Journal of
Organisational Studies and Innovation
Vol. 10, no2, Summer 2023

Do Employees' Artificial Intelligence Attitudes Affect Individual Business Performance?

[1] Yunus Emre TAŞGİT*, Yasemin BAYKAL*, Utku Can AYDIN*, Abdullah YAKUPOĞLU* and Mehmet COŞKUNER*
*Düzce University, Turkey**

Received: Nov 31, 2022; Revised: March 3, 2023; Accepted: May 25, 2023

Abstract: Employee performance, which is accepted as one of the most critical reasons for organizational success, changes day by day depending on different factors, although its scope and level of influence are different. In today's business world, the most important factor affecting employee performance is adaptation to changing technology. The purpose of this research is to examine the relationship between employees' artificial intelligence attitude and individual work performance. The research was designed as a relational survey model, one of the quantitative research methods. The data were collected by questionnaire technique. SPSS was used in the data analysis process. Findings were obtained through the data obtained from a total of 573 participants. According to the results of the research, the positive artificial intelligence attitude of the employees has a positive effect on task performance and contextual performance, and a negative effect on counterproductive work behaviour. On the other hand, negative artificial intelligence attitudes of employees negatively affect task performance and contextual performance, while positively supporting counterproductive work behaviour.
Keywords: *Positive Artificial Intelligence Attitude, Negative Artificial Intelligence Attitude, Task Performance, Contextual Performance, Counterproductive Work Performance.*

Introduction

Since the early 1950s, there have been academic studies on artificial intelligence, but in recent years, there has been a great distance for both literature development and use in various sectors (Vinod, 2021). The use of artificial intelligence technologies is remarkable, especially for businesses operating in sectors such as banking, health, and tourism, to improve operational efficiency (Jabeen *et al.*, 2021). In addition, since it performs any function more quickly and efficiently, artificial intelligence is used in many different departments, especially in human resources, finance, marketing, and production departments (Benbya *et al*., 2021, p.2-3), especially in organizational decision-making processes, it is seen that it has become more effective in issues such as increasing quality and reducing costs (Kaplan and Haenlein, 2019; Cao *et al.*, 2021, p.1). With these developments, it is one of the critical issues to discuss the effects of artificial intelligence applications, which have become dominant in many sectors today, on working life in

[1] https://doi.org/10.51659/josi.22.176

terms of the business world (Li *et al*., 2019). In this context, multidimensional (cognitive and behavioural) examination of artificial intelligence is important for employees because if employees cannot create adaptive behaviour and skills for developing processes, they will experience career development problems or lose their current works. It is important for managers because if they cannot direct the behaviours of employees towards corporate goals in order to successfully manage the change process, they will face serious performance management problems. It is important for businesses because if they cannot adopt and use artificial intelligence technologies at the desired level and in the required time, they will have the problem of losing their competitive position. Therefore, what needs to be done is to manage the perceptions of employees by raising the level of knowledge about technological developments in the field of artificial intelligence and to prepare for the changes that will occur (Brougham and Haar, 2017).

When the literature is examined, it is seen that artificial intelligence applications have some positive results such as increasing work efficiency, but also cause some anxiety and negative attitudes in employees (Agogo and Hess, 2018). In this context, some employees are more open to adopting artificial intelligence by focusing on the opportunities offered by these technologies, while others develop reluctance and fear-oriented attitudes to accept these technological developments (Lichtenthaler, 2020). On the other hand, some studies in the literature show that artificial intelligence can play a more dominant role than humans in low-level works, while some studies accept that human-intensive skills can be performed more successfully with the support of artificial intelligence in high-level works (Prentice, 2019).

In the literature, it is seen that there are detailed studies on each of the variables of artificial intelligence attitude and individual work performance that are the subject of the research. However, no study has been found that examines whether the artificial intelligence attitudes of the employees are effective in their individual work performances. Based on this, the study carried out to fill the gap in the literature on this subject has examined whether the artificial intelligence attitude of the employees has an effect on individual work performance. In the study, which was handled within the stated scope, an answer has been sought to the fundamental question of "Is the artificial intelligence attitudes of the employees effective on their individual work performances?". In addition, research questions were created specifically for the sub-dimensions of each variable, and the answers were evaluated. In the research, which was designed according to the quantitative research method perspective, the relational survey model was used to solve the questions.

Literature Review

Artificial Intelligence Attitude

Artificial intelligence refers to advanced intelligent computer programs that mimic human behaviour and assist humans in different tasks (Scott *et al.*, 2021). It is defined as human-like automation that can perform many functions based on some intelligence level in solving problems and similar situations (Coppin, 2004). Artificial intelligence is the automation of activities that we associate with human thought and includes activities such as decision making, problem solving, and learning (Qomariyah, 2020). In general, they are considered as systems that think and act rationally (Russell and Norvig, 2021). With the developments experienced, artificial intelligence has the potential to undertake more complex tasks that require cognitive abilities such as making implicit decisions, perceiving emotions and directing processes that were previously impossible (Cao *et al.*, 2021).

On the other hand, there are findings that their attitudes towards artificial intelligence are very important for individuals to accept artificial intelligence (Schepman and Rodway, 2020). Many

researchers believe that employee attitudes play a key role in adopting new technologies and can strongly influence their decision to adopt technology (Lichtenthaler, 2020). If employees believe that the consequences of technological changes are negative, they perceive these technologies as a threat, and this threat perception motivates them to avoid or fight these threats as much as possible by taking protective measures (Liang and Xue, 2009). While the employee's attitude shapes his/her reactions to others, it also affects work performance, the way he perceives the work and his commitment to the organization (Gligorea, 2018). If the employee has a negative attitude at the workplace, he is more likely to underperform, but if he has a positive attitude, he is more likely to show high performance. Today, businesses understand the importance of this issue better and spend more time and effort than ever to create the desired attitude (Spencer, 2018). Various theories and models have been developed in the literature to explain and predict individuals' attitudes, acceptance and use of new technologies. For example, Technology Acceptance Model, Innovation Diffusion Theory, Unified Acceptance and Technology Use Theory are some of them. Although each theory and model have its own assumptions and features, general artificial intelligence attitude is examined in two basic dimensions: Positive AI Attitude and Negative AI Attitude.

