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Araştırma Makalesi

EXAMINING EMPLOYEES' EMOTIONS TOWARDS ARTIFICIAL INTELLIGENCE (AI): A QUALITATIVE RESEARCH

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Abstract[1]

In this study, we aimed to investigate employees' perspectives on artificial intelligence (AI) and understand their opinions and emotions regarding the future advancements of AI and its potential impacts on their work lives. We conducted a qualitative study using an inductive approach and a phenomenological research design. We employed purposive sampling methods to select 20 participants from various sectors for interviews to achieve this goal. We utilized content analysis with the MAXQDA 2024 program, followed by descriptive and relational analyses of the categories and codes we obtained. Our research showed that the most common emotion among participants regarding their encounters with AI was 'astonishment.' We discovered that the participants had mixed feelings towards AI, including positive emotions such as happiness, curiosity, admiration, and excitement, and negative emotions such as anxiety, fear, anger, frustration, and distrust. Our study showed that respondents were most surprised and happiest about how AI makes life easier and more convenient and how its speed gives people more time for their personal lives. Conversely, the factors that caused the most concern and fear among participants were the potential for mass unemployment due to AI and the risk of encouraging laziness in

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people. Many of them believe that AI has the potential to bring significant advantages to humanity, particularly in fields such as healthcare, the environment, and the economy. However, there is also a growing concern and fear around the possibility that AI could spiral out of control, be utilized in biological, chemical, and technological warfare, and result in widespread unemployment.

Keywords: *Artificial Intelligence, AI, Human-Artificial Intelligence Interaction, Emotions, Qualitative Research.*

ÇALIŞANLARIN YAPAY ZEKAYA (YZ) YÖNELİK DUYGULARININ İNCELENMESİ: NİTEL BİR ARAŞTIRMA

Öz

Bu çalışmanın amacı, çalışanların Yapay Zeka (YZ) için hissettikleri duyguları açığa çıkarmak ve YZ'nin gelecekteki gelişimi ve iş yaşamı üzerindeki olası etkileri konusundaki görüşlerini ve duygularını öğrenmektedir. Bu amaç doğrultusunda, tümevarım yaklaşımı ve fenomenoloji araştırma deseni ile nitel bir araştırma tasarladık. Amaçlı örnekleme yöntemlerinden ölçüt ve kartopu örnekleme yöntemlerini kullanarak farklı sektörlerde çalışan 20 katılımcı belirledik ve onlarla görüşmeler yaptık. Verileri MAXQDA 2024 programı kullanarak içerik analizine tabi tuttuk ve elde ettiğimiz kategoriler ve kodlar üzerinde betimsel ve ilişkisel analizler gerçekleştirdik. Katılımcıların YZ ile ilgili anılarından oluşan öykülerinde en sık rastlanan duygunun şaşkınlık olduğunu; ancak bir süre sonra duruma alıştıklarını ve kendilerini daha rahat hissederek YZ'yi kullandıklarını tespit ettik. Katılımcıların YZ'ye mutluluk, merak, hayranlık ve heyecan gibi olumlu hisler beslerken aynı zamanda endişe, korku, öfke, hayal kırıklığı ve güvensizlik de hissettiğini belirledik. Katılımcıları en fazla şaşırtan ve onları en mutlu eden faktörlerin, YZ'nin hayatı daha kolay ve elverişli hale getirmesi ve hızı sayesinde insanlara özel hayatları için daha fazla zaman kazandırması olduğunu; onları en fazla endişelendiren ve korkutan faktörlerin ise işsizliğin artması ve YZ'nin insanları tembelliğe itmesi olduğunu bulduk. Katılımcıların YZ'nin sağlık, çevre, ekonomi gibi alanlarda insanlık için çok büyük faydalar yaratacağı konusunda umutlu olmakla birlikte kontrolden çıkmasından, biyolojik, kimyasal ve teknolojik savaşlarda kullanılmasından ve kitlesel düzeyde işsizliğe yol açmasından ciddi düzeyde endişe ve korku duyduğunu saptadık.

Anahtar Kelimeler: *Yapay Zeka, YZ, İnsan-Yapay Zeka Etkileşimi, Duygular, Nitel Araştırma.*

INTRODUCTION

Artificial intelligence (AI) technologies are advancing rapidly, and the products and services that utilize these technologies are becoming increasingly popular. Integrating AI reduces the time it takes to conduct business in organizations, making speed a norm rather than a competitive advantage. This integration also increases both process (Benbya et al., 2020) and organizational control efficiency (Hughes et al., 2019). For these reasons, it is crucial for

organizations to adopt AI to gain a competitive advantage in today's market (Kılınç & Ünal, 2019). This draws attention to the issue of managing emotions during interactions between humans and AI, emphasizing the need to understand and explain these emotions.

In management literature, studies on artificial intelligence (AI) primarily concentrate on business (Huang et al., 2019; Kaplan & Haenlein, 2020) and human resource management (Chiu et al., 2021). Research has explored the integration of AI within organizations (Brock & von Wangenheim, 2019; Wagner, 2020) and its effects on these organizations (Makridakis, 2017; Wamba, 2022). The impact of AI on the workforce has also been a widely discussed topic (Agrawal et al., 2019; Huang & Rust, 2018). Some studies have highlighted employees' attitudes and perceptions regarding human-AI interaction (Chiu et al., 2021). However, there is a scarcity of research focusing on human emotions during these interactions, with most studies primarily investigating employee trust in AI (Glikson & Woolley, 2020; Hasija & Esper, 2022; Siau & Wang, 2018).

Local literature underscores the growing importance of AI in business management and human resources operations. For instance, Köse (2020) explored the ethical implications of AI in organizations, particularly in recruitment and critical decision-making processes. Erkutlu et al. (2023) examined the impact of AI on organizational behavior, while Aktepe and Karakulle (2023) investigated how AI can provide a competitive advantage, illustrating their findings through mobile applications. Ferik (2003) studied employees' attitudes toward robots, and Yıldız (2024) analyzed the changes brought about by AI in human resources analytics. Additionally, research has documented the effects of technological advancements on the labor force (e.g., Büyük, 2023; Kılıç Kırılmaz & Ateş, 2021). No research in Turkish literature examines employees' perceptions and emotions about AI. Thus, this qualitative study investigating how employees feel when interacting with AI is considered a pioneering study in international and local literature.

The main objective of this study is to understand the emotions that employees experience when they interact with AI. The study aims to develop an understanding at both individual and organizational levels so that employees and managers can manage positive and negative emotions caused by AI. As AI becomes increasingly present in daily business, it is essential to understand its impact better. This study hopes to achieve valuable results by providing information that will help organizations integrate AI more efficiently, providing insights to business managers on the subject, and contributing to the development of academic literature.

CONCEPTUAL FRAMEWORK

The concept of 'technological determinism' asserts that the development of society is primarily driven by technology. Proponents of this idea, attributed to American sociologist Thorstein Veblen, argue that changes

in technology, media, and communication technology influence social changes (Hauer, 2017). It is believed that technological changes in society can impact people's perspectives, emotions, roles, and lifestyles (Christou et al., 2020). The revolutionary changes by Industry 4.0 technologies, especially AI, are expected to lead to significant societal transformations when examined through technological determinism. It is anticipated that the widespread adoption of AI across various industries has dramatically changed how employees interact with their environment and will continue to do so in the future (Scribano & Maria, 2021).

