

ORIGINAL RESEARCH ARTICLE

Evaluation of artificial intelligence anxiety status of generation Z candidate nurses using machine learning in perspective of leadership

Bülent Akkaya^{1,*}, İlknur Buçan Kirkbir², Sema Üstgörül^{3,*}

¹ Manisa Celal Bayar University, Ahmetli Vocational High School, Manisa, Turkey, bulent.akkaya@cbu.edu.tr

² Karadeniz Technical University, Faculty of Health Science, Turkey, ilknurbucan@gmail.com

³ Manisa Celal Bayar University, Faculty of Health Science, Manisa, Turkey, sema84car@hotmail.com

* Corresponding authors: Manisa Celal Bayar University, Manisa, Turkey

bulent.akkaya@cbu.edu.tr, sema84car@hotmail.com

ABSTRACT

This study aims to determine the artificial intelligence (AI) anxiety levels of Z-generation candidate nurses and the variables affecting the anxiety levels of artificial intelligence by the machine learning (ML) method. Data were collected from 431 candidate nurses by questionnaire using the convenience sampling method. R open access programming language was used for the statistical analysis of the study and the evaluation of significant variables according to their importance levels. The Boruta algorithm, a machine learning method, was used in the determination of the variables affecting the level of artificial intelligence anxiety according to the degree of importance. The findings showed that the most important variable for students' artificial intelligence anxiety level is age. Moreover, there is a statistically significant relationship between students' class and their anxiety level, a significant relationship between artificial intelligence and machine learning in health and their anxiety level, and a significant relationship between gender and technological competence evaluation. Furthermore, nearly half of the participants (48.5%) had very low anxiety, 12.8% had low anxiety, 30.2% had medium anxiety, 6.5% had high-level anxiety and 2.1% of them had very high levels of anxiety. With this research, the artificial intelligence anxiety of generation Z was determined by determining the demographic characteristics that are effective in artificial intelligence. We concluded that more sensitive analysis and different results can be obtained when using a machine learning algorithm compared to classical statistical analysis in determining the complex relationships in the data.

Keywords: artificial intelligence anxiety, leadership, generation Z, nurse, machine learning

1. Introduction

Robots and artificial intelligence are rising day by day in all sectors. After COVID-19, especially, there has been more and more artificial intelligence in healthcare organizations in which nurses play a critical role. But AI may sometimes cause anxiety in nursing practices which brings a question to mind. Will the Future be the time for the nursing profession to be friends with Artificial Intelligence and how it will affect nursing practices? The nursing profession, like other AI, has become more saturated with modern technologies.

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Electronic charting, remote vital sign monitoring, and machine technology have progressively pulled nurses

away from the bedside ^[1]. Technology has revolutionized nursing in many ways and boosted patient safety but at the expense of reducing nurse-patient engagement, which is critical to continual physical and psychosocial evaluation that promotes holistic recovery. Thus, nurses may be concerned about the rise of robots in health care, driven by various types of AI ^[2]. Concerns about artificial intelligence (AI) technologies among nursing students are intricately linked to leadership. The integration of AI into nursing practice can impact the future leadership roles of nursing students. In this context, nursing students must strike a balance between their concerns about AI and their leadership competencies. Nurses should accept AI technology and use it to better nursing practice to decrease their AI anxiety. Anxiety caused by the use of various technologies in healthcare organizations and hospitals can lead to confusion, and these repercussions may exhibit themselves during daily nurse/patient interactions, generating artificial intelligence anxiety ^[3]. With the development of computer and information technologies, important changes are experienced in nursing as in other health professions. Nurses, who serve in the closest position to the healthy/sick individual, are the decision-makers on issues such as determining the individual's needs, choosing materials for care, and time management. While performing these functions, nurses constitute the occupational group that makes the most use of information technologies ^[2]. The role of artificial intelligence in healthcare settings was discussed in several national ^[4, 5] and international articles and research ^[6-8]. However, there is still a scarcity of studying the attitude of nurses towards partnering with Artificial Intelligence to link socio-demographic features in Turkish healthcare organizations and hospital hospitals. Including the subjects related to informatics and artificial intelligence in the education and training curricula of nursing students, where theoretical and practical training is predominant, will be an approach that supports the active involvement of nursing in the rapidly advancing healthcare field today ^[9]. Therefore, based on the limitation of earlier research mentioned above on artificial intelligence anxiety (AIA) and its interaction with various variables, the purpose of the study was to assess the artificial intelligence anxiety status of nursing students. Another objective of the current research is to be able to determine the type and scope of candidate nurses' artificial intelligence anxiety in perspective of their socio-demographic features.