Positive Artificial Intelligence Attitude

At the point reached today regarding the use of artificial intelligence, some employees have a positive attitude, while others have a negative attitude for various reasons. According to employees with positive attitudes, using artificial intelligence in business processes is a pretty good idea. In particular, the idea that artificial intelligence is compatible with other technologies makes this technology easier to learn and creates situations that employees may like to use (Cao *et al.*, 2021). In addition, artificial intelligence tools and techniques help make the right decision, save time and energy, and increase productivity and efficiency by optimizing routine procedures (Sayantani, 2021). Again, artificial intelligence applications eliminate the problem of simultaneous access to information and accelerate the decision-making process (İnce *et al*., 2021). At the same time, according to those who have this tendency, the effects of artificial intelligence will increase and continue in the future, which will reveal new career opportunities (Thomas, 2021). Since artificial intelligence can integrate physical infrastructure with digital communication technologies, more flexible working times and places will be created for employees (Malik *et al*., 2021). The use of artificial intelligence, especially in complex business processes and taking over difficult tasks from people, may increase the work satisfaction of employees (Bhargava *et al*., 2021). Again, artificial intelligences are systems that can prevent human errors due to their features (Nazlı, 2019). For all these reasons, in the context of human-machine interaction, it is expected that technological developments will be met with a positive attitude, as artificial intelligence is increasingly being dealt with in daily life (Sindermann *et al.*, 2021).

Negative Artificial Intelligence Attitude

Those who have negative attitudes toward the use of artificial intelligence generally argue that developments in digital technology present new opportunities for designing new products and services, but also present new problems and challenges (Yoo, 2010). These challenges are social and organizational attitudes towards technology (Vasiljeva *et al*., 2021). If the socio-economic system is not taken into account while applying these systems, the negative external effect that will occur may limit all the potential expected from these technologies (Bughin *et al*., 2018). According to those who have negative attitudes, artificial intelligence systems bring along some disadvantages for employees as well as the benefits such as productivity and efficiency increase

(Nakrošienė *et al*., 2019). For example, new business models emerging within the scope of artificial intelligence applications can cause millions of people around the world to lose or change their works. Again, due to the change experienced, it is a challenging situation for employees to be exposed to pressures to improve their skills. This situation causes an increase in employees' anxiety about the development of artificial intelligence (Wang and Wang, 2019). In addition, the fact that these technologies can take over the duties of employees causes employees to feel unnecessary within the organization (Cao *et al*., 2021). On the other hand, it is also believed that artificial intelligence applications can eventually make people lazy and impatient (Sayantani, 2021). It is thought that as a result of its intensive use, employees may become dependent on these technologies and lose their opportunities to gain experience and even some of their previously acquired skills (Wang and Wang, 2019).

Individual Work Performance

Individual work performance is defined as the level of achievement of the task behaviours exhibited by employees in order to achieve their organizational goals and individual goals (Shields, 2007, p.21). In the literature, it is seen that individual work performance is generally handled under two main headings as task performance and contextual performance (Borman and Motowidlo, 1993). In addition, in some studies, individual work performance is examined in terms of employee performance, efficiency and productivity, adaptation to work environments, and work satisfaction (Pradhan and Jena, 2017, p.70; Fernet *et al*., 2015, p.290; Pulakos *et al*., 2000, p.612). In the study conducted by Koopmans, Bernaards, Hildebrandt, De Vet, and Van Der Beek (2014) on individual work performance, individual work performance is evaluated within the scope of three dimensions: task performance, contextual performance, and counterproductive behaviour. In this study, individual work performance will be examined over these dimensions.

Task Performance

When the literature is examined, task performance is expressed as the achievement of the objectives determined by the behaviours such as the effectiveness and efficiency levels of the employees while performing their duties in the official work descriptions, their planned work, efficient work, result-oriented work, prioritization and taking responsibility (Koopmans *et al.*, 2014). The situation obtained as a result of the intended and planned activities is evaluated quantitatively or qualitatively (Ion and Criveanu, 2016) and a rating is made. Even if the scope of the employee's work description may vary from business to business, it is generally associated with issues such as the time, details, and planning of the work (Díaz-Vilela *et al*., 2016). It is essential for success to make the most optimal planning for the work to be done in the context of task performance (van Vijfeijken *et al*., 2006). Moreover, it is critical for task performance to do the work as planned (Griffin *et al*.,2001) and to distinguish between the basic and auxiliary subjects of the work while the employee is doing his work (Landy and Conte, 2016, p.208). It is critical for task performance that the work is done as planned and that employees distinguish between basic work-related issues and auxiliary issues while doing their work (Landy and Conte, 2016, p.208).

Contextual Performance

Contextual performance behaviours are considered undefined and optional individual behaviours that emerge in the organizational environment beyond the formal work description (de Boer et al., 2015). Contextual performance generally takes place within the framework of activities that provide organizational, social, and psychological support (Edwards et al., 2008). Its main activities are formed around behaviours such as helping others, taking initiative in solving work-related problems, cooperating, and volunteering to support colleagues (Spector and Fox, 2002). Again, it

is also interpreted as behaviours within the context of contextual performance that the employee finds impressive solutions to new problems related to his work, continues to search for new areas of struggle related to his work (Greenslade and Jimmieson, 2007), takes extra work-related responsibilities (Jawahar and Carr, 2007), actively participates in business meetings (Díaz-Vilela *et al*., 2012). It is also considered within this scope that the employee starts new duties when his current work is finished and undertakes challenging work duties whenever possible (Christian *et al*., 2011).

Counterproductive Work Behaviour

In the studies in the literature, counterproductive work behaviour is defined as when employees consciously and willingly exhibit behaviour types that are not suitable for the interests of the organization (Robbins and Judge, 2017). Behaviours such as employees not coming to work, coming to work late, being busy with other things at work, and stealing something are shown as examples of counterproductive work behaviours (Koopmans *et al*., 2014). Similarly, in some studies in the literature, behaviours such as employees complaining about unimportant issues related to their work (Pearce and Giacalone, 2003), making work-related problems bigger than they are, focusing on the negative aspects of work-related situations instead of the positive aspects (Robbins and Judge, 2017) also considered as counterproductive work behaviour. In addition, employees with this type of behaviour also talk about the negative aspects of their works with their colleagues or people outside the organization (Koopmans *et al*., 2014).

Methodology

This research examines the relationships between artificial intelligence attitudes of employees and individual job performance. Since the main purpose of the research is to reveal the relationship status in terms of direction and level, the relational survey model, one of the quantitative research methods, was preferred for the solution of the problem. This model focuses on determining the existence of a co-change among the variables in the relationship analysis and, if there is a change, how this happens (Karasar, 2011). In addition, the purpose of describing the general trends in the universe from the results obtained in the selected sample is another reason for choosing this model (Creswell, 2014). Again, the relational survey model was preferred because the scales used in the research, the characteristics of the variables, and statistical analyses necessitate this method in obtaining valid and reliable results.