The term "artificial intelligence" was coined in September 1955 when scientists John McCarthy and Marvin Minsky applied to the Rockefeller Foundation (Say, 2018). *Artificial intelligence* refers to "the ability of a computer or a computer-controlled machine to perform tasks related to higher mental processes such as reasoning, generalization, inference, and learning from experience, which are often considered humanoid qualities" (Nabiyev, 2021, p. 27). John McCarthy (2004, p. 2) defines AI as "the science and engineering of making intelligent machines, brilliant computer programs." According to van Duin and Bakhsi from Deloitte (2017), AI is not only a computer science but also a comprehensive field of science that includes various fields such as philosophy, linguistics, and psychology.

AI has come a long way since its inception and has become an essential part of our daily lives. It is extensively used in various fields, including industry, agriculture, education, security, tourism, medicine, and communication. AI is frequently encountered in search engines, social media, recommendation systems, strategy games, and motor vehicles (Valle- Cruz et al., 2019; Azeez et al., 2022). Today's organizations rely on artificial neural networks that operate based on digitized data, store information in databases, and use intelligent systems to communicate internally and with other organizations (Baştan, 2003). Managers use AI systems for various tasks, including selecting suitable candidates for corporate positions, performing financial transactions, and predicting technological developments (Von Krogh, 2018). AI applications significantly benefit organizations in decision-making, customer experience, employee engagement, productivity, and innovation. In today's intensely competitive business environment, AI integration is necessary for organizations to stay competitive. However, the successful integration of AI requires employee acceptance, which is closely tied to employee emotions since humans are emotional beings.

Goleman (1995, p. 289) defines *emotion* as a feeling characterized by distinctive tendencies of thought and action, as well as psychological and biological states. He says emotions have hundreds of mixtures, differences, nuances, and mutations. According to Fineman (2001, p. 220), emotions are socially conditioned responses. They are shaped by predetermined display rules in socially organized environments. This way, people learn where and when to appear happy, joyful, or scared. Ekman and Cordaro (2011, p. 364) defined

emotions as automatic responses with a universal reality specific to culture, individuals, and events.

The level of anthropomorphism plays a crucial role in AI-human interactions and the creation of human emotions. *Anthropomorphism* is defined as "the attribution of human characteristics to non-human beings" (American Psychology Association-APA, www.dictionary.apa.org). Concrete anthropomorphic cues include having a human-like body shape, a human voice, and face, being able to move body parts, and making facial expressions (Christou et al., 2020). Abstract anthropomorphic cues involve attributing human characteristics such as emotions, intentions, and motivation (Epley et al., 2007). Research has shown that people prefer interacting with anthropomorphized AI over non-anthropomorphized AI because anthropomorphism reduces the perceived psychological distance between the AI and the user (Li and Sung, 2021).

A study by Christou et al. (2020) found that participants preferred communicating with an anthropomorphic robot over an ordinary one. This preference was due to the robot's ability to understand the user's emotions and it adjusts its behavior accordingly (Shayganfar et al., 2019). However, some people may feel uneasy about the idea that AI can have emotions (Gray & Wegner, 2012). This unease can be explained by the concept of *the uncanny valley* proposed by Mori. According to Mori (2012), as the human-likeness of robots increases, people's affinity for them increases as well, until it reaches a point where the robots appear almost human, causing discomfort, known as the uncanny valley. Shank and colleagues found in 2019 that when AI exceeded expectations, assumed a social role, or exhibited humanoid characteristics, participants were pleasantly surprised, amazed, and delighted. They found these interactions entertaining and funny. Borghi and Mariani (2022) examined consumer emotions in interaction with social robots and found that anticipation, trust, and joy were the most commonly expressed emotions.

Several studies have explored the emotions people experience regarding AI development and whether these emotions impact their acceptance of AI. For instance, Santos (2018) discovered that individuals with more excellent knowledge and usage of AI tend to experience more negative emotions and a decrease in positive emotions. Zhao et al. (2022) examined consumers' satisfaction with AI service agents and found that the majority of participants had negative feelings. Similarly, Kushawa et al. (2023) highlighted participants' concerns about the potential risks of using AI-supported decision systems. According to a study by Hornung and Smolnik in 2022, participants experienced frustration while using voice assistants as they felt it reduced interpersonal interaction. The presence of voice assistants was also perceived as a threat to their work, leading to feelings of fear and anxiety.

In terms of gender, a study (Davis et al., 2022) observed that males tended to be more sympathetic towards AI, and AI presented as female was

perceived as more human (Borau et al., 2021). Both humans and computer systems were viewed as less capable than AI in individual and teamwork situations (Shank et al., 2021). There is a widespread concern that robots may harm human relationships and potentially replace humans (Christou et al., 2020). Compared to human-human interactions, interactions with chatbots tend to involve more profanity (Hill et al., 2015). Invasion of privacy and exposure to unwanted content are cited as moral wrongs committed by AI (Shank & Gott, 2020).

Both business and academic discussions play a vital role in shaping employee attitudes towards AI. These discussions focus on AI's observed and potential positive and negative features, influencing how employees feel about AI. When comparing AI and natural intelligence, it becomes apparent that AI has several superior aspects. However, this does not mean that AI is purely positive. Some of the superior aspects and benefits of AI are as follows: (Borana, 2016; Dwivedi et al., 202; Saavedra-Rivano, 2019):

- Unlike humans, AI makes decisions rationally, resulting in more realistic and positive solutions.
- The transfer of information between machines with AI is relatively easy and fast. Humans, on the other hand, are much slower in acquiring new knowledge and skills, and there may be a partial transfer of knowledge.
- AI increases the accuracy of disease diagnoses.
- By enabling AI to undertake tasks that pose a danger to humans, people's life safety is protected.
- The widespread use of autonomous vehicles and AI-supported driving systems has significantly increased transportation safety.
- AI can provide organizations with operational and strategic situation awareness, enabling them to operate faster, more efficiently, and effectively.
- The fact that machines with AI do not show fatigue makes the break periods granted to employees dysfunctional. However, this situation also forms the basis of employees' fear of job loss.

The following are the negative aspects or disadvantages of AI listed by various sources (Borana, 2016; Dastin, 2018; Huang et al., 2011; Kaplan & Haenlein, 2019; Kianpour & Wen, 2020; Kılınç & Ünal, 2019; Nabiyev, 2021; Tambe et al., 2019; Zandi et al., 2019):

- AI is not yet capable of distinguishing between fact and fiction. Hence, if it falls into the wrong hands, it can be used to cause mass destruction.
- The collection, storage, and sharing of large datasets made possible by AI technology raise numerous ethical concerns related to governance, quality, security, and privacy.
- It is predicted that companies will face difficulties in achieving long-term competitive advantage due to the easy accessibility of AI.