1.1. Theoretical framework

1.1.1. Artificial intelligence

Artificial intelligence is a general term that refers to the use of a computer to model the intelligent behavior of humans. Today, artificial intelligence is considered a branch of engineering that applies new concepts and new solutions to solve complex challenges ^[10]. In the field of health services, as in other sectors, artificial intelligence applications have taken their place with a rapid acceleration. With the introduction of artificial intelligence applications into the field of health services, there have been developments in many areas such as early diagnosis, treatment, storage of health records, medical decision-making, medical imaging, and drug development ^[11]. However, the issue of what stage the developments in artificial intelligence will be in the coming years may cause health professionals to worry as well as in every field ^[12]. Questions such as the validation of artificial intelligence-based technologies, ethical problems, dehumanization, and whether they will replace health professionals have come to the fore with these developments ^[13]. In today's Industry 4.0 era, where technology is developing very rapidly, it is important to determine the artificial intelligence anxiety of nursing students, who are the practitioners of the future nursing profession, and to support their adaptation to the developments in this field. When it is not possible to adapt to technological developments, in the work and private lives of individuals; It can create psychological effects that cause them to approach technology with fear and anxiety ^[14]. By using informatics, nurses can provide individualized nursing care and fulfill their functions such as education and counseling in a healthier way ¹⁵. There are a limited number of studies using the artificial intelligence anxiety scale in national research ^[5, 16, 17]. In this context, in this study, the artificial intelligence anxiety status of students who are preparing for the nursing profession, which has an important

role in the health system, and its affecting factors, by using the Artificial Intelligence Anxiety scale, which Wang and Wang^[18] developed and Akkaya et al. (2021) adapted it into Turkish^[17].

1.1.2. Generation Z and their characteristics

In the digitalizing world with the developments in technology, the young generation who is highly affected by this transformation and born and living in this transformation is known as generation Z. Generation Z, also known as the “Crystal generation”, born between 2000-2020, can quickly adapt to the change in knowledge and time^[19,20]. It is argued that the youth of generation Z are the generation that will lead the world. However, it is emphasized that generation Z is a more cautious generation than other generations because they grew up in times of uncertainty and change and were raised by pragmatic and suspicious parents^[21]. Generation Z is the generation with the highest ability to synchronize motor skills (hand, eye, ear, etc.) in the history of humanity, but it is also a generation that has the characteristics of being unsatisfied, result-oriented, indecisive, and innate consumer^[22]. In addition to all these, Generation Z youth can easily overcome problems thanks to their lifestyles intertwined with technology, their ability to access and use information quickly, and their ability to use technology easily^[20].

1.1.3. The relationship between artificial intelligence and generation Z

Generation Z is also experiencing indecision about the use of artificial intelligence and robots, which are used to increase speed, efficiency, quality, and efficiency in today's health services^[23]. Attitudes towards new technologies and artificial intelligence are also affected by some socio-demographic characteristics. Although literature studies indicate that the readiness of the new generation of youth is higher than that of other generations, it has been determined that they are more cautious about topics such as artificial intelligence and robots^[24]. It is an important issue to determine the concerns and attitudes of generation Z youth regarding artificial intelligence, which is used in almost every field today.

The level of anxiety towards artificial intelligence (AI) technologies may vary among nurses. Specifically, there is a need for further research to understand the impacts of AI anxiety on nursing practices. Additionally, a more in-depth examination of the factors influencing nurses' attitudes towards AI technologies is warranted. Assessing the anxiety levels of generation Z nursing students, who will be future healthcare professionals, and raising awareness about this issue can help mitigate potential challenges in the delivery of healthcare services in the digitized world. In this context, this study aimed to determine the levels of artificial intelligence anxiety among generation Z nursing students and evaluate them in terms of socio-demographic characteristics.

2. Materials and methods

In this study, the anxiety levels of nursing students about artificial intelligence were determined and the variables affecting the anxiety levels of artificial intelligence were ranked according to their importance by machine learning method.