Population and Sample of the Research

The population of the research consists of public and private sector employees who use artificial intelligence applications at least 50% in their work. Since the research universe is very large and it is impossible to reach the whole universe, it was decided to take a sample that could represent the universe, and it was decided that the most appropriate method in terms of reaching the target group, considering both cost and time, was the "convenience sampling" method (Etikan *et al*., 2016). In the current situation, it does not seem possible to know the exact number of employees in the research universe. In the literature, it is recommended to use some formulas to create a sample in cases where the number of universes is uncertain. Assuming that each formulation has some field-based features, Sekaran's sample size determination formula was used to determine the sample size in this study. According to this formulation, the population size is 384 for 1,000,000 people, with a 95% confidence interval and a 5% margin of error (Sekaran, 2003, p.294). In addition, it was aimed to reach more participants in order to increase the generalizability of the research results. At the end of the data collection process, a total of 573 people were reached.

Considering that a 34-item scale form was used in the study, this number of participants indicates that statistically valid results can be obtained.

Data Collection Technique and Process

An online survey method was used to collect research data. The questionnaire form, which was prepared in four parts, is based on studies in the literature. In the first part of the questionnaire, there are 18 items expressing the individual work performances of the employees, 16 items expressing the attitudes of the employees towards artificial intelligence in the second part, and 8 items expressing the demographic characteristics of the employees in the last part. Five-point Likert-type evaluation criteria (1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree) were preferred in measuring the statements about individual work performance and artificial intelligence attitude.

In order to ensure the linguistic validity of the statements in the questionnaire, the scale statements were translated from English to Turkish with the support of the School of Foreign Languages Instructors. For the content validity of the statements included in the survey, the survey form was examined by academicians who are experts in their fields and the statements in the survey were evaluated in terms of intelligibility, relevance and comprehensiveness. In line with the feedback received, necessary corrections were made on the questionnaire items. After the questionnaire form was created, it was submitted to the approval of University Ethics Committee, and approval for scientific research and publication ethics was obtained. Afterwards, the questionnaire form for the application was organized as an online questionnaire on the surveey.com site. Before the general implementation, a pilot study was conducted on 50 people in order to avoid systematic or random errors. The survey application was carried out in April 2022.

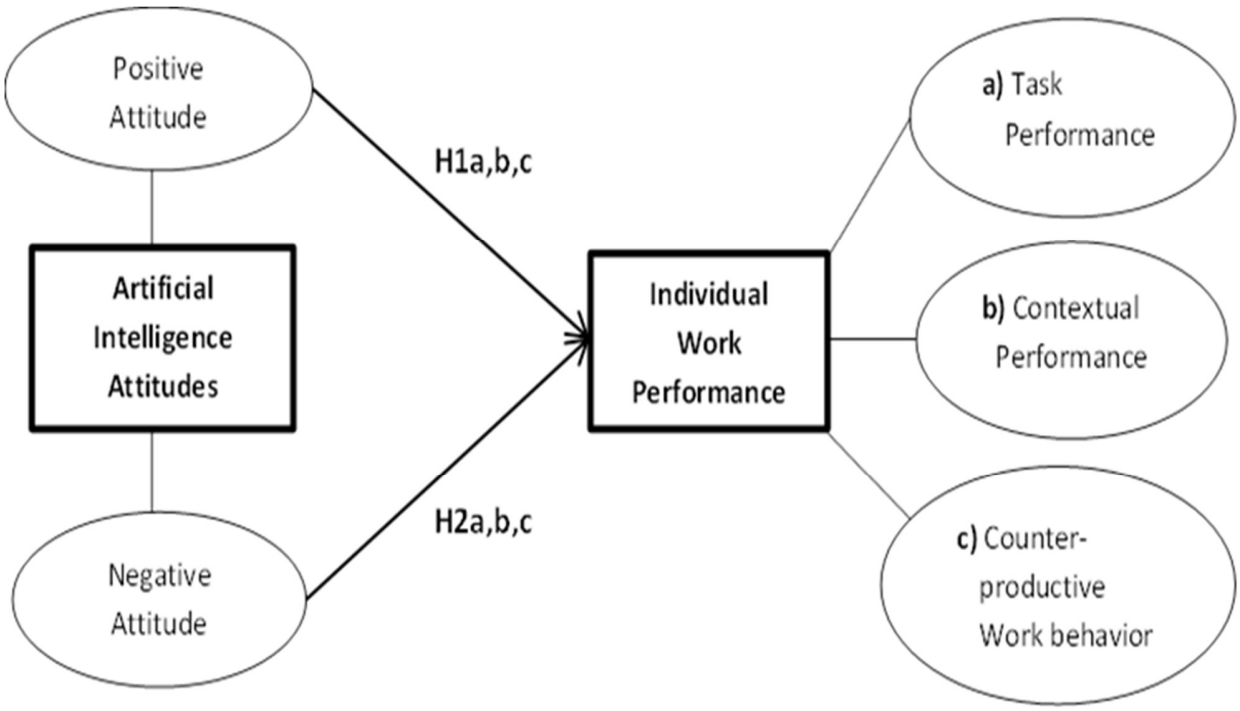
Scales

As a result of the literature review, some important explanatory studies and scales related to the variables in the research model were found. In line with the purpose and method of the research, these scales were used exactly or partially with permission. Accordingly, for the individual work performance scale, the scale developed by Koopmans et al. (2014) was used. This scale includes 18 items in total, 5 items for the task performance sub-dimension, 8 items for the contextual performance sub-dimension, and 5 items for the counterproductive work behaviour sub-dimension. In order to measure the artificial intelligence attitudes of the employees, the Artificial Intelligence Acceptance-Avoidance Scale (Cao *et al*., 2021) and the Artificial Intelligence Anxiety Scale (Wang and Wang, 2019) were used in combination. In the scale, which is designed as 2 sub-dimensions as positive artificial intelligence attitude and negative artificial intelligence attitude, there are 8 items to measure the positive attitude level of the employees and 8 items to determine the negative attitude level.

Research Model and Hypothesis Development

There are 2 main variables in the model that reveals the general characteristics of the relationship between artificial intelligence attitude of employees and individual work performance: Artificial Intelligence Attitude and Individual Work Performance. Among these variables, artificial intelligence attitude has two dimensions; positive AI attitude and negative AI attitude, and individual work performance has three dimensions; task performance, contextual performance, and counterproductive work behaviour. Details about the research model and the relationships between the variables are shown in Figure 1.

Figure 1: Research Model



In order to create the models and hypotheses of the research, two basic approaches focused on literature and observation were used together. Details on the literature review and individual observations of the researchers on the behaviour of the employees at the workplace are given below.