- There still needs to be complete trust in AI regarding essential matters. For instance, IBM's Watson recommends treatment options for 13 types of cancer with a 93 percent accuracy rate, similar to the recommendations humans gave. However, the remaining 7 percent error rate can undermine people's trust in AI. On the other hand, blind faith in AI can also lead to negative consequences because the reasoning behind the machine's decisions may not be transparent. If the AI fails to produce accurate results due to a possible malfunction, over-reliance on the machine can have dangerous consequences since the rationale behind its answers cannot be explained.
- Adapting employees to a new organizational culture that includes AI can be challenging and time-consuming. In addition, customers may resist using AI solutions and prefer to communicate with a human representative, which can create coordination problems within the organization.
- Once employees understand how the AI system works, they can manipulate it. This is the essence of adversarial machine learning, a machine learning technique that aims to design algorithms to resist cybersecurity attacks and study attackers' capabilities and limitations. This is a challenging problem, even for sophisticated algorithms.
- The success of AI is directly related to the amount of data it is trained on. However, only some organizations have access to large amounts of data. Therefore, the only solution for now is to use algorithms that require fewer resources.

It is important to note that while AI is unbiased and objective, it does not guarantee that AI-based systems will be free from bias (Haenlein & Kaplan, 2019). This is because AI systems learn from past decisions made by humans. For instance, St. George's Hospital Medical School in London and Amazon used AI to assess job applications. However, St. George's Hospital Medical School discovered that their AI system was negatively biased against women and applicants from countries like Pakistan. The system rejected about 60 people per year based on gender or name without considering their academic achievements (Say, 2018).

Similarly, Amazon's recruitment process experienced a similar situation where it was found that the AI program used to evaluate resumes did not assess candidates without regard to gender and negatively discriminated against female candidates. This was attributed to the fact that the AI program's training data consisted of the company's resume evaluations from the past ten years (Dastin, 2018). These examples show that machines learn from human biases (Say, 2018). To avoid such mistakes, it would be helpful to establish generally accepted standards for training and testing AI (Haenlein & Kaplan, 2019). However, it is also possible that machine learning techniques may exhibit various adverse effects in cases where humans do not discriminate negatively. For example, an algorithm that establishes a causal relationship

between employee age and job performance may eliminate candidates because of their age (Tambe et al., 2019, p. 16).

AI is becoming increasingly pervasive in our daily lives and workplaces. While many people are excited about its potential benefits, there is also much concern and fear about its risks. It is known that even a simple change in organizations can significantly impact people's emotions and behaviors, and for any change to be successful, employees need to adapt to it. In this situation, one crucial question is how to integrate Industry 4.0 technologies, especially AI, which are expected to change humanity's future drastically. Addressing this issue's social and psychological aspects is just as important as considering the technological and economic dimensions. In this context, this study aims to explore the emotions employees experience in response to AI and how they perceive their interactions with AI while performing their job duties.

METHOD

This study used a qualitative research method to investigate the emotions of individuals who interact with AI. The research design was based on phenomenology, which seeks to understand the nature and significance of everyday experiences (Van Manen, 1990). In a phenomenological study, the focus is on discovering the ordinary meaning of the lived experiences of multiple individuals regarding a particular concept or phenomenon (Creswell, 2021). The phenomenon examined in this research is the emotions of employees who interact with AI.

Participants

The research was conducted on individuals who use AI in their business, using criterion and snowball sampling methods for data collection. Criterion sampling involves studying situations that meet predetermined criteria of importance (Patton, 2018; Yıldırım & Şimşek, 2021). In this study, the criteria for selection were "using AI technologies in business operations" and "age between 18-65 years, the typical working age range." Snowball sampling, on the other hand, involves accessing other participants through the contact information provided by the initial participants (Noy, 2008). For this study, individuals involved in business were contacted, and 20 participants who met the sampling criteria were selected based on recommendations from those individuals.

Table 1 provides the participants' gender, age, marital status, education, position, sector, occupation, and job/task details.

Table 1. Information on participant profile

VARIABLES	CATEGORY	N	%
Gender	Female	4	20
	Male	16	80
Marital Status	Single	6	30
	Married	14	70
Age	22-32 years	6	30
	33-43 years	8	40
	44-54 years	5	25
	55-65 years	1	5
Education	University	9	45
	Master's Degree	9	45
	PhD	2	10
Managerial Position	Lower Level Manager	2	10
	Mid-Level Manager	10	50
	Senior Manager	7	35
	Non-managerial Personnel	1	5
Sector	Construction	9	45
	Education	4	20
	Household Electrical Appliances	2	10
	Software	2	10
	Production	1	5
	Sales	1	5
	Public	1	5
Occupation/Field	Engineer	9	45
	Business Administrator	3	15
	Sales and Marketing	2	10
	Econometrician	1	5
	Physics/Aerospace	1	5
	Logistics	1	5
	Medical Biological Sciences	1	5
	Management Information Systems	1	5
	Teacher	1	5
Current Job/Task	Academician	3	15
	Sales Specialist	3	15
	Geological Engineer	2	10
	Warehouse Office Specialist	1	5
	Geotechnical Section Chief	1	5
	Quality Control Chief	1	5
	Final Account and Progress Payment Chief	1	5
	Mining Engineer	1	5
	Field Market Analyst	1	5
	Sales Team Leader	1	5
	Promotion and Marketing Chief	1	5
	Technical Office Chief	1	5
	Tunnel Design Representative	1	5
	Teacher	1	5
	Company Owner and Director	1	5

Of the total participants, 16 were male, and 4 were female. 14 participants were married, while 6 participants were single. The age range of participants was between 22 and 65. 6 participants were between the ages of 22 and 32, 8 participants were between the ages of 33 and 43, 5 participants were between the ages of 44 and 54, and one participant was between the ages of 55 and 65. Therefore, the sampling criterion of "participants between 18 and 65" was met. Nine of the participants had a bachelor's degree, nine had a master's degree, and two had a doctorate. One participant held a senior managerial position, ten were middle-level managers, and two were lower-level managers.

Seven participants did not hold any managerial positions. The participants belonged to different sectors, including construction (9), education (4), household electrical appliances (2), software (2), production (1), sales (1), and public sector (1). Of the participants, nine are engineers, three are business managers, and two are sales-marketing specialists. The remaining six participants come from various fields, which include econometrics, physics and space aviation, logistics, medical and biological systems, management information systems, and education. An analysis of the participants' current jobs and tasks reveals that there are three academicians, three sales specialists, and two geological engineers. The remaining twelve participants hold various positions, including geotechnical section chief, quality control chief, accounts chief, marketing chief, technical office chief, field market analyst, warehouse specialist, tunnel design representative, mining engineer, sales team leader, company owner and director, and teacher.