2.1. Data set description

Data were collected from 431 candidate nurses by questionnaire using the convenience sampling method. These candidate nurses have studied in the Department of Nursing at two different universities in Turkey during the 2022-2023 academic year. The socio-demographic form and Artificial Intelligence Anxiety Scale were used as data collection tools in the research. The socio-demographic form measured the socio-demographic characteristics of the participants such as age, gender, and education. The Artificial Intelligence Anxiety Scale measured the artificial intelligence anxiety levels of the participants. This scale, which consists of 4 dimensions and 16 questions. The scale was developed by Wang and Wang (2019) and was adapted into Turkish by Akkaya, Özkan & Özkan (2021).

2.2. Statistical analysis

R open access programming language was used for the statistical analysis of the study and the evaluation of significant variables according to their importance levels. In statistical evaluations, numbers and percentages were given for categorical variables, and mean±sd, min, and max values were given for numerical variables. Also, the relationship between the two qualitative variables was evaluated with the chi-square test, and the significance level was accepted as >0.05. The reliability of the scale was measured with Cronbach's Alpha.

2.3. Evaluating the features importance

The Boruta algorithm, which is a machine learning method, was used in the determination of the variables affecting the level of artificial intelligence anxiety according to the degree of importance. The Boruta algorithm iteratively eliminates variables that are statistically tested to be less relevant. That is, Boruta is based on the idea that underpins the Random Forest classifier, that is, it can reduce the misleading effect of random variations and correlations by adding random variables to the system and collecting results from a collection of random samples. Adding this extra randomness is intended here to provide a clearer view of which attributes are truly important. Random Forest algorithm is relatively faster than many other machine learning algorithms and can give a numerical estimate of the variable importance [25].

3. Results

After the obtained of the dataset, the analysis of the descriptive statistics of the demographic characteristics of the students, reliability analysis of the scale, determining the anxiety levels of students, Chi-Square analyses, and the evaluation of the features' importance by using the Boruta algorithm were followed, respectively. Descriptive statistics of the socio-demographic characteristics of the students are given in **Table 1**.

Table 1. Descriptive statistics of variables in the data set.

Categoric Variables	Categories	n	%
<i>Gender</i>	Male	85	19,7
	Female	346	80,3
<i>Graduate(high school)</i>	Health Vocational High School	25	5,8
	Anatolian High School	305	70,8
	Normal High School	65	15,1
	Science High School	36	8,4
<i>Class</i>	1	179	41,5
	2	59	13,7
	3	126	29,2
	4	67	15,5
<i>Nursing Informatics Lesson</i>	Yes	74	17,2
	No	357	82,8
<i>Technological competence evaluation</i>	Low	67	15,5
	Moderate	322	74,7
	High	42	9,7
<i>Heard the concept of AI</i>	Yes	382	88,6
	No	49	11,4
<i>AI applications useful in the future</i>	Yes	334	77,5
	No	12	2,8
	Dubious	85	19,7

<i>Awareness of AI and ML in health</i>	Yes	144	33,4
	No	126	29,2
	Dubious	161	37,4
<i>Discussing ML and AI in health</i>	Yes	144	
	No		
	Dubious		
<i>AI Anxiety Level</i>	Very low	209	48,5
	Low	55	12,8
	Moderate	130	30,2
	High	28	6,5
	Very high	9	2,1
Total		432	100
Numeric Variable	Mean±SD	Min	Max
<i>Age</i>	20,62±2,003	18	34

The Cronbach Alpha value for the current study was 0.932. This value was 0.935 for the learning dimension, 0.893 for the Job Change dimension, 0.893 for the Sociotechnical Blindness dimension, and 0.949 for the AI Structuring dimension. These values show that the scale is reliable for our study because it is above 0.70, which is accepted in the literature. When evaluating the artificial intelligence anxiety levels of the nursing students in the study, 48.5% had very low anxiety, 12.8% had low anxiety, 30.2% had medium anxiety, 6.5% had high-level anxiety and 2.1% of them had a very high level of anxiety were determined (**Table 1**).

Table 2. Result of Chi-Square analysis.

Variables	AI Anxiety Level		Gender	
	X²	p	X²	p
Gender	9.01	0.06	-	-
Graduate	7.69	0.80	5.8	0.11
Class	22.3	0.03*	4	0.94
			9	
Nursing Informatics Lesson	4.21	0.37	0.0	0.97
Heard the concept of AI	4.61	0.32	0	0.65
			9	
Technological competence evaluation	13.2	0.12	28.	0.000*
AI applications useful in the future	10.7	0.21	7	0.66
			2	
Awareness of AI and ML in health	15.9	0.04*	7.8	0.01
			3	

In **Table 2**, as a result of the chi-square test, there is a statistically significant relationship between students' class and their anxiety level ($X^2=22.03$; $p<.05$), significant relationship between awareness of AI and ML in health and their anxiety level ($X^2=15.9$; $p<.05$). Additionally, it was determined that there is a statistically significant relationship between gender and Technological competence evaluation ($X^2=28.79$; $p<.05$).