Literature Review Findings

When the literature is examined, it has been determined that there is a relationship between artificial intelligence and work performance (Tahir *et al*., 2021; Malik, Tripathi, Kar, and Gupta, 2021). In particular, the findings that artificial intelligence and digitalization-related activities have the capacity to reduce the workload of employees and improve employee performance are remarkable (Wijayati *et al*., 2022). On the other hand, there are also findings that artificial

intelligence has a negative effect on the work performance of employees with high emotional intelligence, and as a result, the productivity of employees with negative artificial intelligence attitudes is limited (Prentice *et al*., 2020).

Individual Observations of Researchers

A program has been created by researchers to observe the effect of technological developments on employee performance. In this context, the processes experienced were monitored and recorded. Namely, Enterprise Y, operating in sector X, decided to implement a transition plan to artificial intelligence systems for 50% of the operation within the institution in order to adapt to developing technologies in 2021. In this direction, necessary investments have been made and adaptational processes have started to operate within the institution. While the activities continued in line with the plans, it was observed that different reactions (positive and negative) came from the employees regarding the change-oriented processes put into practice. Employees who think that the use of artificial intelligence is a good idea are very satisfied with the applications, as the use of artificial intelligence is useful for keeping their knowledge and skills up to date. Employees who are worried about the use of artificial intelligence and even think that it is not a good idea have started to complain about unnecessary work-related issues. It has also been observed that employees who find it easy to learn artificial intelligence systems for related processes take extra responsibilities at the workplace and undertake new and challenging tasks when their work is completed. On the other hand, it has been seen that those who think that artificial intelligence makes the employee feel unnecessary and those who find artificial intelligence risky make work-related problems bigger than they are. Likewise, employees focused on the negative aspects of the innovative technological processes, which were initiated with the fear of losing their careers and works due to artificial intelligence concerns, rather than the positive aspects. On the other hand, employees who developed a positive attitude towards the process realized that artificial intelligence was compatible with other technologies and started to make plans to do their work on time and to find alternative solutions to problems. However, it has been observed that employees who develop a negative attitude, who think that they will lose the opportunity and skills to learn from their own experiences because they use artificial intelligence, will become lazy and become addicted, have conversations about the negative aspects of artificial intelligence systems put into practice with their other colleagues and sometimes with people outside of work.

Considering both the findings of the literature review and the individual observation results of the researchers, the research hypotheses were formed as follows.

“H1a,b,c: As Positive AI Attitude increases, from Individual Work Performance dimensions a) Task Performance and b) Contextual Performance increase, c) Counterproductive Work Behaviour decreases”.

“H2a,b,c: As Negative AI Attitude increases, from Individual Work Performance dimensions a) Task Performance and b) Contextual Performance decrease, c) Counterproductive Work Behaviour increases”.

Findings

SPSS was used in the analysis of the data obtained from the research participants. In the analysis process, frequency analysis was carried out firstly in order to examine the demographic characteristics of the participants. Afterward, exploratory factor analysis was applied to determine the structural validity of the variables forming the research model. Then, descriptive statistics

about the variables and linear regression analyses for correlation analysis and model testing were performed.

Frequency analysis results show that the majority of the participants (64.3%) were male. On the other hand, it cannot be said that the participation rate of women (35.7%) is low. When the ages of the participants are examined, it is seen that the rate of participants in the 25-34 age range (34.1%) is higher. This rate is followed by the 35-49 age group (33.6%). In terms of educational status, the participants are mostly at undergraduate (65.6%) and graduate (20.8%) levels. On the other hand, while the participants mostly have 1-5 years (29.4%) and 11-15 years (28.9%) experience, they mostly work in production (28.4%) and accounting-finance (35.9%) departments. Finally, the use of artificial intelligence in the activities of the participants is quite high. That is to say, 47.9% of the participants use artificial intelligence at the rate of 60% in their activities, while the rate of artificial intelligence use of 27.9% is 80%.

In order to determine the structural validity of the variables in the research, exploratory factor analysis was carried out regarding the artificial intelligence attitude of the employees and individual work performance variables. Detailed results regarding the analyses are given below. Individual work performance results are listed in Table 1.

Table 1: Individual Work Performance Factor Analysis Results

Factors/Expressions	**Factor Loads**	**Explained Variance**	**Eigenvalue**
Contextual Performance			
I started new tasks when my current works were finished.	,901	34,588	6,226
I tried to keep my work skills up to date.	,897		
I tried to keep my business information up to date	,896		
I took on extra responsibilities related to my work.	,883		
I took on demanding work duties whenever possible.	,882		
I actively participated in business meetings	,855		
I continued to look for new areas of struggle with my work.	,807		
I found impressive solutions to emerging new problems.	,674		
Task Performance			
I made the most optimal planning for my business	,858	20,802	3,744
I managed to do my work as planned	,857		
I was able to do my work well with minimal time and effort.	,823		
I have not forgotten the results I needed to achieve in my work.	,821		
I was able to separate the basic and auxiliary subjects related to my work.	,809		
Counterproductive Work Behavior			
I talked about the negative aspects of my work with people outside of work.	,846	20,296	3,653
I complained about trivial matters related to my work	,838		
I talked to my colleagues about the negative aspects of my work.	,821		
I focused on the negative aspects of events at work.	,790		
I exaggerated work-related problems.	,781		

When Table 1 is examined, it is seen that the items subjected to factor analysis for the individual work performance scale are grouped under three dimensions, as in the original scale in the literature. When evaluated in terms of factor analysis suitability criteria, it can be said that the obtained results meet the expected values in the literature. Tabachnick and Fidell (2007) state that in order to perform a healthy factor analysis, the KMO value should be higher than 0.6 and the

Bartlett test result should be significant. As a result of the factor analysis for individual work performance, the KMO test result was 0.901 and the Bartlett test result ($p<0.05$) was significant. In the analysis in which principal component analysis and varimax rotation technique are used as inference methods, the total variance explained by the factors regarding the scale is at a very good level for social sciences (75,686). In addition, considering that factors with an eigenvalue higher than 1 are considered to be a significant variable, it can be said that all the factors obtained have a good eigenvalue. According to the results of the analysis, the factor load values of the items in the contextual performance factor (8 items) representing individual work performance vary between 0.901 and 0.674, and the factor load values of the items in the task performance factor (5 items) vary between 0.858 and 0.809, and the factor loadings of the items in the task performance factor vary between 0.846 and 0.781. These results show that the internal reliability of the factors obtained is at a sufficient level.

Within the scope of the analysis, exploratory factor analysis was carried out regarding the artificial intelligence attitude of the employees. Detailed results related to the analysis are shared in Table 2.