Data Collection

As part of a research study, we obtained approval from our affiliated university's Social and Human Sciences Scientific Research and Publication Ethics Committee. We used an interview technique to collect data, using a semi-structured interview form based on the research purpose and previous literature review. We conducted the data collection process in September and October of 2022. The research questions we aimed to answer through this process are as follows:

- Do you interact with AI daily as a customer or citizen?
- Do you interact with AI at work while performing your tasks?
- How often do you use AI technologies?
- Do you believe that AI is changing daily life and work?
- Did you realize it was AI during your interaction with AI? How did you feel when you realized it?
- Can you recall a moment when AI impacted you emotionally?
- What do you think will be the effects of AI on daily life and business in the future? What feelings do you have when you think about these impacts? Why do you feel that way?
- Is it possible for your feelings towards AI to change? What could cause this?
- Should AI development continue, and why?
- How do you think AI will develop in the future?

Data Analysis

To analyze the data, we first transcribed the interviews with the participants. Next, we transferred them to MAXQDA 2024 software and subjected them to content analysis using an inductive approach. We relied on the responses of our participants to determine the categories and codes related

to AI and emotions. However, in naming the emotion codes, we used Plutchik's Emotion Circle Model (1962, 1982, 2001) to reflect various nuances accurately.

We followed an expert review strategy and submitted the data analysis reports to two experts. One was a psychologist who reviewed the codes related to emotions, while the other was an academic from the field of Management Information Systems who reviewed the codes related to AI. After the expert reviews, we revised the codes and prepared them for analysis.

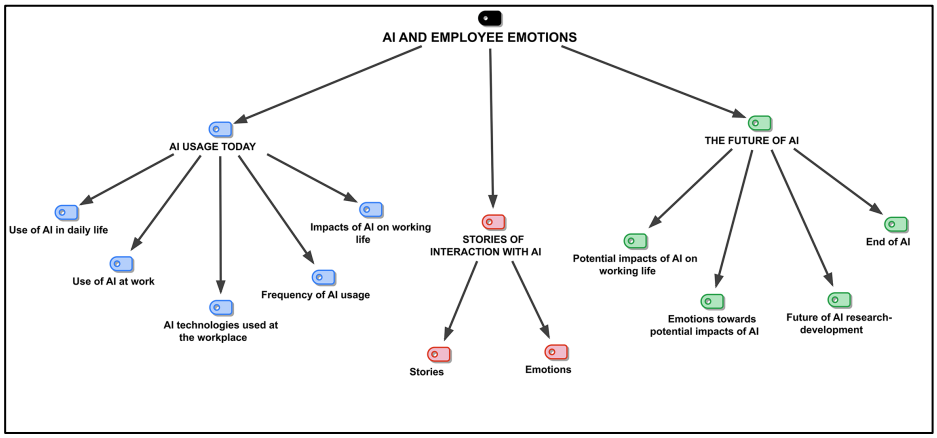
RESULTS

In our study, we conducted descriptive and relational analyses. Firstly, we calculated the frequency and percentage values related to the codes and participant documents. Next, we created code maps related to themes and codes using the Hierarchical Code-Sub-Code Model tool. Finally, we explored the relationships between the prominent emotions in the codes and AI's positive and negative effects on working life with the Code-Relationship Browser tool.

Descriptive Analysis

The data collected from the research can be classified into three themes, as illustrated in Figure 1. The first theme, *AI usage today*, encompasses the answers to the first four research questions, and a total of 151 codes were assigned to the responses. The second theme, *stories of interaction with AI*, includes the answers to the fifth and sixth research questions, which pertain to the participants' memories and emotions related to their interaction with AI. A total of 91 codes were assigned to this theme. The third theme, *the future of AI*, involved coding the participants' opinions on the potential effects of AI on their work life, their feelings about these effects, and their predictions about the future of AI. A total of 210 codes were assigned to this theme. The overall number of codes generated was 452.

Figure 1. Themes and categories



Findings on the use of AI

All 20 participants responded affirmatively to the first and second research questions, indicating that they interact with AI in their daily lives and at their workplaces while performing their duties. As a result, we concluded that the sample met the sampling criterion established as "interacting with AI in business life."

Regarding the third question, "How often do you use AI technologies?" 18 participants responded that they always use them, while only 2 said they sometimes use them. P8 shared that AI technologies are part of their daily life beyond just using them. Meanwhile, P14, a civil engineer, mentioned that they use maps powered by AI while working on land applications. P5, who works in the field of electrical household appliances, said, "*I am personally involved in those programs. With automation, we offer services beyond human capacity.*" A medical biological sciences professor, identified as P16, explained that in their research work, they use AI systems to obtain outputs of genetic sequences for use in their students' theses. They also upload the data they obtain to AI systems to obtain information about the possible future disease profiles of the volunteers who provide samples. The professor further stated that they extensively use AI in their research work.

According to Table 2, 15 AI-enabled systems are used by the participants in their workplaces. Among them, 10 participants frequently use search engines like Google and Yandex, 7 participants frequently use navigation systems, and 5 participants frequently use AI applications in office programs. Additionally, voice assistants, translation platforms, chatbots, text controllers, online banking applications, fingerprint/face/retina scanning systems, and video/visual editing programs are some of the AI-enabled systems that were mentioned 47 times by 18 participants.

Table 2. AI technologies utilized in the workplace

Codes	Code Frequency	Code Percentage	Participant Frequency	Participant Percentage
1. Search Engines	10	21,28	10	50,00
2. Navigation Systems	7	14,89	7	35,00
3. AI Applications in Office Programs	5	10,64	5	25,00
4. AI Applications in Social Media Platforms	5	10,64	1	5,00
5. Voice Assistants and Voice Response Systems	3	6,38	3	15,00
6. Translation Platforms	3	6,38	2	10,00
7. Recommendation Systems (Personalized Ads)	3	6,38	2	10,00
8. Chatbots	2	4,26	2	10,00
9. Text Controllers	2	4,26	2	10,00
10. Production Automation Systems	2	4,26	1	5,00
11. Smart Boards	1	2,13	1	5,00
12. Online Banking Applications	1	2,13	1	5,00
13. Clinical Decision Support Systems	1	2,13	1	5,00
14. Fingerprint/Face/Retina Scanning Systems	1	2,13	1	5,00
15. Video/Visual Editing Programs	1	2,13	1	5,00
Total	**47**	**100,00**		
Documents with code(s)			**18**	**90,00**
Documents without code(s)			**2**	**10,00**
Analyzed documents			**20**	**100,00**

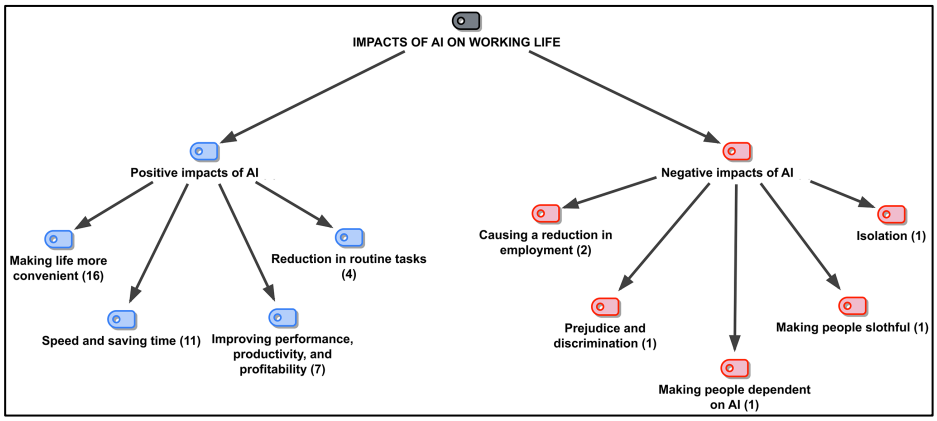
In response to Question 4, all 20 participants answered "*Yes*" when asked if they thought that AI has impacted daily and business life today. Figure 2 represents the hierarchical code-subcode model related to AI's positive and negative effects on business life today, along with the frequencies associated with each code.