In the evaluation of the variables' importance of the artificial intelligence anxiety levels of the students, the Boruta algorithm, which works based on the random forest method, was used and the variables that had a

high effect on the dependent variable were listed in order of importance. The graph of the variables listed in order of importance is given in **Figure 1**.

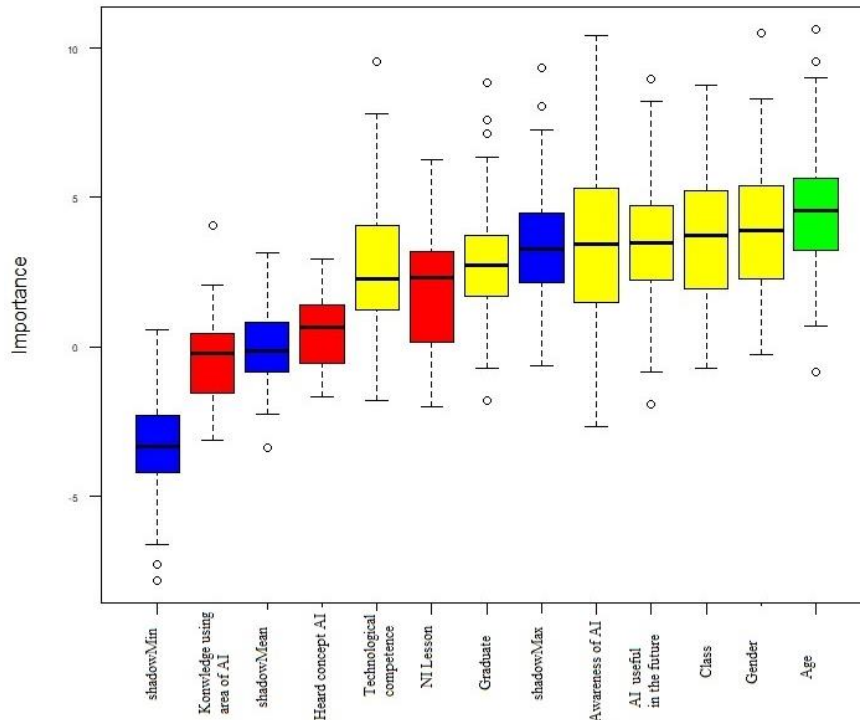


Figure 1. Graphical representation of variables ranked by importance.

When **Figure 1** is examined, it is seen that the most important variable for students' artificial intelligence anxiety level is age. Then gender, class, thoughts about the future use of artificial intelligence applications, and being aware of the discussions on artificial intelligence and machine learning in the field were determined as important features, respectively. In this study, features such as gender, class, thoughts about the future use of artificial intelligence applications in the future, and awareness of discussions on artificial intelligence and machine learning which are not associated with anxiety levels in **Table 2**, were determined as important variables affecting the anxiety level when evaluated with machine learning method. In this context, it is seen that more sensitive analysis and different results can be obtained when using a machine learning algorithm compared to classical statistical analysis in determining the complex relationships in the data.

4. Discussion and conclusion

It's hard to find a conference, article, or academic research that doesn't mention artificial intelligence since Industry 4.0. Because of the challenges associated with artificial intelligence, nurses need to become a part of AI. As Watson, et al. (2020) and Nasreldin et al. (2021) asked “Should nurses fear the robots in health care, powered by different types of artificial intelligence, or should they welcome the technology to improve nursing practice?”^[1, 8]. Increasing digitalization in the changing world brings with it uncertainties and fears. In particular, it is very important for the generation Z, who can think quickly and analytically, to be raised as children who can think and problem solve and have high self-control skills who can struggle with the uncertainties of the future, beyond the conditions of the period in which they live. In this context, the relationship between artificial intelligence anxiety states and socio-demographic characteristics was examined based on the importance of evaluating the artificial intelligence concerns of the generation Z.