Table 2: Artificial Intelligence Attitude Factor Analysis Results

Factors/Expressions	**Factor Loads**	**Explained Variance**	**Eigenvalue**
Positive Attitude (Using artificial intelligence…			
increases my productivity.	,878	39,519	6,323
positively affects my career development	,857		
especially useful for decision making.	,857		
increases my work satisfaction.	,853		
helps me adapt to other technologies I use.	,841		
makes me enjoy	,838		
is a pretty good idea	,829		
is easy to learn for me.	,791		
Negative Attitude (Using artificial intelligence…			
will make me addicted to it .	,844	37,156	5,945
will soon take my work away.	,841		
is pretty risky for me.	,830		
will increase my tendency to become lazy.	,829		
will make me lose some of my skills.	,826		
will make me lose the opportunity to learn from my experiences.	,825		
worries me.	,774		
makes me feel useless.	,752		

When Table 2 is examined, it is seen that the results of the factor analysis performed for the scale related to the artificial intelligence attitude of the employees are at a very good level. According to the analysis findings, the KMO test result was 0.943 and the Bartlett test result ($p<0.05$) was significant. In the analysis in which principal component analysis and varimax rotation technique were used as inference methods, the total variance explained by the factors regarding the scale was at a very good level (76,675). In addition, considering that factors with an eigenvalue higher than 1 are considered to be a significant variable, it can be said that both factors (Positive Attitude: 6,323 and Negative Attitude: 5,945) have a high eigenvalue. On the other hand, according to the results of the analysis, the factor load values of the items in the positive attitude dimension (8)

representing the artificial intelligence attitude of the employees vary between 0.878 and 0.791, and the factor load values of the items in the negative attitude dimension (8) vary between 0.844 and 0.752. Therefore, the internal reliability of the factors obtained according to these findings is at a sufficient level.

After exploratory factor analysis, descriptive statistics and reliability coefficients for the variables were obtained. Detailed information on the results is given in Table 3.

Table 3: Descriptive Statistics

Variable	Mean	Std.Dev.	Skew.	Kurt.	A
Task Performance	4,1990	,66264	-1,118	2,861	,909
Contextual Performance	4,1928	,84230	-1,465	2,495	,959
Counterproductive Work Behavior	2,0052	,97810	,785	-,155	,895
Positive Attitude	4,1957	,81993	-1,089	,981	,962
Negative Attitude	1,9383	,94629	,947	,405	,949

When Table 3 is examined, it is seen that the perceptions of task performance and contextual performance of the participants are high and very close to each other. Counterproductive work behaviour perceptions are low. On the other hand, while the positive artificial intelligence attitude perceptions of the participants are quite high, the negative artificial intelligence attitude perceptions are quite low. When the skewness and kurtosis coefficients of the variables are examined, it can be said that the data show a normal distribution since the scores obtained are at an acceptable level (between -3 and +3). In addition, it is seen that the reliability coefficients for all the variables in the study are above the threshold value (α: 0,60) accepted in the literature. These results reveal that the scale items obtained are quite reliable.

After the correlation analysis, regression analyses were applied for inferences and hypothesis testing for the research model. Details of the regression analyses performed for all models in the study are presented in Table 4.

Table 4: Artificial Intelligence Attitude and Individual Work Performance Regression Analysis

Models		**Non-standardized Coefficients**		**Standardized Coefficients**	**t**	**p**
		B	**Std. Error**	**Beta**		
H1a	(Constant)	2,934	,134		21,874	,000
	Positive Attitude	,301	,031	,373	9,604	,000
	Dependent Variable: Task Performance r: ,373 r^2: ,139 F: 92,232 p: ,000					
H1b	(Constant)	2,259	,164		13,753	,000
	Positive Attitude	,461	,038	,449	11,997	,000
	Dependent Variable: Contextual Performance r: ,449 r^2: ,201 F: 143,939 p: ,000					
H1c	(Constant)	3,806	,199		19,117	,000
	Positive Attitude	-,429	,047	-,360	-9,217	,000
	Dependent Variable: Counterproductive Work Behavior r: ,360 r^2: ,130 F: 84,955 p: ,000					
H2a	(Constant)	4,580	,061		75,514	,000
	Negative Attitude	-,197	,028	-,281	-6,993	,000
	Dependent Variable: Task Performance r: ,281 r^2: ,079 F: 48,900 p: ,000					
H2b	(Constant)	4,760	,076		62,753	,000
	Negative Attitude	-,293	,035	-,329	-8,325	,000

	Dependent Variable: Contextual Performance r: ,329 r^2: ,108 F: 69,301 p: ,000					
H2c	(Constant)	,833	,076		11,010	,000
	Negative Attitude	,605	,035	,585	17,246	,000
	Dependent Variable: Counterproductive Work Behavior r: ,585 r^2: ,342 F: 297,431 p: ,000					

When the findings for the relationship in Table 4 are examined, it is seen that there is a moderate positive relationship between positive AI attitude and task performance (37%) and contextual performance (44%), and there is a moderate negative relationship between positive AI attitude and counterproductive work behaviour (36%). A low-level negative relationship has been found between negative artificial intelligence attitude and task performance (28%), while a moderate negative relationship has been found between negative artificial intelligence attitude and contextual performance (32%). On the other hand, negative artificial intelligence attitudes of employees have been found to be moderately (58%) positively correlated with counterproductive work behaviours. When the results regarding the effect are examined, it can be said that all models included in the regression analysis, F value, t test result, standardized regression coefficient (β) and p values are statistically significant. When the results in the positive artificial intelligence attitude-task performance model are evaluated, it is seen that positive attitude has a positive effect of 13.9% on task performance. Hence, "H1a: Positive AI attitude has a positive effect on task performance." hypothesis was accepted. In addition, positive attitude has a positive and significant effect on contextual performance. 20.1% of the variance in contextual performance is explained by the positive AI attitude. In this direction, "H1b: Positive AI attitude has a positive effect on contextual performance." hypothesis was accepted. The final result on positive attitude is related to counterproductive work behavior. When the model is examined, it is understood that positive attitude is a significant predictor of counterproductive work behaviour. This prediction is negative and at a low level (13%). However, it can still be said that the positive attitude towards artificial intelligence prevents counterproductive work behaviour. In this context, "H1c: A positive AI attitude has a negative impact on counterproductive work behaviour." hypothesis was accepted. On the other hand, when the effect of negative artificial intelligence attitude on individual work performances is examined, it is seen that negative attitude has a negative effect on task performance, albeit at a low level. The 7.9% variance in task performance is explained by the negative AI attitude. In this case, it can be said that negative artificial intelligence attitude has a negative and significant effect on task performance. Hence, "H2a: Negative AI attitude has a negative effect on task performance." hypothesis was accepted. Likewise, the 10.8% variance in contextual performance is explained by the negative artificial intelligence attitude. In other words, negative artificial intelligence attitude has a negative significant effect on contextual performance, albeit at a low level. In this context, "H2b: Negative AI attitude has a negative effect on contextual performance." hypothesis was accepted. Finally, when the effect of negative attitude on counterproductive work behaviour is examined, a significant positive effect draws attention. 34.2% of the variance in counterproductive work behaviour is explained by negative AI attitude. Therefore, it can be said that negative artificial intelligence attitude has a significant positive effect on counterproductive work behaviour. In this context, "H2c: Negative AI attitude has a positive effect on counterproductive work behaviour." hypothesis was accepted.