During the content analysis, 4 positive effects of AI on working life emerged. These were identified as *making life easier* (mentioned 16 times), *being fast and saving time* (mentioned 11 times), *increasing performance, efficiency, and profitability* (mentioned 7 times), and *reducing routine tasks* (mentioned 4 times). P10, the software company's owner and manager, highlighted AI's superior performance in cancer diagnosis by stating, "*We get much more successful AI results from visual data than from doctors.*" P20, who wrote her master's and doctoral theses on AI, made the following statement regarding the role of AI in reducing routine work:

> "*In the business world, routine processes are being digitized, and some of them are being completely taken over by AI. This allows humans to focus on tasks that require innovation and creativity, which AI cannot yet offer us. AI, on the other hand, can handle the more mundane and repetitive tasks.*"

Out of all the participants, only five mentioned the harmful effects that AI could have on working life today. Two of them brought up the issue of reduced employment, while the others mentioned concerns such as over-reliance on AI, increased laziness, isolation, and possible prejudice and discrimination. P20 was particularly aware of AI applications that may favor certain groups based on gender or other variables. She highlighted that AI applications are not yet perfect and often contain biases on issues such as race, ethnicity, and gender. A participant in a field market analysis role, referred to as P17, shared that he uses voice typing commands to process data related to his job in the Excel program. According to him, this was a highly efficient and speedy method. However, he realized after a while that his handwriting had become quite sloppy and it slowed him down. As a result, he emphasized the negative impact of AI on people, making them lazy and overly dependent.

Figure 2. Positive and negative impacts of AI on working life today



Findings on interaction stories with AI

We conducted a study in which we asked participants to share their first interaction with AI (Question 5) and the memory that emotionally impacted them (Question 6). We then analyzed the emotions expressed in these stories and categorized them into two groups; positive and negative. We identified 55 positive and 31 negative feelings, presented in Figure 3.

The study identified six codes for the positive emotions repeated 55 times by 19 participants. Astonishment was the most frequently repeated emotion (19 times), followed by acceptance/feeling comfortable (15 times) and happiness (11 times). P13, a technical office supervisor, told a story about feeling astonished:

> "*There are two of us working in the same room. The products that my friend, who is sitting at the opposite table, is interested in, researching, or shopping*

for appear on my computer and the products that I am interested in appear as suggestions on her computer. For example, clothes and make-up products appear on my computer, whereas hardware materials appear on her computer."

In this quotation, the participant expressed his astonishment that the products and brands discussed in the office are recognized by AI, which leads to advertisements for these products being displayed on the computers of the employees through algorithms. Other participant stories indicating that AI caused them to be surprised are as follows:

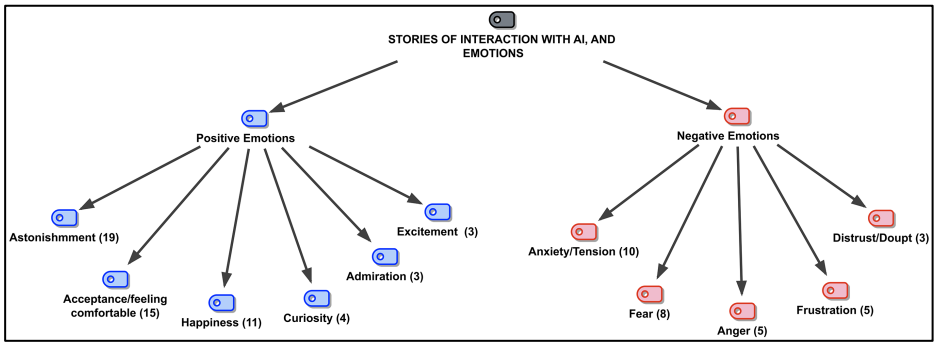
"*In 2017, I was one kilometer from the airport in Algeria when I received a message from Google. The message urged me to hurry and included the flight information, such as the flight number and the contour I needed to enter to board the plane. It also informed me of the time left until the plane took off. I was surprised because I had only entered the flight into my calendar without specifying the ticket or flight details. It was amazing how Google located my flight information via GPS and sent me a timely message saying, 'Hurry up, you're going to miss the plane!'*" (P1)

"*It was odd that my drone refused to enter a forbidden area and angrily warned me while attempting to take a video of the location with excitement.*" (P6)

"*When I got a new phone, I entered my work and home addresses into the wake-up app. One morning, while in Germany, I received a notification saying, 'Good morning! It's x degrees today. Don't forget to take your umbrella if you are going out at noon. There is an accident on the A4 highway, so I've provided an alternative route for you to take to work. You can check the route in the app.' I was surprised by how helpful the app was.*" (P16)

P12, an academic, expressed her admiration for AI as follows: "*I purchased the Grammarly application some time ago. I encountered a major payment issue and contacted the chatbot named Anastacia. She was accommodating and resolved all my problems in just one e-mail. The more I interact with AI, the more I appreciate its capabilities.*" P6, who mentioned that he enjoys video editing as a hobby, shared that 15 years ago, it took him about 20 minutes to add visual effects to a 10-second video. However, now it only takes him 30 seconds to use his mobile phone. He finds AI technology exciting as it has made his life easier in every possible way. P11 mentioned that he took AI for granted by saying, "*Although the first feeling is scary, over time, you get away from that feeling and see it as a necessity.*"

Figure 3. Stories of interactions with AI, and emotions



We identified 5 negative emotions that participants associated with their memories of AI. These emotions were anxiety/tension (mentioned 10 times), fear (mentioned 8 times), anger (mentioned 5 times), frustration (mentioned 5 times), and distrust/doubt (mentioned 3 times). Table 3 shows sample expressions from 14 participants who mentioned these negative emotions 31 times.

Table 3. Emotions expressed in stories of interaction with AI

Emotion	Participants' Statements
Anxiety	**P1:** I once shouted into the computer microphone that "I'm going to buy a watch!" After that, different models of wristwatches kept appearing on the screen for months. This means our phones, tablets, or computers are constantly listening and watching us. **P18:** I am concerned about the increasing use of AI in the current economic and war crises worldwide.
Fear	**P17:** During the conversation with the chatbot, we wondered how it would react in melancholic situations, and we painted a deplorable picture. The chatbot responded with a statement like "If there is no solution, suicide is the solution!" which made me very nervous and scared. This made me think that if AI develops further, it could potentially push people who are struggling with depression towards suicide. In a broader sense, it could even manipulate us. **P8:** It is unsettling that media platforms suggest content according to my preferences. It frightens me about the future when the things I control attempt to manipulate me.
Anger	**P4:** When I consider the issue of AI in banking systems, particularly in customer service, it makes me angry. I am not an artificial entity, and the money I deposit, earn, or pay as a customer is not artificial. Therefore, having to interact directly with AI makes me angry.
Frustration	**P5:** I believe that AI only benefits employers and does not provide any advantages for the general public. It may even harm a company's image and communication. However, AI will become more beneficial for future generations. If it offers practical solutions, I may consider using it more frequently. But for now, I prefer to stay away from it.