In this study, we concluded that nearly half of the participants (48.5%) had very low anxiety levels, and a few of them (2.1%) experienced very high levels of anxiety. According to the results of the Boruta algorithm,

which we used to determine the important variables affecting artificial intelligence anxiety, age was identified as the most significant variable. Park et al. (2022) stressed that elder people are more accepting of smart information technologies powered by artificial intelligence and new technologies as they stay up to date. This result agreed with this finding of the current study^[26]. But Kaya et al., (2022) disagreed with those findings because they found that there is no relationship between age and artificial intelligence anxiety^[27].

Gender is the second important variable according to Boruta algorithm results. In the literature, there are various studies on the impact of gender on artificial intelligence anxiety. Some studies indicate that women generally experience more anxiety towards artificial intelligence technologies, while others suggest that this difference is associated with gender stereotypes and societal norms^[28, 29]. For instance, the perception that women have lower access to technology or technological competencies than men can have negative effects on artificial intelligence anxiety^[30]. Additionally, gender roles and expectations can influence attitudes towards artificial intelligence technologies^[31]. The current study's findings align with those of Yazdani and colleagues' research^[33]. However, contrary to our results, there are studies^[5, 27, 32, 34] that found no significant difference between artificial intelligence anxiety scores and gender.

The results of the current study proved that the class variable was obtained as the third most important variable according to the Boruta algorithm and there is a statistically significant relationship between students' class and their anxiety level (**Table 1**). Filiz et al. (2022) and Masayuki (2016) support this link. They found a positive and significant between education level and artificial intelligence anxiety^[5,35].

We also discovered a statistically significant relationship between awareness of AI and ML in health and students' anxiety levels. Although the importance of the use of artificial intelligence in higher education has been emphasized in the literature, education, and health services have listed the areas where the concept of artificial intelligence has been adopted the least^[36]. Some researchers found that healthcare students' knowledge and technical competencies fell short of the levels needed in clinical practice^[37, 38]. The reason for this is expressed as the lack of how to integrate artificial intelligence applications into the education system, especially for generation Z, and the creation of smart learning and teaching systems^[39,40,41,42]. In Turkey, the informatics course in undergraduate education is given as an elective course in some universities. In the study, the artificial intelligence anxiety averages of the students were found to be statistically significantly higher in the group who did not take the nursing informatics course. By adding the informatics course to the curriculum in all occupational groups in undergraduate education, it can be ensured that the useful use of technology in the changing world can be increased. In addition to this, leadership education for nursing students can assist them in understanding AI technologies, using them correctly, and coping with concerns related to these technologies.

The limitations of the current study include a relatively small sample size and a cross-sectional design, which limits the ability to establish causal relationships. Additionally, reliance on self-report measures may introduce response bias. Future research should employ longitudinal designs with larger and more diverse sample groups to better understand the long-term effects of socio-demographic factors and modifiable lifestyle habits on artificial intelligence anxiety.

Author contributions

Conceptualization, BA, SÜ and İKB; methodology, BA and İKB.; software, İBK.; validation, BA, SÜ and İKB.; formal analysis, BA and İKB; investigation, BA, SÜ and İKB; resources, BA, SÜ and İKB.; data curation BA and SÜ.; writing—original draft preparation, BA, SÜ, and İKB; writing—review and editing, BA, SÜ and İKB. “All authors have read and agreed to the published version of the manuscript.”

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Conflict of interest

The authors declare no conflict of interest.