Discussions

When an overall assessment of the research findings is made, it is seen that all the developed hypotheses are supported. That is, while the positive artificial intelligence attitude of the employees positively affects their task and contextual performance, it causes a decrease in counterproductive work behaviours. In other words, employees who think that using artificial intelligence is a good idea are very willing to learn new applications and learn easily. In addition, as they realize the compatibility aspects with other technologies they use, they benefit from alternative solutions such as decision-making on many issues. The result is a situation they enjoy that contributes to their career development, where their work satisfaction and productivity increase. Employees with this type of positive attitude do not have problems in distinguishing and prioritizing the basic and auxiliary issues related to their work, making the most optimal (optimal) planning for their work, obtaining the desired results at the planned time with the least effort, and their task performance begins to increase. In addition, employees with a positive attitude can also be willing to keep up-to-date on their work, take on extra responsibilities, start new tasks when their current work is finished, take on challenging work tasks, when possible, continue to look for new areas of struggle, and actively participate in order to find effective solutions to new problems that arise, therefore, their contextual performances also increase. They do not complain about trivial matters related to their works. They do not focus on the negative aspects of the events in business and do not exaggerate the problems experienced. In addition, they do not gossip about the negative aspects of their work with their colleagues and outsiders. Therefore, work behaviour that hinders productivity does not appear or begins to decline.

On the other hand, the negative artificial intelligence attitude of the employees negatively affects their task and contextual performance and causes an increase in counterproductive work behaviours. If employees think that using artificial intelligence will make them dependent on it, increase their tendency to become lazy and make them lose some skills, they start to see artificial intelligence as a risky phenomenon that will soon take away their works, and this makes them worry about their future and career. They also start to feel unnecessary to the business. Therefore, working in such an intellectual atmosphere is quite challenging. They cannot make the most optimal planning for their work and cannot complete their work at the scheduled time. Moreover, they cannot distinguish between the main subjects and auxiliary subjects related to their work, and they have a prioritization problem. As a result, their chances of doing their work well with the least amount of time and effort are seriously reduced. In addition, in such an environment, their tendency to keep their work-related knowledge and skills up-to-date and to seek new areas of struggle begins to decline. Likewise, their motivation to take on extra responsibilities for their work, undertake challenging tasks, and find impressive solutions to emerging problems is gradually decreasing. On the other hand, the negative attitude of the employees leads to counterproductive work behaviour. In other words, as the negative attitude toward artificial intelligence increases, employees start to complain about unimportant issues related to their work, to make the problems bigger than they are, to focus on the negative aspects of the events instead of the positive aspects, and to talk about the negative aspects of their works with their colleagues or even with people outside the organization.

Conclusion

According to the results of the research, the most important reason why employees have a positive artificial intelligence attitude is related to the fact that they perceive using artificial intelligence as a good idea and think that it is compatible with other technologies they use. However, the main reason why employees have negative artificial intelligence attitudes is the thought that using

artificial intelligence will make them dependent on it, increase their tendency to become lazy and lose some skills.

In the analyses made in line with the basic question; “Is the artificial intelligence attitudes of the employees effective on their individual work performances?”, positive and negative moderate relations, in general, have been determined for the direct effect and bilateral relations between the variables. In the specific evaluation, a moderately positive relationship has been found between positive AI attitude and task performance and contextual performance, and a moderately negative relationship between positive AI attitude and counterproductive work behaviour. On the other hand, there has been a moderately negative relationship between negative AI attitude and task performance and contextual performance, while a moderately positive relationship has been found between negative AI attitude and counterproductive work behaviour.

When the results obtained within the scope of the research are compared with similar studies in the literature, it is seen that the results support each other. For example, the result related to the positive reflection of the positive artificial intelligence attitude on task performance and contextual performance obtained within the scope of the research is in line with the results of the study by Wijayati et al. (2022) which shows that activities related to artificial intelligence and digitalization have the capacity to reduce the workload of working professionals and improve employee performance. Similarly, the result reached is compatible with the findings of Mikalef and Gupta's (2021) studies on the effect of artificial intelligence on corporate performance. On the other hand, the results of the research on the negative effects of negative artificial intelligence on task performance and contextual performance are also consistent with studies by Prentice et al. (2020) and Hornung and Smolnik (2022). Prentice et al. (2020) reveals in their study that artificial intelligence has a negative effect on the work performance of especially employees with high emotional intelligence and limits productivity. Hornung and Smolnik (2022), on the other hand, reveal in their study that if employees have feelings of anxiety, dissatisfaction and disappointment towards artificial intelligence, this limits their use of artificial intelligence systems and employees have problems in developing their work skills and achieving the desired performance.

At this point, developing the artificial intelligence attitude of the employees if it is positive and changing it if it is negative, can be considered a new field of struggle for employees and managers, a critical and strategic phenomenon for the institution. Therefore, it is very important to examine the issue as a multidimensional (cognitive and behavioural) for all relevant parties. The phenomenon of artificial intelligence is important for employees because if employees cannot create adaptive behaviour and skills for developing processes, they will experience career development problems or lose their current works. It is important for managers because if they cannot direct their employee's behaviour toward corporate goals in order to successfully manage the change process, they will face serious performance management problems. It is important for businesses because if they cannot adopt and use artificial intelligence technologies at the desired level and in the required time, they will have the problem of losing their competitive position.

As a result, since it is understood that the artificial intelligence attitude of the employees has a significant effect on the individual work performance, various studies to improve the artificial intelligence attitudes of the employees in a positive way (such as managing the perceptions of the employees by increasing the level of knowledge of the technological developments) may be beneficial in increasing the individual work performance. For this purpose, it can be ensured that the employees develop a positive attitude towards artificial intelligence by organizing conferences that will convey the benefits of artificial intelligence, such as the convenience that artificial

intelligence will provide in their work. It should also be explained that it can increase their effectiveness and productivity instead of taking their works away from them and that they will be able to spare time for themselves in their increased time with the help of artificial intelligence. In this way, employees who have a negative attitude about artificial intelligence can change their attitudes and increase their individual work performance with the developed positive attitude.