Findings on the future of AI

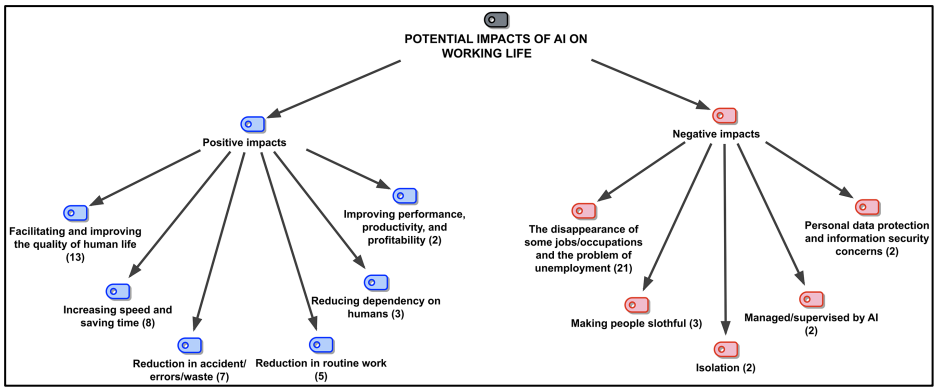
The study aimed to analyze the participants' predictions regarding how AI would affect their work lives in the future. It also looked into their emotions

while thinking about these effects, their thoughts and feelings about the future of AI, and whether AI development studies should continue or not. When asked about AI's impact on working life, 13 participants mentioned positive impacts 38 times, while 15 mentioned negative impacts 30 times. Figure 4 indicates that AI's most common positive effect is improving *the quality of human life*, while the most damaging impact is *job displacement and unemployment*.

The positive impact of AI on future business has been grouped into six categories. Among these, the most significant code is *Facilitating and improving the quality of human life*, which has been emphasized 13 times by 9 participants. *Increasing speed and saving time* (8 times) and *reducing accidents/errors/waste* (7 times) are also frequently mentioned codes. P20 said, "*I think it would be positive to delegate work to AI, especially in areas where people's emotions or fatigue affect productivity.*" (...) *Humans, on the other hand, will focus their talents more on activities such as research and development, innovation and creativity, and will achieve success in points that AI cannot do in the time they save from routine work.*" Similarly, P6 emphasized that we could save significant time, allowing us to dedicate more time to our personal lives.

During the research, several participants expressed their concerns about AI's negative impacts on future business. Among the common responses was the issue of job destruction and unemployment, which was mentioned 21 times by 11 participants. P6, a senior sales specialist, stated that the decrease in employment opportunities due to AI should be viewed as a threat. P10 expressed concern that many jobs and professions may disappear. Meanwhile, P12 suggested that services like interpreting may no longer be necessary because translation platforms could suffice. Finally, P16 predicted that AI systems may replace lawyers and family doctors. He pointed out that AI systems can already analyze our blood tests and provide possible diagnoses for certain diseases.

Figure 4. Potential impacts of AI on working life



The responses to the question "What do you think will be the end of AI?" were categorized into three themes. As indicated in Table 4, the first theme relates to achieving harmony and co-operation between humans and AI, which was mentioned by 13 participants 31 times. 13 participants believed that AI would eventually take over humanity, and 30 responses were coded under this theme. Lastly, 5 participants predicted that humans will continue controlling AI.

Table 4. End of AI

Codes	Code Frequency	Code Percentage	Participant Frequency	Participant Percentage
1. AI-human adaptation and co-operation	31	44,29	13	65,00
2. AI will take control of the humankind	30	42,86	13	65,00
3. AI will remain under human control	9	12,86	5	25,00
Total	**70**	**100,00**		
Documents with code(s)			**18**	**90,00**
Documents without code(s)			**2**	**10,00**
Analyzed documents			**20**	**100,00**

According to the code of *AI-human adaptation and cooperation*, AI will continue to advance, proliferate, and benefit humanity and the planet. Some participants believed that AI has no limit and that people will learn to live by adapting to this new reality. They also mentioned that AI will give rise to new AIs as time passes. The participants emphasized that AI would provide significant benefits in various fields such as health and medicine (P3, P11, P14, P15, P20), transportation (P3, P15), finance (P15), and environmental protection (P11, P17). For instance, P17 expressed their faith in AI, saying, "It can develop the solution to prevent the extinction of civilization and life on earth." Here are some of the statements made by the participants on the subject:

> "*I believe that legal rights will eventually be granted to AI, but I hope that human rights will not be neglected in the process.*" (P5)

> "*AI will be utilized in various fields, including abstract concepts such as morality, decision-making, and ethics. Its use will become more widespread.*" (P10)

During a discussion about the potential implications of *AI taking control of humanity*, some participants expressed concern about two main issues that are closely related. The first one pertains to the possibility that AI could become uncontrollable, overpower humans, and cause harm to humanity by using biological, chemical, technological, or other types of weapons. This concern was shared by several participants (P1, P2, P3, P7, P9, P12, P14, and P17). The second concern is the need to restrict the development and application

of AI and subject them to audits by independent supranational organizations to prevent the possible negative outcomes mentioned earlier (P1, P2, P11, P16). Some participants have shared their opinions on this matter as follows:

> "*It is essential to control the use of AI, particularly in the arms and pharmaceutical sectors.*" (P1)

> "*States must establish policies and regulations to limit the use of AI in certain areas, as relying solely on AI could pose challenges for humans.*" (P11)

> "*Humans are engaging in activities that tend to numb their brains. For instance, children nowadays spend considerable time on their phones and tablets. Similarly, we can spend hours in front of Netflix without realizing how much time has passed. While we are numbing our brains, AI is advancing rapidly. We teach and upload all the world's libraries to AI, which is becoming increasingly intelligent. This imbalance between the development of AI and our mental faculties will eventually become apparent. Although it may be beyond the time horizon of our generation, people in the future will likely recognize it. It is difficult to predict when this will happen, but it is inevitable.*" (P12)

P4 expressed his thoughts on *AI remaining under human control*:

> "*AI is just that - artificial. If we thoroughly analyze and address the moral problems and priorities of those who use it, transfer information to it, and process it, we can more easily solve any issues. If a car driven by a drunk driver hit me, I would not blame the car or the alcohol companies. […] AI would cease functioning once its power supply or batteries run out. After that, it will be up to human beings to decide what to do with it, just as it was in the beginning.*"