References

1. Watson D, Womack J, Papadakos. Rise of the robots: Is artificial intelligence a friend or foe to nursing practice?. *Critical Care Nursing Quarterly* 2020; 43(3): 303-311.
2. Maalouf N, Sidaoui A, Elhajj IH, Asmar D. Robotics in nursing: a scoping review. *Journal of Nursing Scholarship* 2018; 50(6): 590-600.
3. Davenport T, Kalakota R. The potential for artificial intelligence in healthcare. *Future healthcare journal* 2019; 6(2): 94.
4. Güzel Ş, Dömbekci HA, Eren F. Yapay Zekânın Sağlık Alanında Kullanımı: Nitel Bir Araştırma. *Celal Bayar Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi* 2022; 9(4): 509-519.
5. Filiz E, Güzel Ş, Şengül A. Sağlık profesyonellerinin yapay zekâ kaygı durumlarının incelenmesi, *Journal of Academic Value Studies* 2022; 8(1): 47-55.
6. Higgins O, Short BL, Chalup SK, Wilson RL. Artificial intelligence (AI) and machine learning (ML) based decision support systems in mental health: An integrative review. *International Journal of Mental Health Nursing* 2023 doi: 10.1111/inm.13114.
7. Almaiah MA, Alfaisal R, Salloum SA, Hajje F, Thabit S, El-Qirem FA, Al-Marroof RS. Examining the impact of artificial intelligence and social and computer anxiety in e-learning settings: students' perceptions at the university level. *Electronics* 2022; 11(22): 3662.
8. Nasreldin Othman W, Mohamed Zanaty M, Mohamed Elghareeb S. Nurses' Anxiety level toward Partnering with Artificial Intelligence in Providing Nursing Care: Pre&Post Training Session. *Egyptian Journal of Health Care* 2021; 12(4): 1386-1396.
9. Buchanan C, Howitt ML, Wilson R, Booth RG, Risling T, Bamford M. Predicted influences of artificial intelligence on nursing education: Scoping review. *JMIR nursing* 2021; 4(1): e23933.
10. Miranda J, Navarrete C, Noguez J, Molina-Espinosa JM, Ramirez-Montoya MS, Navarro-Tuch SA, Molina A. The core components of education 4.0 in higher education: Three case studies in engineering education. *Computers & Electrical Engineering* 2021; 93: 107278.
11. Markus AF, Kors JA, Rijnbeek PR. The role of explainability in creating trustworthy artificial intelligence for health care: a comprehensive survey of the terminology, design choices, and evaluation strategies. *Journal of Biomedical Informatics* 2021; 113: 103655.
12. Hamet P, Tremblay J. Artificial intelligence in medicine. *Metabolism* 2017; 69: 36-40.
13. Briganti G, Le Moine O. Artificial intelligence in medicine: today and tomorrow. *Frontiers in medicine* 2020; 27(7). doi.org/10.3389/fmed.2020.00027
14. Taş D, Turanlıgil F. Sağlık Çalışanlarının Bilgisayar Teknolojisine Karşı Tutumları İle Teknoloji Öz-Yeterliği Düzeylerinin İşgücü Devrine Etkisi: Gaziantep Üniversitesi Tıp Fakültesi Hastanesi Örneği. *Anadolu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi* 2020; 21(2): 1-17.
15. Kardaş Özdemir F, Karakaya G. The use of computer and information technology by nurses. *The Journal of Tepecik Education and Research Hospital* 2017; 27(2): 126-130. DOI: 10.5222/terh.2017.126
16. Kolcu GK, Özceylan G, Başer A, Altuntaş SB. Yapay Zekâ Kaygısı Ölçeğinin Aile Hekimlerinde Geçerlik ve Güvenirliğinin Değerlendirilmesi. *Research Journal of Biomedical and Biotechnology* 2021; 2(1): 20-28.
17. Akkaya B, Özkan A, Özkan H. Yapay Zeka Kaygı (YZK) Ölçeği: Türkçeye Uyarlama, Geçerlik ve Güvenirlik Çalışması. *Alanya Akademik Bakış* 2021; 5(2): 1125-1146. https://doi.org/10.29023/alanyaakademik.833668.
18. Wang YY, Wang YS. Development and validation of an artificial intelligence anxiety scale: an initial application in predicting motivated learning behavior. *Interactive Learning Environments* 2019; 30(4): 619-634. https://doi.org/10.1080/10494820.2019.1674887
19. Çetin C, Karalar S. X, Y ve Z kuşağı öğrencilerin çok yönlü ve sınırsız kariyer algıları üzerine bir araştırma. *Yönetim Bilimleri Dergisi* 2016; 14(28): 157-197.
20. Erten P. Z kuşağının dijital teknolojiye yönelik tutumları. *Gümüşhane Üniversitesi Sosyal Bilimler Dergisi* 2019; 10(1): 190-202.
21. Karadoğan A. Z kuşağı ve öğretmenlik mesleği. *Ağrı İbrahim Çeçen Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 2019; 5(2): 9-41.
22. Gümüş N. Z kuşağı tüketicilerin satın alma karar tarzlarının incelenmesi. *Yaşar Üniversitesi E-Dergisi* 2020; 15(58): 381-396.