References

Agogo, D. and Hess, T. J. (2018). How does tech make you feel? a review and examination of negative affective responses to technology use. *European Journal of Information Systems*, Volume 27, Issue 5.

Benbya, H., Pachidi,S., and Jarvenpaa, S. L. (2021). Special Issue Editorial: *Artificial Intelligence in Organizations: Implications for Information Systems Research*.

Bhargava, A., Bester, M., and Bolton, L. (2021). Employees' Perceptions of the Implementation of Robotics, Artificial Intelligence, and Automation (RAIA) on Work Satisfaction, Work Security, and Employability. *J. technol. behav. Sci*, 6, pp. 106–113.

Borman, W. C. and Motowidlo, S. J. (1993). *Expanding the criterion domain to include elements of contextual performance.* In N. Schmitt & W.C. B. a. Associates (Eds.). Personnel Selections in Organizations. San Francisco: Jossey-Bass.

Brougham, D. and Haar, J. (2017). Smart Technology, Artificial Intelligence, Robotics, and Algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*, 24:2, pp. 239–257.

Bughin, J., Jeongmin Seong, J., Manyika, M. C., and Raoul, J. (2018). *Notes from the AI Frontier: Modeling the Global Economic Impact of AI. McKinsey.* September 4, pp. 1–61. Available at: https://www.mckinsey.com/featured- insights/artificial-intelligence/notes-from-the-ai-frontier-modeling-the-impact-of-ai- on-the-world- economy, (Accessed: 25 March 2022).

Cao, G., Duan, Y., Edwards, J. S., and Dwivedi, Y. K. (2021). Understanding managers' attitudes and behavioral intentions towards using artificial intelligence for organizational decision-making. *Technovation*, pp.106.

Christian, M. S., Adela S. G., and Jerel E. S. (2011). Work Engagement: A Quantitative Review and Test of its Relations with Task and Contextual Performance, *Personnel Psychology*, 64 (1): 89-136.

Coppin, B. (2004). *Artificial Intelligence Illuminated*. Jones and Bartlett Publishers 1st Edition, pp.4-5.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed. Thousand Oaks, California, SAGE Publications.

de Boer, B.J., van Hooft, Edwin A. J., and Bakker, A.B. (2015). Self-control at work: its relationship with contextual performance. *Journal of managerial psychology*, vol. 30, no. 4, pp. 406-421.

Díaz-Vilela, L., Díaz-Cabrera, D., Isla-Díaz, R., Hernández-Fernaud, E., and Rosales-Fernández, C. (2012). Adaptación al español de la escala de desempeño cívico de Coleman y Borman (2000) y análisis de la estructura empírica del constructo. *Revista de Psicología del Trabajo y las Organizaciones*, 25, 135-149. https://doi.org/10.5093/tr2012a11

Díaz Vilela, L., Delgado, N., Isla-Díaz, R., Cabrera, D., Hernández-Fernaud, E., and Rosales, C. (2016). Relationships between Contextual and Task Performance and Interrater Agreement: Are There Any? *PLoS ONE*. 10. e0139898. 10.1371/journal.pone.0139898.

Edwards, B. D., Bell, S. T., Arther Jr, W., and Decuir, A. D. (2008). Relationship between facets of work satisfaction and task and contextual performance. *Applied Psychology: An International Review*, 57(3), pp.441-465.
Etikan, İ., Musa, S. A., and Sunusi Alkassim, R. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, Vol. 5, No 1, pp. 1-4.
Fernet, C., Trepanier, S.G., Austin, S., Gagne, M., and Forest, J. (2015). Transformational Leadership and Optimal Functioning at Work: On the Mediating Role of Employees' Perceived Work Characteristics and Motivation. *Work & Stress*, 29(1), pp. 11-31.
Gligorea R. (2018). Work attitude matters for a productive working environment. *Performance Magazine*, Available at: https://www.performancemagazine. org/ work-attitude-productive-environment/, (Accessed: 23 June 2022).
Greenslade, J. H. and Jimmieson, N. L. (2007). Distinguishing Between Task and Contextual Performance for Nurses: Development of A Work Performance Scale. *Journal of Advanced Nursing*, 58(6), pp. 602-611.
Griffin, M., Neal, A., and Neale, M. (2001). The Contribution of Task Performance and Contextual Performance to Effectiveness: Investigating the Role of Situational Constraints. *Applied Psychology*, 49. 517 - 533. 10.1111/1464-0597.00029.
Hornung, O. and Smolnik, S. (2022). AI invading the workplace: negative emotions towards the organizational use of personal virtual assistants. *Electron Markets*, 32, pp. 123–138.
Ion, E. I. and Criveanu M. (2016). Organizational Performance – A Concept That Self-Seeks to Find Itself. *Annals - Economy Series Constantin Brancusi University, Faculty of Economics*, vol. 4, pp. 179-183.
İnce, H., İmamoğlu, S.E., and İmamoğlu, S.Z. (2021). Yapay zekâ uygulamalarının karar verme üzerine etkileri: Kavramsal bir çalışma. International Review of Economics and Management 9(1), pp. 50-63.
Jabeen, F., Al Zaidi, S., and Al Dhaheri, M.H. (2021). Automation and artificial intelligence in hospitality and tourism. *Tourism Review*, Vol. 77 No. 4, pp. 1043-1061. https://doi.org/10.1108/TR-09-2019-0360.
Jawahar, I.M. and Carr, D. (2007). Conscientiousness and contextual performance: The compensatory effects of perceived organizational support and leader-member. *Exchange, Journal of Managerial Psychology*, Vol. 22 No. 4, pp. 330-349. https://doi.org/10.1108/02683940710745923.
Kaplan, A. and Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, Vol. 62, Issue 1, pp. 15-25, ISSN 0007-6813, https://doi.org/10.1016/j.bushor.2018.08.004.
Karasar, N. (2011). *Bilimsel Araştırma Yöntemleri*. Ankara, Nobel Yayınları.
Koopmans, L., Bernaards, C. M., Hildebrandt, V. H., De Vet, H.C.W., and Van der Beek, A. J. (2014). Construct Validity of the Individual Work Performance Questionnaire. *Journal of Occupational and Environmental Medicine*, 56(3).
Landy, F. J. and Conte, J. M. (2016). *Work in the 21st Century: An Introduction to Industrial and Organizational Psychology.* New Jersey: John Wiley & Sons, Inc.
Li, J., Bonn M. A., and Ye, B. H. (2019). Hotel employee's artificial intelligence and robotics awareness and its impact on turnover intention: The moderating roles of perceived

