Dear Participant,

This questionnaire is prepared to collect data for my Master's thesis, under the supervision of Prof. Dr. Cemil ULUKAN. The study focuses on the attitudes of students towards the potential role of artificial intelligence (AI) on their future employment. Your feedback is invaluable and will contribute to our understanding of this important topic. Your responses will be kept confidential, and participation is voluntary. By answering this questionnaire, you consent to participate in this research study.

Reema Alnabahin

| PART 1: Demographics           |                                     |                                 |                                 |
|--------------------------------|-------------------------------------|---------------------------------|---------------------------------|
| Department:                    |                                     |                                 |                                 |
| Level of the Program enrolled: | <input type="radio"/> Undergraduate | <input type="radio"/> Graduate  |                                 |
| Major:                         | <input type="radio"/> Adm. Sciences | <input type="radio"/> Arts      | <input type="radio"/> Science   |
| Age:                           | <input type="radio"/> 20-25         | <input type="radio"/> 26-30     | <input type="radio"/> 31-35     |
| Gender:                        | <input type="radio"/> Male          | <input type="radio"/> Female    | <input type="radio"/> Other     |
| Marital Status:                | <input type="radio"/> Single        | <input type="radio"/> Married   | <input type="radio"/> Other     |
| Employment Status:             | <input type="radio"/> Unemployed    | <input type="radio"/> Part-time | <input type="radio"/> Full-time |

Please indicate your level of agreement with each statement on a scale from 1 to 5, where 1 is 'Strongly Disagree' and 5 is 'Strongly Agree'.

| N<br>o | PART 2: Impact of AI on students' future employments        | SD<br>A | D<br>A | N | A | S<br>A |
|--------|-------------------------------------------------------------|---------|--------|---|---|--------|
| 1      | I am familiar with artificial intelligence (AI) technology. | 1       | 2      | 3 | 4 | 5      |

|   |                                                                                            |   |   |   |   |   |
|---|--------------------------------------------------------------------------------------------|---|---|---|---|---|
| 2 | I use AI in my assignments/studies.                                                        | 1 | 2 | 3 | 4 | 5 |
| 3 | I believe AI will help me find a job after graduation.                                     | 1 | 2 | 3 | 4 | 5 |
| 4 | Industries grow faster as AI replaces humans.                                              | 1 | 2 | 3 | 4 | 5 |
| 5 | AI systems are capable of autonomously making decisions without human intervention.        | 1 | 2 | 3 | 4 | 5 |
| 6 | AI impacts the types of skills and knowledge required for future careers of students.      | 1 | 2 | 3 | 4 | 5 |
| 7 | Students are adequately prepared to compete in a job market increasingly shaped by AI.     | 1 | 2 | 3 | 4 | 5 |
| 8 | AI can contribute to reducing human error and increasing efficiency in various industries. | 1 | 2 | 3 | 4 | 5 |

| N<br>o | <b>PART 2: Challenges to students from the AI</b>                                                             | <b>SD<br/>A</b> | <b>D<br/>A</b> | <b>N</b> | <b>A</b> | <b>S<br/>A</b> |
|--------|---------------------------------------------------------------------------------------------------------------|-----------------|----------------|----------|----------|----------------|
| 1      | I feel overwhelmed by the complexity of AI technology in my future employment.                                | 1               | 2              | 3        | 4        | 5              |
| 2      | AI could affect the demand for traditional job roles within my area of expertise.                             | 1               | 2              | 3        | 4        | 5              |
| 3      | (AI) is assisting educational institutions in enhancing students' skills.                                     | 1               | 2              | 3        | 4        | 5              |
| 4      | I see AI as a threat to future job opportunities.                                                             | 1               | 2              | 3        | 4        | 5              |
| 5      | AI helps industries address worries about spreading misinformation and fake news.                             | 1               | 2              | 3        | 4        | 5              |
| 6      | AI enhances positive discrimination in employment (e.g., encouraging employment of people with disabilities). | 1               | 2              | 3        | 4        | 5              |

| N<br>o | <b>PART 3: Opportunities for students using the AI</b>                | <b>SD<br/>A</b> | <b>D<br/>A</b> | <b>N</b> | <b>A</b> | <b>S<br/>A</b> |
|--------|-----------------------------------------------------------------------|-----------------|----------------|----------|----------|----------------|
| 1      | I am optimistic about AI in creating employment opportunities for me. | 1               | 2              | 3        | 4        | 5              |

|   |                                                                                             |   |   |   |   |   |
|---|---------------------------------------------------------------------------------------------|---|---|---|---|---|
| 2 | I perceive the presence of new job roles in my field identified by artificial intelligence. | 1 | 2 | 3 | 4 | 5 |
| 3 | I believe that AI will create opportunities for interdisciplinary careers.                  | 1 | 2 | 3 | 4 | 5 |
| 4 | AI provides educational institutions with opportunities for teaching skills to students.    | 1 | 2 | 3 | 4 | 5 |
| 5 | AI allows flexibility for remote working.                                                   | 1 | 2 | 3 | 4 | 5 |
| 6 | AI could enhance job satisfaction and work-life balance of employees.                       | 1 | 2 | 3 | 4 | 5 |



Evrak Kayıt Tarihi: 18.04.2024 Protokol No: 723299

Tarih: 08.05.2024



ANADOLU ÜNİVERSİTESİ  
SOSYAL VE BEŞERİ BİLİMLER BİLİMSEL ARAŞTIRMA VE YAYIN ETİĞİ KURULU  
KARAR BELGESİ

|                       |                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ÇALIŞMANIN TÜRÜ:      | Yüksek Lisans Tez Çalışması                                                                                                                                                                                                                                    |
| KONU:                 | Sosyal Bilimler                                                                                                                                                                                                                                                |
| BAŞLIK:               | Lisans ve Lisansüstü Öğrencilerin Gelecekteki İstihdamları Üzerinde Yapay Zekanın Potansiyel Rollerine Yönelik Tutumları<br>The Attitudes of Graduate and Undergraduate Students towards Potential Roles of Artificial Intelligence on Their Future Employment |
| PROJE/TEZ YÜRÜTÜCÜSÜ: | Prof. Dr. İ. Cemil ULUKAN                                                                                                                                                                                                                                      |
| TEZ YAZAR:            | Reema E.AlNabahin                                                                                                                                                                                                                                              |
| ALT KOMİSYON GÖRÜŞÜ:  | -                                                                                                                                                                                                                                                              |
| KARAR:                | Olumlu                                                                                                                                                                                                                                                         |