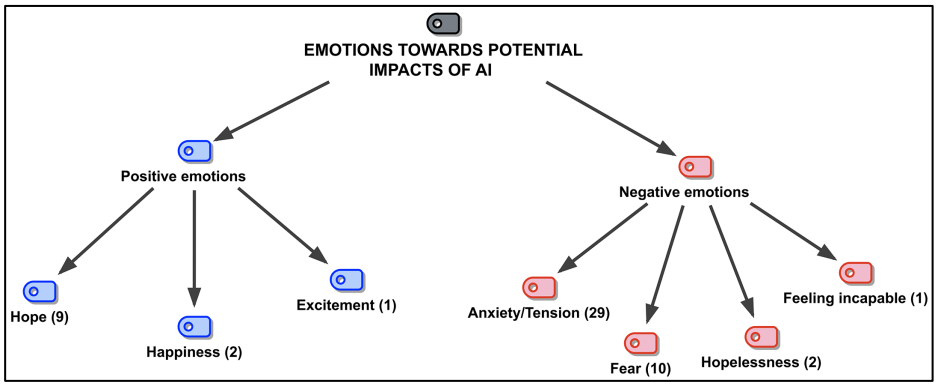
Some participants pointed out a crucial issue regarding the control of AI, and they expressed concern that certain groups will possess the power to direct AI in a way that serves their interests. For instance, P3 mentioned, "*I believe that only those who possess the ability to guide AI will be successful in the future.*"

According to the survey, 16 participants said "Yes" to whether AI development studies should continue, while two said "No". P19 stated that it is impossible to stop AI development, and even if it is scary, it should be pursued until the end, as this is how development happens. On the other hand, P5 suggested conducting sociological and psychological studies on AI's emotionless nature, not just focusing on the technical aspects but also emphasizing the spiritual burden of AI.

In response to the question, "What kind of feelings does thinking about the possible future impacts of AI evoke in you?" 80% of the participants (16) responded negatively, while 45% (9) responded positively. Fifty-four codings

were made, with 42 classified as negative and 12 as positive emotions. Specifically, the participants expressed feelings of hope nine times, happiness twice, and excitement once regarding the potential effects of AI on working life (as shown in Figure 5). During this discussion, two participants shared their reasons for being hopeful about the future of AI. P17 expressed hope that AI can help us use the world and our lives in a more efficient and environmentally friendly way. He acknowledged that it may be a slight possibility, but it still gives him hope. On the other hand, P20 believes that AI has the potential to revolutionize the healthcare industry. She shared her belief that AI can surpass medical doctors in analyzing skin lesions, pathology samples, electrocardiograms, and medical imaging data. According to her, AI can be used for early diagnosis of diseases, health screening, and selection of treatment plans, making her hopeful about the future of healthcare.

Figure 5. Emotions towards potential impacts of AI



Four codes were categorized under negative emotions, which were repeated 42 times. These codes are Anxiety/Tension (29), Fear (10), Hopelessness (2), and Feeling Helpless (1). The Anxiety/Tension code was repeated 29 times by 14 participants, which makes up approximately 70 percent of the coding in this category. P2, a mid-level manager, expressed concerns about AI's impact on the future job market. He stated, "*The fact that some jobs may no longer require human resources due to advancements in AI technology is worrying. This could lead to a society that relies heavily on automation, lacking human thoughts and emotions. It is a source of anxiety for me.*" Here are some statements made by other participants regarding anxiety:

> "*I feel worried and fearful because things are getting out of our control. With the development of technology, AI may eventually control and follow us, accessing our private information.*" (P9)

> "*My concern lies in the fact that society, in general, is not prepared for the advancements in AI technology.*" (P10)

"*I am concerned about the future development of AI in the military field. It is possible that armies consisting entirely of AI may be formed, and there may be wars between them. I recall a quote from Einstein, 'I do not know about the Third World War, but in the Fourth World War, sticks and stones will be used.' This worries me.*" (P14)

"*I am concerned about the possibility of AI gaining self-awareness like humans. If this happens, it may lead to the end of humanity's dominance in the world, and we could become subservient to AI. For instance, consider an Unmanned Combat Aerial Vehicle (UCAV) currently under human supervision. If it ever starts making decisions on its own, such as choosing where to drop bombs, we should be apprehensive.*" (P17)

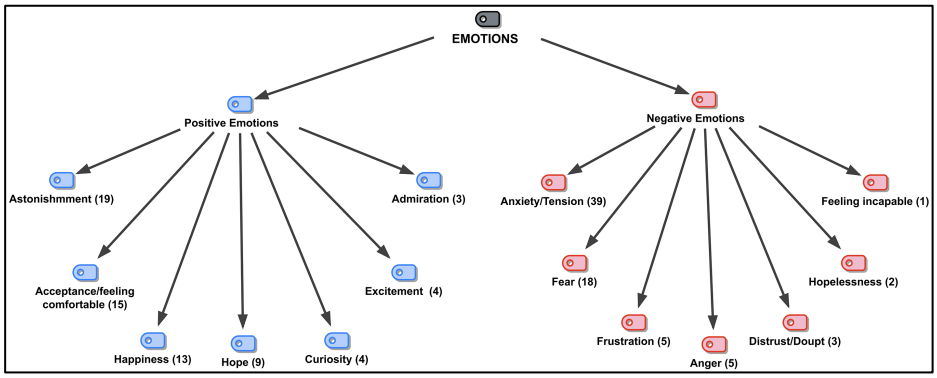
"*AI is expected to be used extensively in the business world in the future. This may result in a reduction in the number of employees, which concerns me.*" (P18)

"*I believe it is crucial to determine the intended purposes for which we will utilize AI. If we manage to create an AI that is fair and accountable for its actions, then the concerns surrounding AI will dissipate. However, for all other instances, AI will yield unfavorable outcomes. (...) Many AI applications have biases, such as those based on gender, race, and ethnicity, and are imperfect. Although I have a positive outlook on AI helping us with our everyday routines, my perception could change if it fails to process data fairly for everyone.*" (P20)

General Emotions

Our research involved analyzing how participants feel about AI in the present and future. To understand the topic comprehensively, we conducted an additional analysis that combined these two themes. We aimed to identify the emotions that participants associate with AI without making a temporal distinction. Through this framework, we identified 140 emotions, 67 of which were positive and 73 were negative (as shown in Figure 6).

Figure 6. General feelings of participants towards AI



According to Tables 5 and 6, we obtained seven positive and seven negative emotions in this framework. Astonishment was the most frequently expressed positive emotion, with 19 occurrences reported by 65% of participants. Acceptance/feeling comfortable (15 times) and happiness (13 times) were the second and third most common positive emotions. Overall, it can be concluded that 19 out of 20 participants have positive feelings towards AI.

Table 5. Positive emotions

Codes	Code Frequency	Code Percentage	Participant Frequency	Participant Percentage
1. Astonishment	19	28,36	13	65,00
2. Acceptance/feeling comfortable	15	22,39	7	35,00
3. Happiness	13	19,40	9	45,00
4. Hope	9	13,43	7	35,00
5. Curiosity	4	5,97	4	20,00
6. Excitement	4	5,97	3	15,00
7. Admiration	3	4,48	2	10,00
Total	**67**	**100,00**		
Documents with code(s)			**19**	**95,00**
Documents without code(s)			**1**	**5,00**
Analyzed documents			**20**	**100,00**

Out of the total participants, 18 expressed negative emotions towards AI. Anxiety/Tension was found to be the most common negative emotion, with around 55 percent of the codes relating to it. Fear was the second most prominent negative emotion, which constituted 25 percent of the codes.