organizational support and competitive psychological climate. *Tourism Management*, 73, pp.172–181.
Liang, H. and Xue, Y. (2009). Avoidance of Information Technology Threats: A Theoretical Perspective. *MIS Quarterly*, (33: 1) pp.71-90.
Lichtenthaler, U. (2020). Extremes of acceptance: employee attitudes toward artificial intelligence. *Journal of Business Strategy*, Vol. 41 No. 5, pp. 39-45. https://doi.org/10.1108/JBS-12-2018-0204
Malik, N., Tripathi, S.N., Kar, A.K., and Gupta, S. (2021). Impact of artificial intelligence on employees working in industry 4.0 led organizations. *International Journal of Manpower*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJM-03-2021-0173.
Mikalef, P., and Gupta, M. (2021). Artificial Intelligence Capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance. *Information & Management*, 58(1).
Nakrošienė, A., Bučiūnienė, I., and Goštautaitė, B. (2019). Working from home: characteristics and outcomes of telework. *International Journal of Manpower*, Vol. 40 No. 1, pp. 87-101.
Nazlı, G. (2019). *Positive And Negative Impacts of Technology and Artificial Intelligence in Globalized World*. Available at: https://medium.com/@gizemnazli9/positive- and-negative-impacts-of-technology-and-artificial-intelligence-in-globalized-world-bfd546363bf4 (Accessed: 27 March 2022).
Pearce, C. L. and Giacalone, R. A. (2003). Teams Behaving Badly: Factors Associated with Anti-citizenship Behavior in Teams. *Journal of Applied Social Psychology*, 33(1), pp.58-75.
Pradhan, R. K. and Jena, L. K. (2017). Employee Performance at Workplace: Conceptual Model and Empirical Validation. *Business Perspectives and Research*, 5(1): pp. 69-85.
Prentice C., Dominique Lopes S., and Wang X. (2020). Emotional intelligence or artificial intelligence–an employee perspective. *Journal of Hospitality Marketing & Management*, 29:4, pp. 377-403.
Pulakos, E. D., Sharon, A., Donovan A. M., and Plamondon, K. E. (2000). Adaptability in the Workplace: Development of a Taxonomy of Adaptive Performance. *Journal of Applied Psychology*, 85(4), pp. 612-624.
Qomariyah, N. N. (2020). *Artificial Intelligence Definition*, Available at: https://international.binus.ac.id/computer-science/2020/11/09/artificialintelligence-definition/ (Accessed: 9 April 2022).
Robbins, S. P. and Judge, T. A. (2017). *Organizational Behavior*. 17th edition, England: Pearson Education Limited.
Russell, S. J. & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach*. Global Edition, Pearson, 4th Edition, pp. 4-8.
Sayantani, S. (2021). *Is Artificial Intelligence making us Lazy and Impatient?* Available at: https://industrywired.com/is-artificial-intelligence-making-us-lazy-and-impatient/ (Accessed: 9 April 2022).
Sekaran, U. (2003). *Research Methods for Business: A Skill-Building Approach*. 4th Edition, John Wiley & Sons, New York.
Schepman, A. and Rodway, P. (2020). Initial validation of the general attitudes towards Artificial Intelligence Scale. *Computers in Human Behavior Reports*, Vol.1, pp.1-13.
Scott, I.A., Carter, S.M., and Coiera, E. (2021). Exploring stakeholder attitudes towards AI in clinical practice. *BMJ Health & Care Informatics*, pp.28: e100450. doi: 10.1136/bmjhci-2021-100450.

Shields, J. (2007). *Managing employee performance and reward*. Cambridge: Cambridge Univ. Press.
Sindermann C., Sha, P., Zhou, M. et al. (2021). Assessing the Attitude Towards Artificial Intelligence: Introduction of a Short Measure in German, Chinese, and English Language, *KI - Künstliche* Intelligenz, Vol.35, pp.109–118.
Spector, P. E. and Fox, S. (2002) An Emotion-Centered Model of Voluntary Work Behavior: Some parallels between counter-productive work behavior and organizational citizenship behavior. *Human Resource Management Review*, 12, 269–292.
Spencer, A. (2018). Waymaker Principles of Management: Attitudes That Affect Work Performance. *Lumen Learning*, pp.226.
Tabachnick, B. G. and Fidell, L. S. (2007). *Using Multivariate Statistics*. 5th. Edition, USA, Boston: Pearson International Edition.
Tahir, K. H. K., Iqbal, A., and Khudai, M. S. (2021). Articulating Manager's Skills and Employee Performance Management Through Artificial Intelligence. *Multicultural education*, 7(10), pp. 321. https://doi.org/10.5281/zenodo.5646563.
Thomas, M. (2021). Is Artificial Intelligence a Good Career? *These AI Professionals Think So*, Available at: https://builtin.com/artificial-intelligence/career-in-artificial-intelligence, (Accessed: 9 April 2022).
van Vijfeijken, H., Kleingeld, A., van Tuijl, H., Algera, J.A., and Thierry, H. (2006). Interdependence and fit in team performance management. *Personnel review*, vol. 35, no. 1, pp. 98-117.
Vasiljeva, T., Ilmars, K., and Ilze, L. (2021). Artificial Intelligence: The Attitude of the Public and Representatives of Various Industries. *Journal of Risk and Financial Management*, 14: pp. 339. https://doi.org/10.3390/jrfm14080339.
Vinod, B. (2021). Artificial Intelligence in travel. *J Revenue Pricing Management*, 20, pp. 368–375. https://doi.org/10.1057/s41272-021-00319-w.
Yoo,Y. (2010). *Digitalization and Innovation*, Available at: https://www.researchgate.net/publication/48926382 (Accessed on 25 March 2022).
Wang, Y.Y., and Wang, Y.S. (2019). Development and validation of an artificial intelligence anxiety scale: an initial application in predicting motivated learning behavior. *Interactive Learning Environments*, pp.1-16.
Wijayati, D.T., Rahman, Z., Fahrullah, A., Rahman, M.F.W., Arifah, I.D.C., and Kautsar, A. (2022). A study of artificial intelligence on employee performance and work engagement: the moderating role of change leadership. *International Journal of Manpower*, Vol. ahead-of-print, No. ahead-of-print. https://doi.org/10.1108/IJM-07- 2021-0423