23. Gürdin B. Türkiye’de Robonomi: Z Kuşağı Gençlerin Hastanelerde Potansiyel Hizmet Robotu Kullanımına Yönelik Tutumları. *Artuklu Kaime Uluslararası İktisadi ve İdari Araştırmalar Dergisi* 2020; 3(1): 41-55.
24. Lazányi K. Generation Z and Y—are they different, when it comes to trust in robots? In 2019 IEEE 23rd International Conference on Intelligent Engineering Systems (INES) (pp. 000191-000194). IEEE).
25. Kurşa MB, Rudnicki WR. Feature Selection with the Boruta Package. *Journal of Statistical Software* 2010; 36(11): 1–13. <https://doi.org/10.18637/jss.v036.i11>).
26. Park I, Kim D, Moon J, Kim S, Kang Y, Bae S. Searching for new technology acceptance model under social context: Analyzing the determinants of acceptance of intelligent information technology in digital transformation and implications for the requisites of digital sustainability. *Sustainability* 2022; 14(1): 579.
27. Kaya F, Aydın F, Schepman A, Rodway P, Yetişensoy O, Demir Kaya M. The Roles of Personality Traits, AI Anxiety, and Demographic Factors in Attitudes toward Artificial Intelligence. *International Journal of Human–Computer Interaction* 2022; 1-18.
28. Smith, J. (2019). The Impact of Gender on Artificial Intelligence Anxiety. *Journal of Technology and Society*, 15(2), 45-58.
29. Jones, A., Smith, B., & Johnson, C. (2020). Understanding Gender Differences in Artificial Intelligence Anxiety. *Journal of Psychology and Technology*, 25(3), 102-115.
30. Brown, L. (2018). Exploring the Relationship between Gender and Artificial Intelligence Anxiety. *Technology and Society Review*, 12(4), 231-245.
31. Garcia, P., Rodriguez, M., & Martinez, E. (2021). Gender Roles and Expectations in Relation to Artificial Intelligence Technologies. *Journal of Gender Studies*, 30(1), 45-58.
32. Menekli T, Şentürk S. The relationship between artificial intelligence concerns and perceived spiritual care in internal medicine nurses. *YOBÜ Sağlık Bilimleri Fakültesi Dergisi* 2022; 3(2): 210-218.
33. Yazdani M, Rezaei S, Pahlavanzadeh S. The effectiveness of stress management training program on depression, anxiety and stress of the nursing students. *Iranian journal of nursing and midwifery research* 2010; 15(4): 208-215.
34. Ramadan E, Ahmed H. The effect of health educational program on depression, anxiety and stress among female nursing students at Benha University. *IOSR Journal of Nursing and Health Science* 2015; 4(3): 49-56.
35. Masayuki M. The Effects of Artificial Intelligence and Robotics on Business and Employment: Evidence from a survey on Japanese firms. *Res. Inst. Econ. Trade Ind* 2016; 16.
36. Ma Y, Siau KL. Artificial intelligence impacts on higher education. *MWAIS Proceedings* 2018; 42(5): 1-5.
37. Swan BA Assessing the Knowledge and Attitudes of Registered Nurses about Artificial Intelligence in Nursing and Health Care. *Nursing Economic\$* 2021; 39(3): 139-143.
38. Ronquillo CE, Peltonen LM, Pruinelli L, Chu CH, Bakken S, Beduschi A, Topaz M. Artificial intelligence in nursing: Priorities and opportunities from an international invitational think - tank of the Nursing and Artificial Intelligence Leadership Collaborative. *Journal of advanced nursing* 2021; 77(9): 3707-3717.
39. Taşçı G, Çelebi M. Eğitimde yeni bir paradigma: “Yükseköğretimde yapay zekâ”. *OPUS Uluslararası Toplum Araştırmaları Dergisi* 2020; 16(29): 2346-2370.
40. Dobrowolski, Z., Drozdowski, G., & Panait, M. (2022). Understanding the impact of Generation Z on risk management—A preliminary views on values, competencies, and ethics of the Generation Z in public administration. *International Journal of Environmental Research and Public Health*, 19(7), 3868.
41. Ndou, V., Hysa, E., Ratten, V., & Ndrecaj, V. (2023). Digital transformation experiences in the Balkan countries. *The Electronic Journal of Information Systems in Developing Countries*, 89(2), e12262.
42. Panait, M., Ionescu, R., Apostu, S. A., & Vasić, M. (2022). Innovation through Industry 4.0-Driving Economic Growth and Building Skills for Better Jobs. *Economic Insights-Trends & Challenges*, (2).