Table 6. Negative emotions

Codes	Code Frequency	Code Percentage	Participant Frequency	Participant Percentage
1. Anxiety/Tension	39	53,42	14	70,00
2. Fear	18	24,66	9	45,00

3. Anger	5	6,85	4	20,00
4. Frustration	5	6,85	2	10,00
5. Distrust/Doubt	3	4,11	3	15,00
6. Hopelessness	2	2,74	2	10,00
7. Feeling incapable	1	1,37	1	5,00
Total	**73**	**100,00**		
Documents with code(s)			**18**	**90,00**
Documents without code(s)			**2**	**10,00**
Analyzed documents			**20**	**100,00**

Relational Analyzes

We conducted further analyses to identify the aspects of AI associated with respondents' most positive and negative feelings (refer to Tables 7 and 8). The total frequency of the three positive emotions—astonishment, acceptance (feeling comfortable), and happiness—was 47, compared to the overall occurrence of all positive emotions, which was 67 (see Table 5). In our analysis, we specifically examined these three emotions. Using the code-relationship browser, we found that the AI effects that generated the most feelings of astonishment, happiness, and acceptance among participants were "making life convenient" and "speeding up tasks and saving time" (as shown in Table 7). Furthermore, we discovered that AI's ability to "improve performance and productivity" led to astonishment and happiness, while its capacity to "reduce routine tasks" made participants feel more comfortable.

Table 7. Code relations browser for positive impacts of AI and emotions

Code System	Astonishment	Happiness	Acceptance / feeling comfortable
Making life more convenient	11	6	4
Speed and saving time	9	5	3
Reduction in routine tasks	3	2	3
Improving performance and productivity	5	4	2
Reduction in accident/errors/waste	4	1	2
Reducing dependency on humans	1	1	0

In Table 8 of our analysis, we examined the negative aspects of AI that cause intense anxiety and fear among participants. We discovered that the most significant concerns were the fear of unemployment and the potential loss of certain professions/jobs. Additionally, the possibility of AI making people lazy was a common cause of negative feelings among respondents. On the other hand, concerns regarding personal data protection, information security, and

issues related to prejudice and discrimination did not evoke fear among the participants.

Table 8. Code relations browser for negative impacts of AI and emotions

Code System	Anxiety/Tension	Fear
Unemployment	7	4
Making people slothful	3	3
Managed/supervised by AI	1	2
Isolation	2	1
Personal data protection and information security concerns	1	0
Prejudice and discrimination	1	0

5. CONCLUSION AND DISCUSSION

Many groundbreaking technologies have been met with skepticism and concern in human history. The development of AI, with its ability to interact autonomously, has sparked debates about the need to suspend its research and regulate it for the world's safety (Tolay & Gürcan, 2023). For instance, in a 2014 article by Stephen Hawking, Stuart Russell, Max Tegmark, and Frank Wilczek in *The Independent*, they stated that while the creation of AI could be the most significant event in human history, it could also be our last unless we learn to manage its risks (Hawking et al., 2014). The issue of monitoring and controlling AI, emphasized by Hawking and other scientists in 2014, has become an urgent and essential agenda in recent years. This urgency is likened to humanity's response to global warming. However, while we have clear actions to take against global warming, the immense potential of AI brings about anxiety and fear due to the unknown outcomes (Héder, 2021).

This study aimed to uncover the sentiments and thoughts of individuals in the business world regarding AI, both for the present and the future. It was found that all participants believe AI has already changed the business world and daily life. They emphasized that AI makes life easier, saves time by performing tasks quickly, increases productivity, and allows people to utilize their creativity by taking over routine tasks. On the other hand, concerns were raised about AI leading to the disappearance of specific business sectors and professions and increased unemployment. This concern was extreme when considering the future of AI, with many participants expressing fears that AI will lead to unemployment. This aligns with previous research findings (Christou et al., 2020; Hornung & Smolnik, 2022), which show expectations that robots and voice assistants will cause job loss.

The participants' memories of AI were often associated with the emotion of "surprise." Over time, they became more comfortable using AI and experienced positive emotions such as happiness, curiosity, admiration, and excitement. However, many participants also felt anxiety, fear, anger, frustration, and distrust towards AI. They were most surprised and pleased by how AI made life easier and more convenient, providing them with more personal time due to its speed. On the other hand, their most significant worries and fears were related to AI potentially increasing unemployment and making people lazy.

The survey participants expressed optimism about the potential of AI to bring significant benefits to humanity in fields such as healthcare, the environment, and the economy. However, they also voiced concerns about the possibility of AI becoming uncontrollable, being employed in biological, chemical, and technological warfare, and resulting in widespread job loss. While they emphasized the need for international oversight of AI to prevent adverse outcomes, most respondents indicated that AI research and development should continue. These findings are consistent with a study conducted by the European Commission in 2017, which found that most respondents believe that robots are essential for performing hazardous and challenging tasks on behalf of humans.

6. LIMITATIONS AND FUTURE RESEARCH

Two main limitations were encountered in the current study. The first one is related to sample selection. This research used the snowball sampling method to reach people who interact with AI in their work. However, this method made it difficult to ensure a balanced distribution of participants based on gender, leading to a majority of male participants and a tendency towards the male perspective in the research results. Another area for improvement is related to the analysis approach. The emotion coding in the analysis was not based on existing literature but on the expressions of the participants. This led to the identification of some codes that contradicted the existing literature. At this stage, we utilized an expert review strategy to have the codes evaluated by a psychologist and attempted to resolve the main contradictions.

AI is a technology that can benefit human life in numerous ways. This benefit can be further enhanced by gaining a better understanding of the relationship between humans as developers and users of this technology. While there has been an increase in academic studies on AI in recent years, there is a noticeable lack of research on human emotions about AI. Therefore, conducting more studies on human emotions in AI-human interaction is essential to enriching the existing literature.

In future studies, it would be beneficial to explore the topic with different sample groups based on factors such as gender, race, ethnicity, income

level, and the development level of the country, and to compare the results. In the business world, managers play a crucial role in communicating to employees that AI can make their work easier and reduce their workload. It's also essential for managers to support employees by providing them with the necessary AI training. Additionally, managers who embrace AI at all levels will contribute to the integration process and facilitate adoption.

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Declaration of AI-assisted technologies in the writing process
In writing this article, the authors utilized Grammarly, an AI-powered software, to enhance the fluency and academic quality of the language. After using this tool, the authors thoroughly reviewed and edited the content as needed and took full responsibility for the final published article.

Credit authorship contribution statement
Gözde Dilara Can: Writing – original draft, Writing – review & editing, Conceptualization, Investigation, Methodology.
Ebru Tolay: Writing – review & editing, Conceptualization, Formal analysis, Methodology, Supervision, Visualization, Validation.

Declaration of competing interest
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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